Total No. of Printed Pages-3]

35

CC(M)

AGRICULTURE

(OPTIONAL)

PAPER - II

[07]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. a) Explain the cell culture technique for crop improvement, disease resistance and bioremediation. **(10)**

b) How can production, procurement and distribution problem in supply chain management be optimised in India? **(10)**

c) What is the mechanism of gametophytic self-incompatibility and how does it differ from sporophytic self-incompatibility? **(10)**

d) How do the key hormones regulate seed dormancy? Explain the methods to break seed dormancy. **(10)**

e) How can the balance between chemical control and environmental sustainability be achieved in agricultural pest management? **(10)**

2. a) How can plant breeding techniques mitigate biotic and abiotic stresses? Briefly outline the history of plant breeding and discuss its landmark achievements. **(20)**

b) Why does inversion suppress crossing over in genetic recombination? Explain the cytological basis of crossing over and its significance in genetic diversity. **(15)**

c) What are the notable achievements of mutation plant breeding? Discuss the limitations and challenges of mutation breeding in crop improving programs. **(15)**

3. a) How can crop improvement through genetic engineering lead to food and nutritional security? **(15)**

b) Describe the role and mode of action of growth hormones in regulating plant life cycle? **(15)**

c) How do intellectual property rights (IPRs) differ from traditional property rights? Describe the forms of protection of intellectual property and discuss the opportunities and obstacles in IPR issues. **(10)**

d) Discuss the trends and prospects of horticultural crops in India. **(10)**

4. a) Discuss the prospects and techniques of protected agriculture and soilless cultivation for raising high value crops. **(20)**

b) How can forecasting be used to predict the occurrence or change in the severity of plant diseases and pests? Discuss the limitations of plant pest forecasting system and their redressal. **(15)**

c) What food based dietary approaches can be adopted to tackle protein- energy malnutrition and deficiencies of nutrients and vitamins? **(15)**

SECTION - B

5. a) What are the challenges associated with scaling up cell culture techniques for tissue engineering applications? What are the cellular mechanisms for DNA repair and why is it essential for cell survival? **(10)**

   b) What is the significance of wild relatives of crop plants in providing genetic resources for pest resistance? How do environmental factors influence the expression of resistant traits in plants? **(10)**

   c) What are the mechanisms involved in the absorption of essential nutrients by plants and how does nutrients' absorption vary across different plant species and soil conditions? **(10)**

   d) What regulatory frameworks govern the public and private sectors in seed production and marketing? How do intellectual property rights influence seed production and marketing? **(10)**

   e) How can vertical farming enhance crop production in urban settings? Explain the role of automation in hi-tech agriculture. **(10)**

6. a) What are the genetic and ecological factors contributing to inbreeding depression in plants? Describe the degree of inbreeding depression in various crop species. **(20)**

   b) How does genetic engineering contribute for the improvement of climate resilient crop varieties? Highlight the biosafety concerns of genetically modified crops. **(20)**

   c) How does consumption of fruits and vegetables impact the prevention of chronic diseases and what are the mechanisms of these health benefits? **(10)**

7. a) What are the current major trade issues in WTO and what are the potential impacts of these issues on global trade and economic development? **(20)**

   b) What is the purpose of plant quarantine measures in safeguarding agriculture and natural ecosystems and how do these contribute to global food security? **(15)**

   c) What are the differences between C_3, C_4 and CAM photosynthesis mechanisms and how do these mechanisms optimize carbon fixation and water use efficiency in different plant species? **(15)**

8. a) What are the challenges and opportunities in achieving food security for growing global population and what sustainable strategies can be adopted to address these challenges? **(20)**

   b) How do soil and environmental factors influence the prevalence and spread of crop pests and diseases and what are the suggestions for their management? **(15)**

   c) What are the main aims of Public Distribution System (PDS) and how does PDS contribute to ensure food and nutritional security for vulnerable Indian populations? **(15)**

Total No. of Printed Pages-3]

36

CC(M)

ANIMAL HUSBANDRY AND VETERINARY SCIENCE

(OPTIONAL)

PAPER - II

[09]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. a) Describe the ruminant stomach and the functions of each of the compartments. **(20)**

b) Define 'milk pasteurization'. Describe its objectives and different methods. **(10)**

c) Explain Animal Disease Free Zone. Why these zones are important? **(10)**

d) Explain various types of wounds in veterolegal cases. **(10)**

2. a) What are the considerations for the selection of site for an abattoir? Enlist different units in a modern abattoir. **(20)**

b) Explain the following: **(2×5=10)**

i) Toxicity of Tetracyclines

ii) Antitrypanosomal drugs.

c) Discuss postparturient hemoglobinuria in cows. **(10)**

d) Detail the histology of adenohypophysis and hormones secreted. **(10)**

3. a) Write difference between **(4×5=20)**

i) Metaphylaxis and prophylaxis

ii) Tension band wiring and cerclage wiring

iii) Multimodal and pre-emptive analgesia

iv) Dynamic compression plating and intramedullary pinning.

b) What is fermented milk? Explain the manufacturing process involved in production of cultured butter milk. **(10)**

c) Briefly discuss five major diseases of sheep. **(10)**

d) Describe in detail the events of fertilization in mammals. **(10)**

4. a) Discuss the functional anatomy of air sacs and their functions in the birds. **(20)**

b) Discuss the following **(2×5=10)**

i) Structure-activity relationship of barbiturates.

ii) Kinetics of iron absorption from gastrointestinal tract.

c) What are the procedures for collecting and testing the raw milk? **(10)**

d) A pregnant sheep having body condition score 2 carrying two fetuses and in last two weeks of gestation developed anorexia, depression, neurologic signs, progressing to recumbency. Laboratory findings showed hypoglycemia, increased urine ketone level and increased serum β hydroxybutyrate. Discuss diagnosis, treatment and its control. **(10)**

SECTION - B

5. a) What are objectives of *Office International des Epizooties*(OIE)? Write about two categories of communicable diseases defined by OIE. **(20)**

   b) Classify the connective tissue and discuss each with suitable examples. **(10)**

   c) Diagrammatically explain the antibiotics inhibiting cell wall synthesis act. **(10)**

   d) Describe various curing ingredients for meat along with their roles. **(10)**

6. a) A cow was brought to the hospital, and an abdomen radiograph confirmed the presence of a foreign body in the reticulum. To perform a rumenotomy, suggest the nerve block, surgical site for incision and anatomical structures from outside to inside of the site to reach the area of foreign body deposition. **(15)**

   b) Discuss by-products of dairy industry and their processing methods. **(15)**

   c) Describe the sources, mechanism, symptoms, management/treatment of molybdenum toxicity in cattle. **(10)**

   d) Describe the foetal circulation of cattle. **(10)**

7. a) Explain the mechanism of action of the following. **(4×5=20)**

   i) Ivermectin ii) Macrolides iii) Praziquantel iv)Fluoroquinolones.

   b) Explain the pre-slaughter care and management of meat animals and its effect on meat quality. **(10)**

   c) What are the causes of diarrhea in horses and foals? **(10)**

   d) Give reasons of the following **(2×5=10)**

   i) Why rumenotomy is indicated before diaphragmatic herniorrhaphy in buffaloes?

   ii) Why fatty animals take longer duration to recover from barbiturate induced and maintained anesthesia than the lean animals.

8. a) What are the different methods of classification of cheese? Explain the processing procedure for manufacturing cheddar cheese. **(20)**

   b) Discuss the autonomic nervous system and its functions. **(10)**

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CC(M)
ANIMAL HUSBANDRY AND VETERINARY SCIENCE
(OPTIONAL)
PAPER - II
[09]

Time Allowed - Three Hours	*Maximum Marks-250*

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Total No. of Printed Pages-3]

37

CC(M)

ANTHROPOLOGY

(OPTIONAL)

PAPER - II

[11]

Time Allowed - Three Hours	*Maximum Marks-250*

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SECTION-A

Write notes on the following in about 150 words each. **(5×10=50)**

1. a) Relevance of rina and fundamental duties. **(10)**

   b) Sacred ecology as a dimension of Indian civilization. **(10)**

   c) Attirampakkam and Hominid settlement. **(10)**

   d) Gender Empowerment and Panchayati Raj Institutions. **(10)**

   e) Dravidian language and tribes. **(10)**

2. a) Discuss the impact of colonial economic policies on the traditional livelihood of tribal communities. How did the tribes react to these colonial interventions? **(20)**

   b) Explain the impact of introduction of Christianity on the ethnic and religious identities of adivasi communities. **(15)**

   c) On the basis of Narmada valley fossil findings, write an account of human ancestor populations during the late pleistocene times. **(15)**

3. a) What are the legal provisions available to safeguard the traditional land rights of tribes? Examine their effectiveness in dealing with the issue of land alienation in tribal areas. **(20)**

   b) Discuss the impact of Sufism in emergence of a composite cultural tradition in India. **(15)**

   c) Briefly describe the models of ethno-linguistic diversity of Indian population. **(15)**

4. a) Describe the impact of macro policy reforms and globalization on farming sector and rural economy of India. **(20)**

   b) Critically examine the impact of economic liberalization on the nature of communalism and fundamentalism in India. **(15)**

   c) Explain the distinctive role of anthropology in promoting sustainable tourism in India with suitable examples. **(15)**

SECTION-B

Write notes on the following in about 150 words each. **(5×10=50)**

5. a) Gufkral prehistoric culture. **(10)**

   b) Ethnic diversity of Lakshadweep Islands. **(10)**

   c) Bohras **(10)**

   d) Autonomous district councils and tribal governance. **(10)**

   e) Tuberculosis in Sahariyas. **(10)**

6. a) Examine the contributions of K.S. Singh towards the understanding of Tribal communities in India. **(20)**

b) Discuss the impact of internet governance on administration in tribal areas. **(15)**

c) Examine the changes and continuities in the Post-Harappan civilization sites from India. **(15)**

7. a) Examine the recent policy initiative and development programms to improve infrastructure and livelihood opportunities among the tribal communities in India. **(20)**

b) Critically analyse the issues related to foreign funding of Non-government organisations involved in tribal development in India. **(15)**

c) Explain the Government strategies of development of Indigenous communities of Andaman Islands. **(15)**

8. a) Explain the main ethos of Indian civilisation that have contributed towards diversity and unity of ethnic groups in India. How are these features supported by the fundamental rights enshrined in the constitution of India? **(20)**

b) Critically examine the limitations of Sanskritisation and tribe-caste continuum in understanding social dynamics of transformation in contemporary India. **(15)**

c) Discuss the role of anthropology in decolonization and contesting structural discrimination which hinders social justice and equitable policies of government of India. **(15)**

Total No. of Printed Pages-3]

38

CC(M)

BOTANY

(OPTIONAL)

PAPER - II

[13]

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SECTION - A

Write short notes on the following: **(5×10=50)**

1. a) Economic importance of lichens.

b) Anomalous secondary growth

c) Relevance of ethnobotany in conservation

d) Wobble hypothesis

e) Plant quarantine

2. a) Origin of angiosperms has been one of the most widely discussed topic in botany. Discuss the different theories associated with the probable ancestors, and time of origin of angiosperms. **(20)**

b) 'Microbes are used to mitigate soil and water pollution'. Discuss the various mechanisms and suitable examples to justify the statement. **(15)**

c) Describe the methods and relevance of studying fossils in understanding plant evolution. Cite suitable examples in support of your answer. **(15)**

3. a) Enlist the key features of Bentham and Hooker system of classification. Discuss its merits and demerits. **(20)**

b) Name the causative organism, symptoms, mode of spread and methods of control of any three plant diseases caused by virus. **(15)**

c) Describe the process of microsporogenesis in angiosperms. How is it different from that of gymnosperms? Support your answer with suitable diagrams. **(15)**

4. a) Describe the various mechanisms that lead to self-incompatibility. Elaborate upon the role played by the different techniques of experimental embryology in conservation of plants. **(20)**

b) Discuss the salient features of Vavilov's work on centers of origin of cultivated plants. Give the botanical name, family,economically important Part of two plants each belonging to the old and new world. **(15)**

c) Enlist the salient features of Pteridophytes. Elaborate upon their distribution in India. **(15)**

SECTION - B

Write short notes on the following: **(5×10=50)**

5. a) Applications of gene silencing

b) Calcium as secondary messenger

c) Fick's law

d) Ribozymes

e) Types of statistical distribution

6. a) The need for Environment Impact Assessment has never been more dire then now. Discuss the statement in the light of frequent incidents of landslides. Describe in detail the process of EIA. **(20)**

b) Discuss the chemical nature, mode of action and functions of brassinosteroids, nitric oxide and ethylene. **(15)**

c) Discuss the procedure, application and limitations of PCR and DNA fingerprinting. **(15)**

7. a) With help of a suitable diagram describe the principle and working of a transmission electron Microscope. How is it different from a phase-contract microscope? **(20)**

b) Define genetic mapping. How is it different from physical mapping? Discuss the applications of gene mapping in agriculture. **(15)**

c) Define a sere. With suitable diagram describe the sequence of development and causes, of plant communities in a hydric system. **(15)**

8. a) Describe the mitochondrial electron transport chain. Discuss the key features of the chemiosmotic theory of ATP synthesis. Support your answer with suitable diagram. **(20)**

b) Describe the key processes involved in plant breeding. What advantages does conventional breeding have over genetic engineering? **(15)**

c) Draw well-labeled diagrams of

(i) Nuclear pore complex;

(ii) T.S. of monocot stem; and

(iii) Orthotropous, bitegmic ovule with Polygonum type embryo sac. **(15)**

Total No. of Printed Pages-8]

39

CC(M)
CHEMISTRY
(OPTIONAL)
PAPER - II
[15]

Time Allowed - Three Hours	*Maximum Marks-250*

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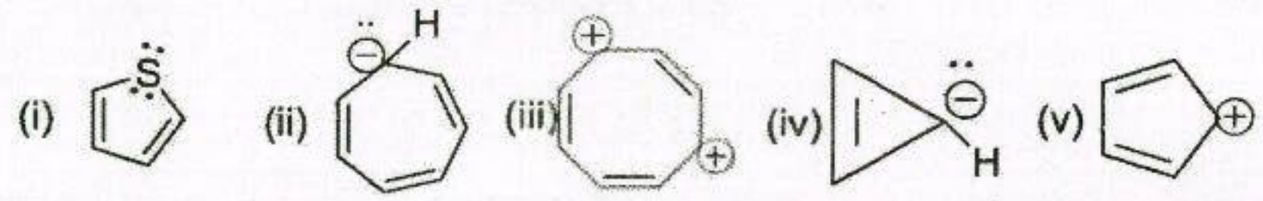
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SECTION - A

1. (a) Use the Huckel rule to indicate whether the following planar species are aromatic or antiaromatic:

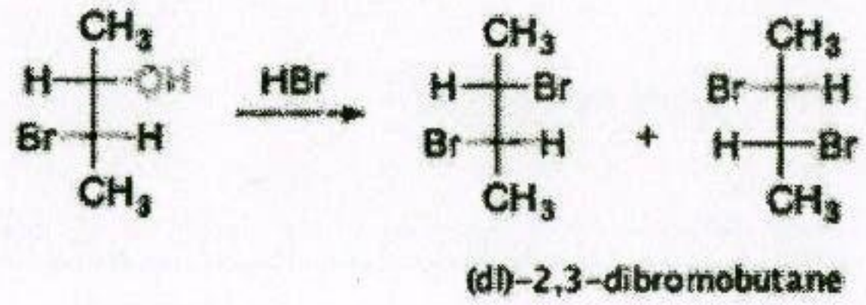


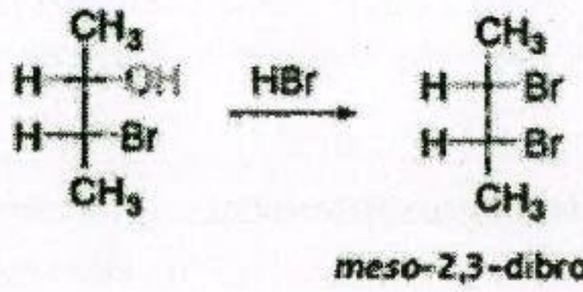
(10)

(b) Illustrate mechanistically the formation product for an S_N2 reaction between *trans*-1 - bromo-3methylcyclobutane with NaI. **(5)**

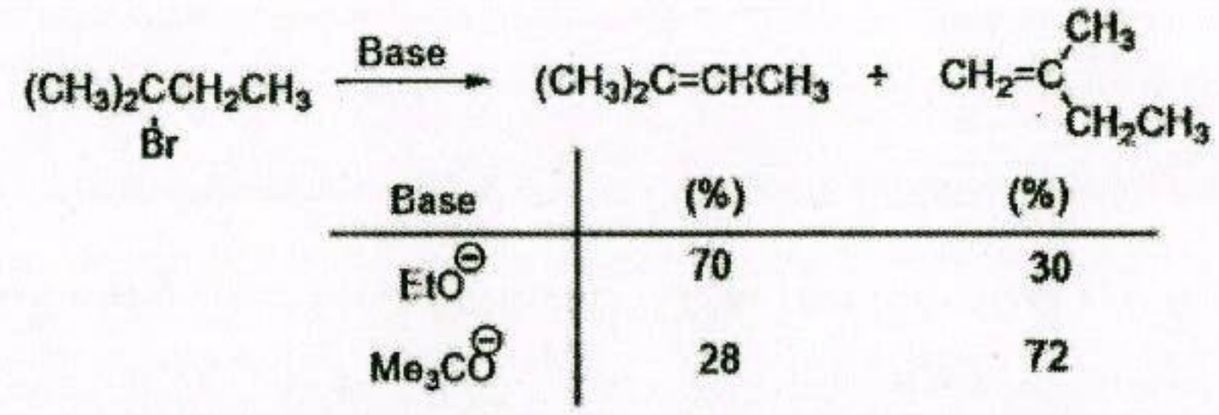
(c) Using detailed mechanisms, explain the formation of the following product.

(i)





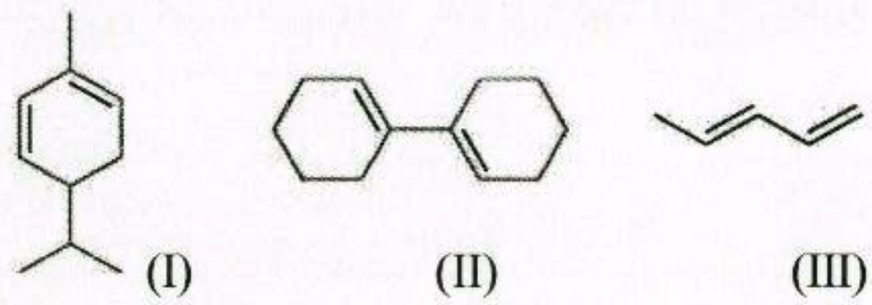
(ii)



Base	(%)	(%)
$EtO^{\ominus}$	70	30
$Me_3CO^{\ominus}$	28	72

(10)

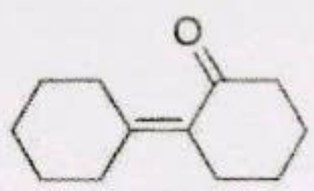
(d) (i) An organic compound can have one of the following structures:



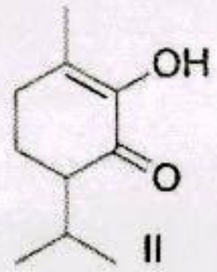
The λ_{max} of the compound is 236nm. Which is the most likely structure of the compound? Explain your choice.

(2)

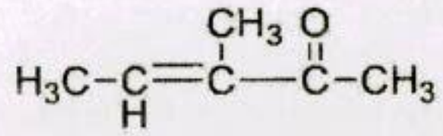
(ii) The following α,β-unsaturated ketones have λ_{max} 236,256 and 270nm in ethanol. Explain which is which?



I



II



III

(25)

2. (a) (i) How does the absence of a primary isotope effect prove experimentally that the first step in aromatic electrophilic substitution is rate-determining?

(ii) How is electrophile (E^+) generated, and what is the base, in the following reactions?

(A) Nitration of reactive aromatics with HNO_3 alone.

(B) Chlorination with HOCl using HCl as catalyst.

(C) Nitrosation of reactive aromatics with HONO in strong acid.

(D) Deuteration with DCl. **(10)**

(b) Prepare the following compounds from benzene, toluene, and alcohols of four or fewer C's:

i) 2-methylpropanal,

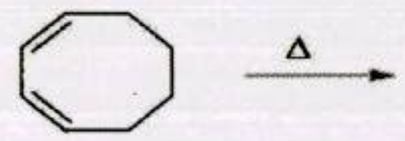
ii) *p*-chlorobenzaldehyde,

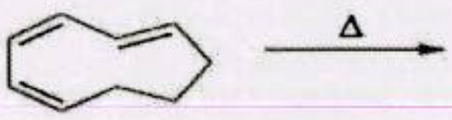
iii) *p*-nitrobenzophenone,

iv) benzyl methyl ketone,

v) *p*-methylbenzaldehyde. **(20)**

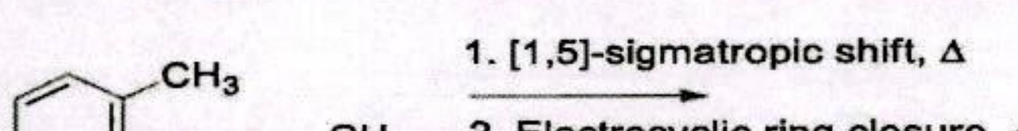
(c) Give the products possible in the following pericyclic reactions with appropriate stereochemistry:

(i) 

(ii) 

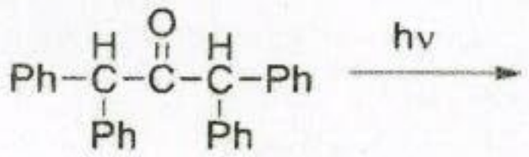
(iii) 

(iv) 

(v) 

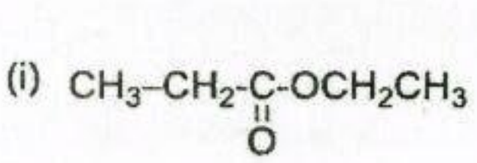
(20)

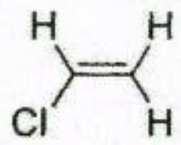
3. (a) Complete the following Norrish Type I reaction:

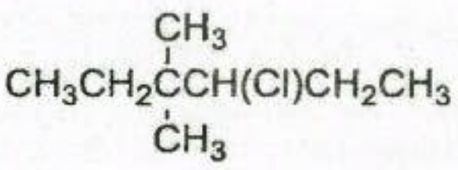


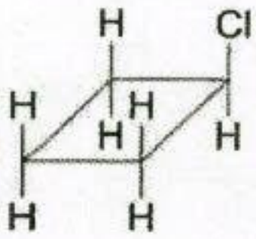
(10)

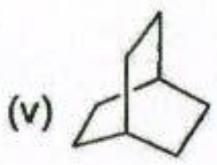
(b) Give the number of NMR signals observed in the following compounds, also indicate the number of kinds of equivalent H's in the structures:

(i) 

(ii) 

(iii) 

(iv) 

(v) 

(20)

(c) In terms of relative stability of the intermediate, explain why an electrophile (E^+) attacks the α rather than the β position of pyrrole, furan, and thiophene. Why are these heterocyclics more reactive than C_6H_6 to E^+-attack? **(10)**

(d) Starting with cyclopentanol, show the reactions and reagents needed to prepare

(i) cyclopentene,

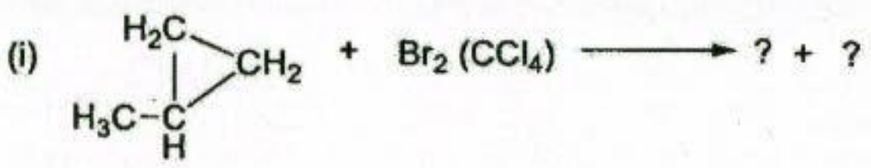
(ii) 3-bromocyclopentene,

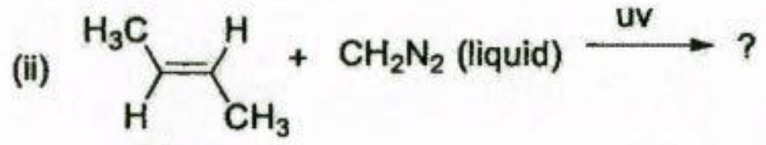
(iii) 1,3-cyclopentadiene,

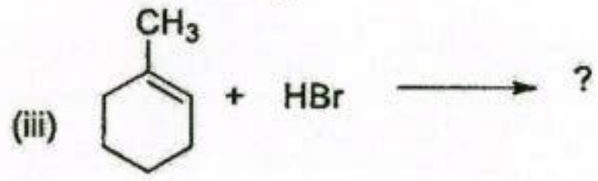
(iv) trans-1,2-dibromocyclopentane,

(v) cyclopentane. **(10)**

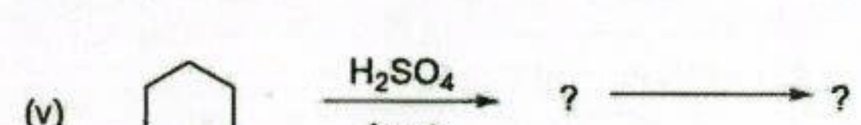
4. (a) Write structural formulas for the product compounds formed in the following reaction. Indicate stereochemistry where necessary, and account for the products. **(10)**

(i) 

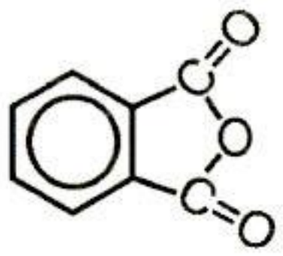
(ii) 

(iii) 

(iv) 

(v) 

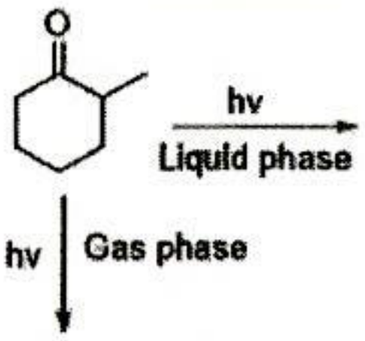
(b) (i) Show steps in the following syntheses, using any needed inorganic reagents:

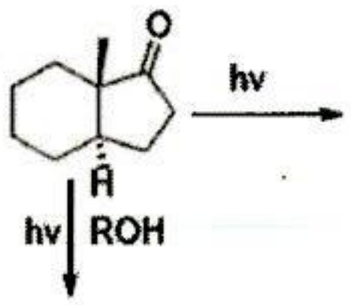
a) *O*-Xylene  b) 

(ii) Prepare malonic acid (propanedioic acid, $HOOC–CH_2–COOH$) from CH_3COOH.

(20)

(c) Complete the following photochemical reaction:

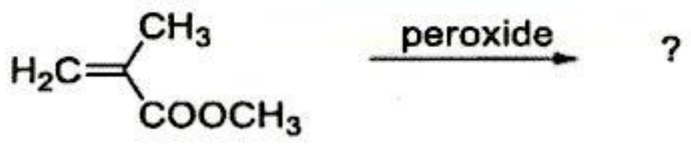
(i) 

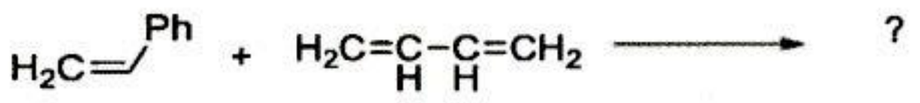
(ii) 

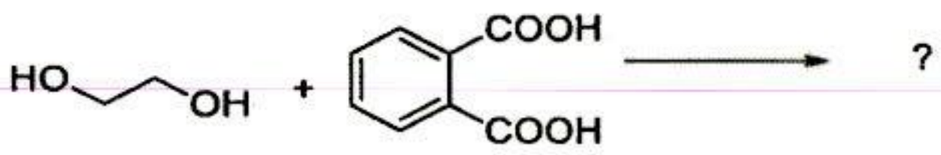
(20)

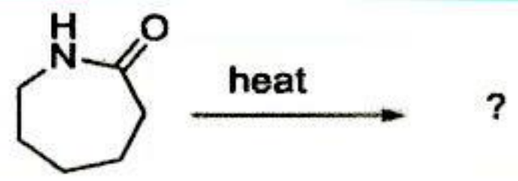
SECTION - B

5. (a) (i) Give the likely structures of the polymers obtained in each of the following cases: **(10)**











(ii) Explain how the following reagents denature proteins: **(8)**

(A) Ag^+ (B) ethanol (C) urea (D) heat.

(iii) A tripeptide is partially hydrolysed to two dipeptides, viz. Gly.Leu and Asp.Gly. Assign the possible structure. **(2)**

b) Give suitable explanation for the following:

(i) Stretching frequencies of C-C, C=C and C==C fall in the regions which are in increasing order 800-1200 cm^{-1}, 1650-1670 cm^{-1} and 2100-2260 cm^{-1}, respectively.

(ii) The ν_{O-H} band appears near 3570cm^{-1}, whereas the ν_{O-D} band appears near 2630 cm^{-1}.

(iii) 2-*t*-butylphenol has two ν_{O-H} bands-one at 3608 cm^{-1} and the other at 3643 cm^{-1}, whereas 2,6-di-*t*-butylphenol has only one band at 3642 cm^{-1}.

(iv) C=O stretching band is more intense than C=C stretching band.

(v) Concentrated solutions of alcohols in CCl_4 have an IR absorption band at about 3300 cm^{-1} but this band is shifted to a higher frequency on dilution. **(10)**

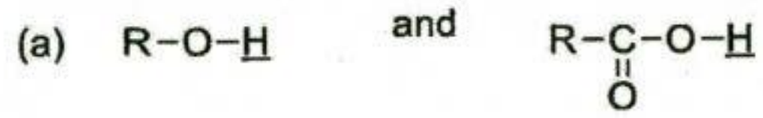
(c) Three isomeric dimethylcyclopropane A, B and C give 2,3 and 4 NMR signals, respectively. Draw the stereochemical formula for A, B and C. **(10)**

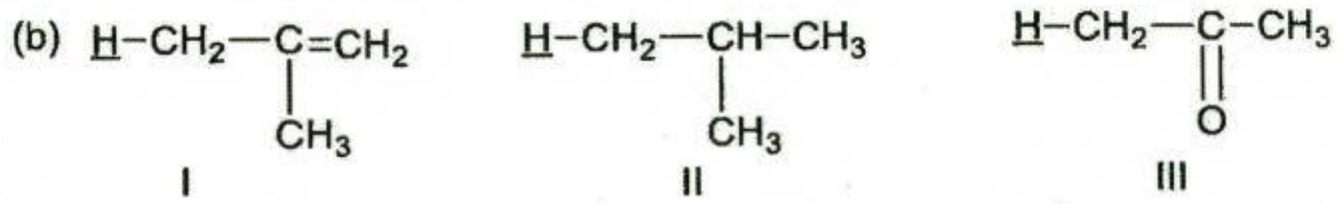
(d) A compound shows three signals a, b and c in its PMR spectrum. The heights of integration curve at these signals are 8.8, 2.9 and 3.8 units, respectively. If the molecular formula of the compound is $C_{11}H_{16}$, then count each kind of proton in it. **(10)**

6. (a) (i) Compare the basicities of the following pairs:

(A) RS^- and RO^-; (B) $:NH_3$ and $:PH_3$; (C) $NH2^-$ and OH^-.

(ii) Compare and account for the acidity of the underlined 'H' in:

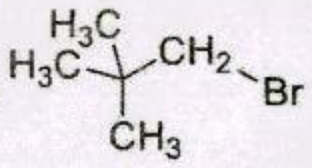
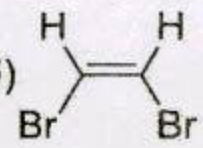
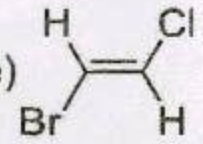
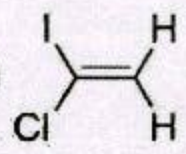
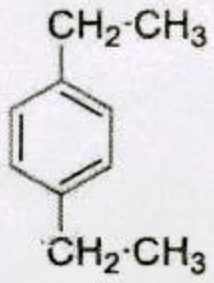
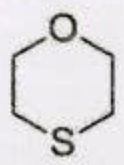
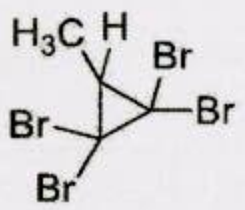
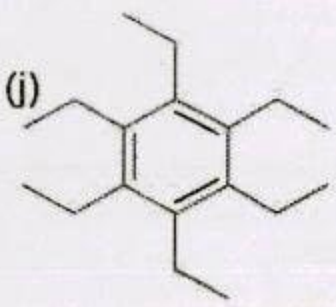
(a) 

(b) 

(10)

(b) Heating C_4H_9Br **(A)** with alcoholic KOH forms an alkene, C_4H_8 **(B)** which reacts with bromine to give $C_4H_8Br_2$ **(C)**. **(C)** is transformed by KNH_2 to a gas, C_4H_6 **(D)**, which forms a precipitate when passed through ammoniacal CuCl. Give the structures of compounds **(A)** through **(D)**. **(10)**

(c) In which of the following molecules does spin-spin coupling occur? If splitting is observed, give the multiplicity of each kind of H.

(a) 
(b) 
(c) 
(d) 
(e) 
(f) 
(g) 
(h) 
(i) 
(j) 

(20)

(d) Use phenol and any inorganic or aliphatic reagents to synthesize.

(i) Aspirin (acetylsalicyclic acid),

(ii) Oil of wintergreen (methyl salicylate).

Do not repeat the synthesis of any compound. **(10)**

7. (a) Draw the structure of each of the following compounds which meets the given requirements in its PMR spectrum. **(20)**

(i) $C_3H_3Cl_5$; one doublet and one triplet.

(ii) $C_4H_{10}O$; one singlet, one doublet and one septet.

(iii) $C_4H_8O_2$; one singlet, one triplet and one quartet.

(iv) C_3H_7Cl; one doublet and one septet

(v) $C_4H_8Cl_2O$; two triplets.

(b) Devise practical laboratory syntheses of the following phenols from benzene or toluene and any inorganic or aliphatic compounds: **(15)**

(A) *m*-iodophenol, (B) 3-chloro-4-methylphenol, (C) 2-bromo-4-methylphenol.

c) What products are formed in the following reactions? **(10)**

(i) $CH_3CH_2OH, Cr_2O_7^{2-}, H^+$;

(ii) $CH_3CHOHCH_3, Cr_2O_7^{2-}, H^+$ (60°C);

(iii) $CH_3COCl, LiAl(O–t\text{-}C_4H_9)_3H$;

(iv) $CH_3COCl, C_6H_6, AlCl_3$;

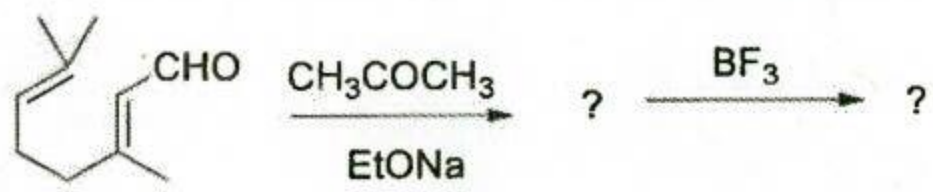
(v) $CH_3COCl, C_6H_5NO_2, AlCl_3$.

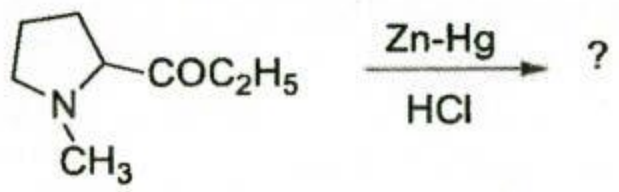
d) Use ethanol to prepare $CH_3COOC_2H_5$, an important commercial solvent. **(5)**

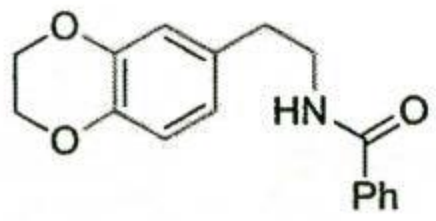
8. (a) Using mass spectrometry how will you distinguish 2-pentanone and 3-pentanone? **(20)**

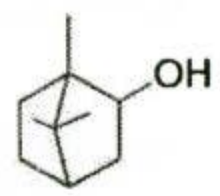
(b) An organic compound with molecular mass 100 gave the following spectral data:
UV: λ_{max} 274 nm, ε_{max} 2050.
IR: Significant absorption bands at 3030, 2940, 1725, 1605, 1505, 1060 and 830 cm^{-1}.
PMR : δ 2.35 (3H, *s*), 3.82 (3H, *s*) and 7.20-7.85 (unsymmetrical pattern, 4H).
Rationalizing the spectral data, deduce the structure of the compound. **(20)**

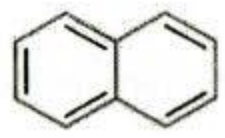
(c) Write the structure of products in the following reactions: **(10)**

(i) 

(ii) 

(iii) 

(iv) 

(v) 

CC(M)
CHEMISTRY
(OPTIONAL)
PAPER - II
[15]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are **Eight** questions divided in **Two** Secti ons and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a question/part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

iii) If you encounter any typographical error, please read it as it appears in the text book.

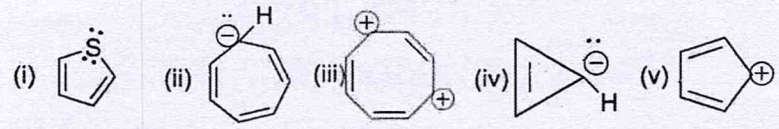
iv) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page should be left in between answers to various questions.

SECTION - A

1. (a) Use the Huckel rule to indicate whether the following planar species are aromatic or antiaromatic:

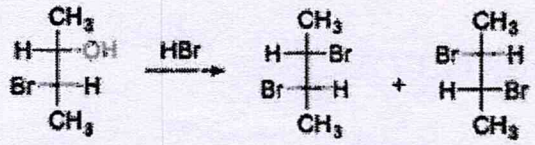


(10)

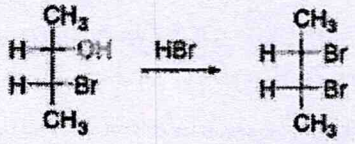
(b) Illustrate mechanistically the formation product for an S_N2 reaction between *trans*-1 - bromo-3methylcyclobutane with NaI. **(5)**

(c) Using detailed mechanisms, explain the formation of the following product.

(i)

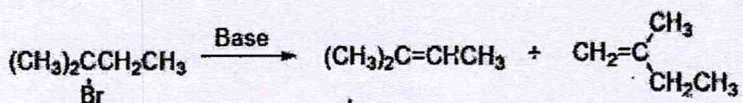


(dl)-2,3-dibromobutane



meso-2,3-dibromobutane

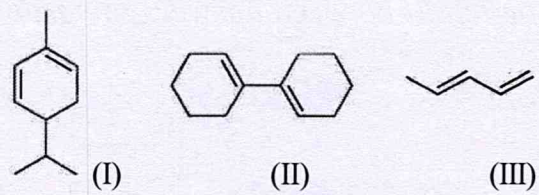
(ii)



Base	(%)	(%)
$EtO^{\ominus}$	70	30
$Me_3CO^{\ominus}$	28	72

(10)

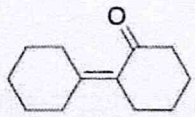
(d) (i) An organic compound can have one of the following structures:



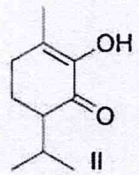
(I) (II) (III)

The λ_{max} of the compound is 236nm. Which is the most likely structure of the compound? Explain your choice.

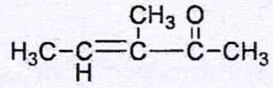
(ii) The following α,β-unsaturated ketones have λ_{max} 236,256 and 270nm in ethanol. Explain which is which?



I



II



III

(25)

2. (a) (i) How does the absence of a primary isotope effect prove experimentally that the first step in aromatic electrophilic substitution is rate-determining?

(ii) How is electrophile (E^+) generated, and what is the base, in the following reactions?

(A) Nitration of reactive aromatics with HNO_3 alone.

(B) Chlorination with HOCl using HCl as catalyst.

(C) Nitrosation of reactive aromatics with HONO in strong acid.

(D) Deuteration with DCl. **(10)**

(b) Prepare the following compounds from benzene, toluene, and alcohols of four or fewer C's:

i) 2-methylpropanal,

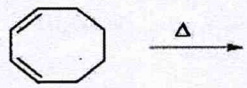
ii) *p*-chlorobenzaldehyde,

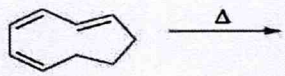
iii) *p*-nitrobenzophenone,

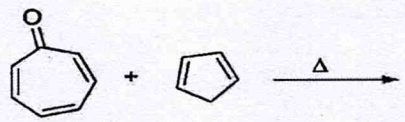
iv) benzyl methyl ketone,

v) *p*-methylbenzaldehyde. **(20)**

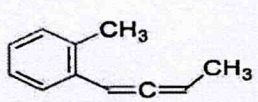
(c) Give the products possible in the following pericyclic reactions with appropriate stereochemistry:

(i) 

(ii) 

(iii) 

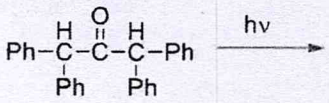
(iv) 

(v) 

1. [1,5]-sigmatropic shift, Δ
2. Electrocyclic ring closure, Δ

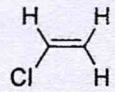
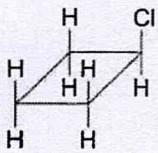
(20)

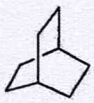
3. (a) Complete the following Norrish Type I reaction:



(10)

(b) Give the number of NMR signals observed in the following compounds, also indicate the number of kinds of equivalent H's in the structures:

(i) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-OCH_2CH_3$ (ii)  (iii) $CH_3CH_2\overset{\overset{CH_3}{|}}{C}CH(Cl)CH_2CH_3$ (iv) 

(v) 

(20)

(c) In terms of relative stability of the intermediate, explain why an electrophile (E^+) attacks the α rather than the β position of pyrrole, furan, and thiophene. Why are these heterocyclics more reactive than C_6H_6 to E^+-attack? **(10)**

(d) Starting with cyclopentanol, show the reactions and reagents needed to prepare

(i) cyclopentene,

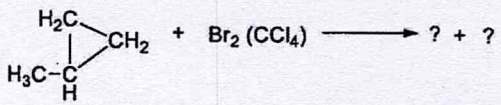
(ii) 3-bromocyclopentene,

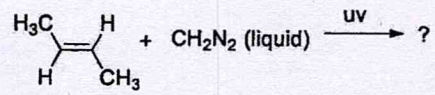
(iii) 1,3-cyclopentadiene,

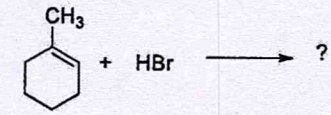
(iv) trans-1,2-dibromocyclopentane,

(v) cyclopentane. **(10)**

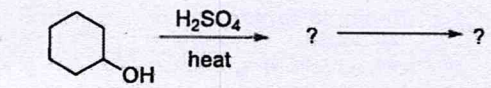
4. (a) Write structural formulas for the product compounds formed in the following reaction. Indicate stereochemistry where necessary, and account for the products. **(10)**

(i) 

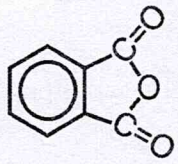
(ii) 

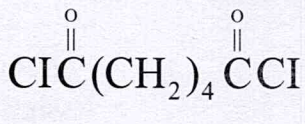
(iii) 

(iv) 

(v) 

(b) (i) Show steps in the following syntheses, using any needed inorganic reagents:

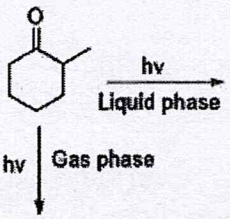
a) *O*-Xylene 

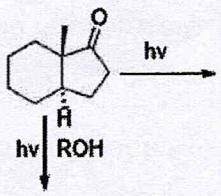
b)  

(ii) Prepare malonic acid (propanedioic acid, HOOC–CH_2–COOH) from CH_3COOH.

(20)

(c) Complete the following photochemical reaction:

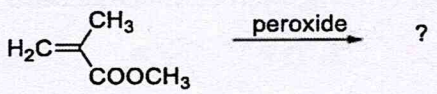
(i) 

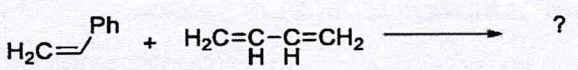
(ii) 

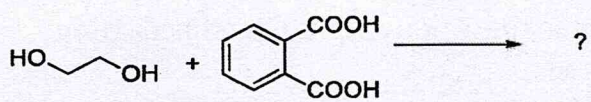
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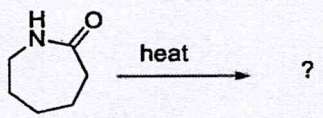
SECTION - B

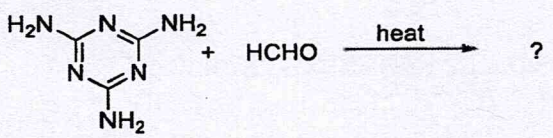
5. (a) (i) Give the likely structures of the polymers obtained in each of the following cases: **(10)**











(ii) Explain how the following reagents denature proteins: **(8)**

(A) Ag^+ (B) ethanol (C) urea (D) heat.

(iii) A tripeptide is partially hydrolysed to two dipeptides, viz. Gly.Leu and Asp.Gly. Assign the possible structure. **(2)**

b) Give suitable explanation for the following:

(i) Stretching frequencies of C-C, C=C and C==C fall in the regions which are in increasing order 800-1200 cm^{-1}, 1650-1670 cm^{-1} and 2100-2260 cm^{-1}, respectively.

(ii) The ν_{O-H} band appears near 3570cm^{-1}, whereas the ν_{O-D} band appears near 2630 cm^{-1}.

(iii) 2-*t*-butylphenol has two ν_{O-H} bands-one at 3608 cm^{-1} and the other at 3643 cm^{-1}, whereas 2,6-di-*t*-butylphenol has only one band at 3642 cm^{-1}.

(iv) C=O stretching band is more intense than C=C stretching band.

(v) Concentrated solutions of alcohols in CCl_4 have an IR absorption band at about 3300 cm^{-1} but this band is shifted to a higher frequency on dilution. **(10)**

(c) Three isomeric dimethylcyclopropane A, B and C give 2,3 and 4 NMR signals, respectively. Draw the stereochemical formula for A, B and C. **(10)**

(d) A compound shows three signals a, b and c in its PMR spectrum. The heights of integration curve at these signals are 8.8, 2.9 and 3.8 units, respectively. If the molecular formula of the compound is $C_{11}H_{16}$, then count each kind of proton in it. **(10)**

6. (a) (i) Compare the basicities of the following pairs:

(A) RS^- and RO^-; (B) :NH_3 and :PH_3; (C) $NH2^-$ and OH^-.

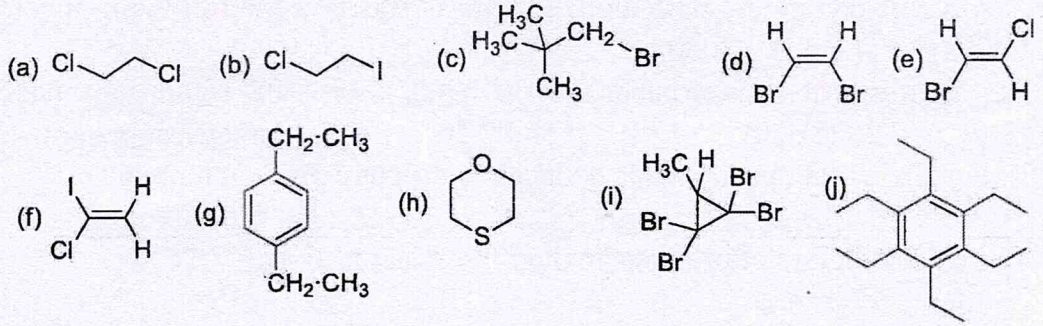
(ii) Compare and account for the acidity of the underlined 'H' in:

(a) R–O–H and R–C(=O)–O–H

(b) H–CH_2–C(=CH_2)–CH_3 (I); H–CH_2–CH(CH_3)–CH_3 (II); H–CH_2–C(=O)–CH_3 (III) **(10)**

(b) Heating C_4H_9Br **(A)** with alcoholic KOH forms an alkene, C_4H_8 **(B)** which reacts with bromine to give $C_4H_8Br_2$ **(C)**. **(C)** is transformed by KNH_2 to a gas, C_4H_6 **(D)**, which forms a precipitate when passed through ammoniacal CuCl. Give the structures of compounds **(A)** through **(D)**. **(10)**

(c) In which of the following molecules does spin-spin coupling occur? If splitting is observed, give the multiplicity of each kind of H.



(20)

(d) Use phenol and any inorganic or aliphatic reagents to synthesize.

(i) Aspirin (acetylsalicyclic acid),

(ii) Oil of wintergreen (methyl salicylate).

Do not repeat the synthesis of any compound. **(10)**

7. (a) Draw the structure of each of the following compounds which meets the given requirements in its PMR spectrum. **(20)**

(i) $C_3H_3Cl_5$; one doublet and one triplet.

(ii) $C_4H_{10}O$; one singlet, one doublet and one septet.

(iii) $C_4H_8O_2$; one singlet, one triplet and one quartet.

(iv) C_3H_7Cl; one doublet and one septet

(v) $C_4H_8Cl_2O$; two triplets.

(b) Devise practical laboratory syntheses of the following phenols from benzene or toluene and any inorganic or aliphatic compounds: **(15)**

(A) *m*-iodophenol, (B) 3-chloro-4-methylphenol, (C) 2-bromo-4-methylphenol.

c) What products are formed in the following reactions? **(10)**

(i) $CH_3CH_2OH, Cr_2O_7^{2-}, H^+$;

(ii) $CH_3CHOHCH_3, Cr_2O_7^{2-}, H^+$ (60°C);

(iii) $CH_3COCl, LiAl(O\text{–}t\text{-}C_4H_9)_3H$;

(iv) $CH_3COCl, C_6H_6, AlCl_3$;

(v) $CH_3COCl, C_6H_5NO_2, AlCl_3$.

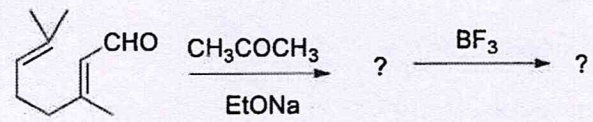
d) Use ethanol to prepare $CH_3COOC_2H_5$, an important commercial solvent. **(5)**

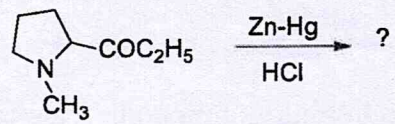
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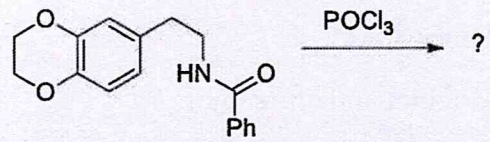
8. (a) Using mass spectrometry how will you distinguish 2-pentanone and 3-pentanone? **(20)**

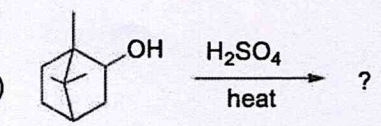
(b) An organic compound with molecular mass 100 gave the following spectral data:
UV: λ_{max} 274 nm, ε_{max} 2050.
IR: Significant absorption bands at 3030, 2940, 1725, 1605, 1505, 1060 and 830 cm^{-1}.
PMR : δ 2.35 (3H, *s*), 3.82 (3H, *s*) and 7.20-7.85 (unsymmetrical pattern, 4H).
Rationalizing the spectral data, deduce the structure of the compound. **(20)**

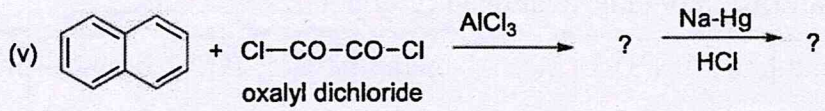
(c) Write the structure of products in the following reactions: **(10)**

(i) 

(ii) 

(iii) 

(iv) 

(v) 

Total No. of Printed Pages-7]

CC(M)

CIVIL ENGINEERING

(OPTIONAL)

PAPER - II

[17]

Time Allowed - Three Hours | ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in **All**. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *For any typographical error, please read it as it appears in the question paper.*

iv) *Diagrams/Figures, may be drawn wherever required in the space provided.*

v) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

vi) *No continuation sheets shall be provided to any candidate under any circumstances.*

vii) *No blank page should be left in between answers to various questions.*

viii) *Non Programmable Calculators are allowed.*

SECTION - A

1. (a) Discuss the potential errors encountered in compass surveying. **(10)**

(b) How much should the outer edges of the pavement be raised with respect to the central line on a two-lane road designed to cater for mixed traffic at a speed of 65 km/hr on a horizontal curve of radius 160 m, if (i) the pavement is rotated w.r.t. the central line, and (ii) the pavement is rotated w.r.t. the inner edge. **(5+5=10)**

(c) Define the terms. **(2+2+2+2+2=10)**

i. Flemish Bond

ii. Traverse Survey

iii. Coefficient of permeability

iv. Self-cleansing velocity of sewer line

v. Overtaking sight distance

(d) Differentiate between. **(2+2+2+2+2=10)**

i. Infiltration vs seepage

ii. Coagulation vs flocculation

iii. PERT VS CPM

iv. Flexible pavement and rigid pavement

v. BOD vs COD

(e) The parameters in Horton's infiltration equation $\left[f(t) = f_c + (f_o - f_c)e^{-kt} \right]$ are given as, $f_o = 7.62$ cm/hour, $f_c = 1.34$ cm/hour and k = 4.182/hour. Find out the cumulative infiltration at the end of 2 hours for assumed continuous ponding. **(10)**

2. (a) The following figures were extracted "from a level field book, some of the entries being illegible owing to exposure to rain. Insert the missing figures and check your results. Rebook all the figures by the 'rise' and 'fall' method. **(20)**

Station	B.S.	L.S.	E.S.	Rise	Fall	R.L.	Remarks
1	2.285			4		232.460	B.M.1
2	1.650		×	0.020			
3		2.105			×		
4	×		1.960	×			
5	2.050		1.925		0.300		
6		×		×		232.255	B.M. 2
7	1.690		×	0.340			
8	2.865		2.100		×		
9			×	×		233.425	B.M. 3

(b) Discuss the parameters influencing the degree of compaction achieved by a vibrator roller? **(10)**

(c) Spot speed study was carried out to redesign the stretch of major district road. The data collected during the study is given below. Calculate (i) What is the design speed for redesigning existing MDR? (ii) What are upper and lower speed limits for mixed traffic? (iii) What are the different measures to increase the spot speed of vehicles moving on the road? (iv) Check whether the speed distribution is reasonably normal or not.

Speed range kmph	Frequency of Vehicles		
	Two wheelers	Cars	Others
0-10	5	0	0
10-20	20	6	4
20-30	24	12	4
30-40	20	30	5
40-50	30	60	30
50-60	35	35	30
60-70	25	35	15
70-80	10	15	10
80-90	10	18	2
90-100	1	9	0

(2.5+2.5+7.5+7.5=20)

3. (a) The ordinates of a 2-hour unit hydrograph at 1 h intervals starting from time = 0 are 0,3,8,6,3,2 and 0 m^3/sec. What is the catchment area represented by the unit hydrograph? A storm of 6.6 cm occurs uniformly over the catchment in 3 h. If ϕ- index is equal to 2 mm/h and base flow is $5m^3/sec$, what is the peak flow due to the storm?

(10+10=20)

(b) What are the factors affecting evaporation from water surfaces? **(20)**

(c) What are the key factors considered in the modernization of railway track with the aim to increase the average speed and capacity of the modernized section? **(10)**

4. (a) The MLSS concentration in an aeration tank of ASP system was 3000mg/L. Sludge volume was 180 mL after 30 minutes of settling in 1000 mL graduated measuring jar. For the above sample, find(I) SVI (ii) SDI (iii) Return sludge ratio required (iv) SS conc. in recirculated sludge.

(2.5+2.5+7.5+7.5 =20)

(b) A curve of 600 m radius on a BG section has a limited transition of 40 m length. Calculate the maximum permissible speed and superelevation for the same. The maximum sectional speed (MSS) is 100 kmph. **(10)**

(c) A PST 15m long, 6m wide and 3m deep treats water for a town with a population of 20,000 supplied with 100lpcd. The raw water sample indicated suspended solids conc. as 60ppm. The PST worked with efficiency of 70% SS removal and the average specific gravity of the deposit in PST was 2.6. Comput (i) Detention Time (ii) Horizontal Velocity(iii) Rate of dry solids deposited(iv) Overflow rate. **(5+5+5+5=20)**

SECTION-B

5. (a) A car moving with a speed of 80 Kmph must overtake another car moving at a speed of 64kmph in the two-lane one-way highway. If the reaction time of the driver is 2.5s and acceleration of overtaking car is $0.95 m/s^2$, calculate the safe overtaking sight distance. **(10)**

(b) State and explain four important durability tests performed on building stones? **(10)**

(c) What are the factor affecting the durability of concrete? **(10)**

(d) Classify the bricks based on the physical and mechanical properties. Indicate the properties of first-class bricks. Which are the applications where first class bricks are highly recommended and other classes of bricks should not be used? **(5+5=10)**

(e) Discuss the scale of sampling for physical characteristics of bricks. Indicate its importance. **(7+3 =10)**

6. (a) A city with population of 5 lakhs is to be supplied water at rate of 150 lpcd. Using the data given below, determine the storage capacity of the reservoir assuming. (i) Continuous pumping. (ii) Pumping for 9 hours from 6 PM-3 AM. **(10+10=20)**

Also assume fire demand at 2 lpcd and power breakdown for 2 hours.

0-3 AM	5% of total
3-6 AM	5% of total
6-9 AM	40% of total
9-12 PM	10% of total
12-3 PM	5% of total
3-6 PM	10% of total
6-9 PM	20% of total
9-12 AM	5% of total

(b) What are the assumptions of Sherman's Unit Hydrograph Theory? Briefly describe the following: (i) Aquifers (ii) Aquitard (iii) Aquiclude. **(7.5 + 7.5 =15)**

(c) The following bearings were observed in running a closed traverse.

Line	F.B.	B.B.
AB	71°05'	250°20'
BC	110°20'	292°35'
CD	161°35'	341°45'
DE	220°50'	40°05'
EA	300°50'	121°10'

Determine the correct magnetic bearings of the lines. **(15)**

7. (a) A fully penetrating well with radius r_w in a confined aquifer is located at the centre of a circular groundwater basin having constant head boundary condition at the outer periphery. The well is recharged maintaining a constant head at the well face. Find the recharge rate per unit rise at the well face considering the flow is laminar. **(20)**

(b) The following table gives the details of various activities of a construction project: (i) Draw the Network of the project? (ii) What is the expected project length ? (iii) What is the probability that the project will be completed at least 3 months earlier than expected? **(5+5+10=20)**

Activity	Optimistic time (months)	Most likely time (months)	Pessimistic time (months)
1-2	2	2	8
1-3	2	5	8
1-4	3	3	9
2-5	2	2	4
3-5	3	6	15
4-6	3	6	9
5-6	4	7	16
6-7	2	2	2

(c) The ordinates of discharge for a typical storm of a catchment having an area of 450 km^2 are given below:

Hours	Discharge (m^3/s)	Hours	Discharge (m^3/s)	Hours	Discharge (m^3/s)
0	12	36	90	72	27
6	15	42	75	78	22
12	25	48	63	84	15
18	75	54	45	90	13
24	120	60	35	96	13
30	110	66	30	102	13

Find ordinates of the direct surface runoff hydrograph using straight-line technique for base-flow separation. **(10)**

8. (a) Referring to figure below, calculate the discharge from the well in steady state condition. The well completely penetrates the confined aquifer. Consider following information for computation:

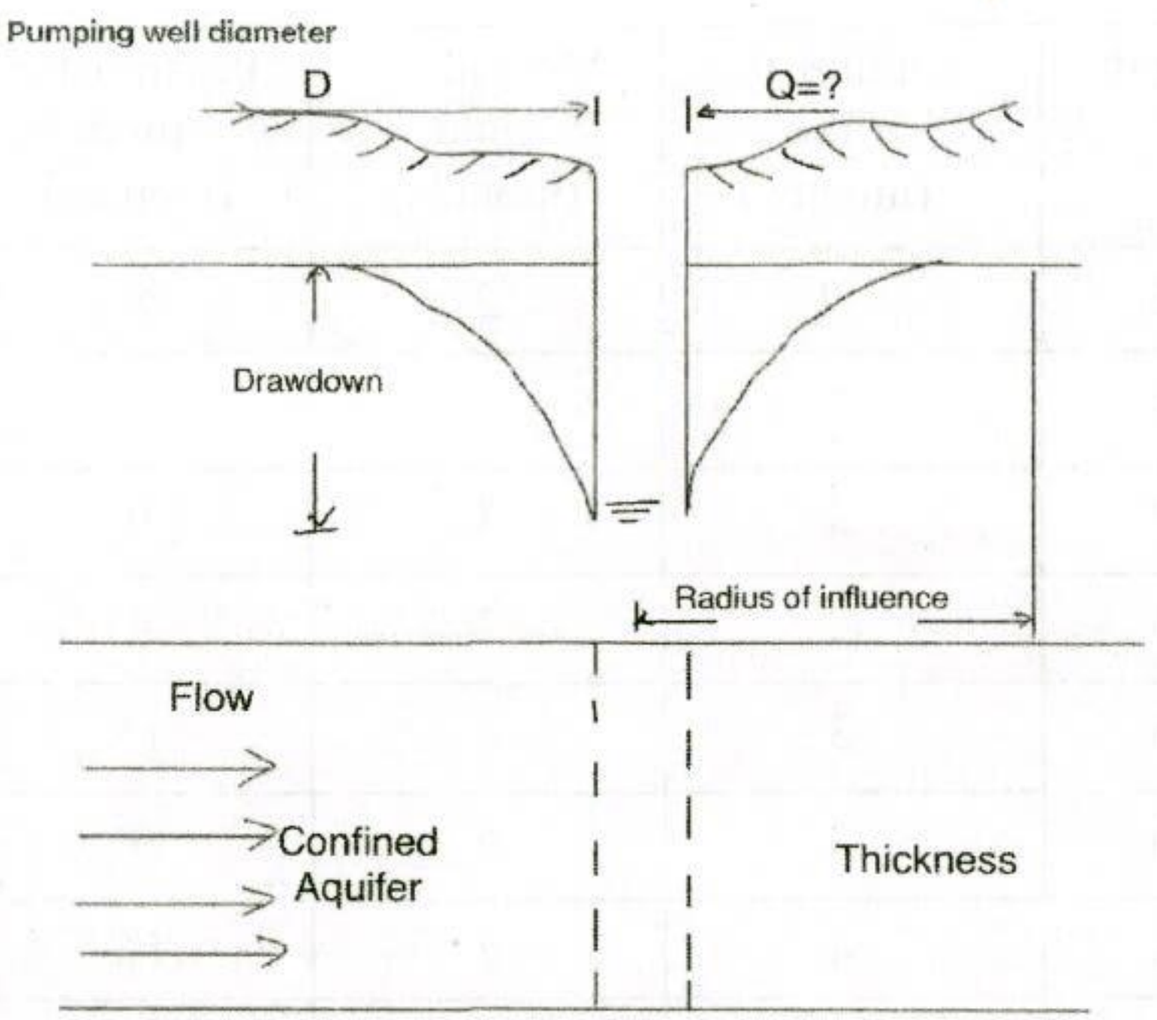
Diameter of pumping well = 30 cm

Permeability = 45 m/day

Length of the strainer = 20 m

Drawdown = 3.0 m

Radius of influence = 300 m **(20)**



(b) The following inflow and outflow hydrographs were observed in a river reach. Estimate the values of K and x applicable to this reach for the Muskingum equation.

Time (Hours)	0	6	12	18	24	30	36	42	48	54	60	66
Inflow(m^3/s)	20	80	210	240	215	170	130	90	60	40	28	16
Outflow (m^3/s)	20	20	50	150	200	210	185	155	120	85	55	23

Muskingum equation can be given as $S = K\left[xI + (1-x)Q\right]$ **(20)**

(c) What is shotcrete? Give a few examples where shotcrete is used in the construction process. **(5+5 = 10)**

Total No. of Printed Pages-3]

41

CC(M)

COMMERCE AND ACCOUNTANCY

(OPTIONAL)

PAPER - II

[19]

Time Allowed - Three Hours	***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt Five questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any Three are to be attempted choosing at least **One** question from each Section. The number of marks carried by a question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

iii) If you encounter any typographical error, please read it as it appears in the text book.

iv) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page should be left in between answers to various questions.

SECTION - A

Write short notes on the following: **(5×10=50)**

1. a) Transformational leadership. **(10)**

b) Perception. **(10)**

c) Organizational culture. **(10)**

d) Maslow's Hierarchy of Needs theory. **(10)**

e) Span of control **(10)**

2. a) What is an organization? Describe the elements of the external environment of an organization. **(20)**

b) "Classical theory of organization emphasizes order, structure, formality, and objective rationality, whereas neo-classical theory emphasizes consideration of social and emotion factors at work." In the light of this statement, critically examine the differences between these two theories of organization. **(15)**

c) What is organizational effectiveness? Discuss the factors that influence organizational effectiveness. **(15)**

3. a) What is an organizational design? Describe the various forms of organizational design. **(20)**

b) What is leadership? Critically analyze Trait, Behavioural and Situational theories of leadership. **(15)**

c) "The personality of an employee is useful in understanding his behaviour and designing suitable strategies to deal with the same." In the light of this statement, define personality and describe the various personality attributes that influence organizational behaviour. **(15)**

4. a) What is power in an organization? Describe the formal and informal sources of power within an organization. **(20)**

b) What is management of change? Discuss some measures to overcome resistance to change. **(15)**

c) What is Quality of Work Life (QWL)? Describe some of the practices that enhance QWL. **(15)**

SECTION - B

Write short notes on the following: **(5×10=50)**

5. a) Performance appraisal **(10)**

b) Absenteeism **(10)**

c) Employee welfare **(10)**

d) Approaches to Job design **(10)**

e) Balanced Scorecard **(10)**

6. a) What is human resource management (HRM)? Describe some of the functions of HRM. **(20)**

b) Describe the process of conciliation and arbitration in industrial dispute resolution. **(15)**

c) What is the role of recruitment in an organization? Describe the internal and external sources of recruitment. **(15)**

7. a) What are the objectives of employee training? Explain the need for training in modern industry. **(20)**

b) What is trade union? Describe the important role and challenges faced by trade unions in India. **(15)**

c) What is ILO? Describe its organizational structure and explain its major roles and function. **(15)**

8. a) What do you understand by industrial relations? Describe the characteristics, objectives and importance of industrial relations. **(20)**

b) Discuss the characteristics and levels of participation of Workers in the management of an organization. Critically evaluate the status of Worker's Participation in the Management in India. **(15)**

c) What do you understand by collective bargaining? Describe the benefits of collective bargaining and the major challenges to its success in India. **(15)**

Total No. of Printed Pages-3] **Roll No. _____**

CC(M)

DOGRI

PAPER - II

[26]

Time Allowed - Three Hours ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instruction carefully before attempting questions.

*i) There are **EIGHT** questions divided in two Sections and printed in **Dogri.***

*ii) Candidate has to attempt **Six** questions in all.*

*iii) Questions No. **1** and **5** are compulsory and out of the remaining, **FOUR** are to be attempted choosing at least **Two** question from each Section.*

iv) The number of marks carried by a question/part is indicated against it.

v) Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

vi) Word limit in questions, wherever specified, should be adhered to.

vii) Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

SECTION - A

हिदायत – सुआल नं. 1 जरुरी ऐ। बाकी त्रंऊं सुआलें (2,3 ते 4) चा कोई दो सुआल करो।

1. (अ) अज़ादी पैह्ले दी डोगरी कविता बारै विचार प्रकट करदे होई देवी दित्ता ते परमानंद अलमस्त दी कविता बारै तनकीदी चर्चा करो। **(30)**

(ब) अज़ादी बाद दी डोगरी कविता च हास्य–व्यंग दी प्रवृत्ति दा जिकर करदे होई तारा स्मैलपुरी जां प्रकाश प्रेमी दी कविता दियां चेचगियां हवाले देइयै स्पश्ट करो। **(25)**

(जां/OR)

(अ) ''चंदै दी चाननी चंदै कन्नै कविता जीवन दे बहुमुखी पक्खें दी तर्जमानी करदी ऐ'' इस तत्थ दी पुश्टी च कविता दे प्रमुख पैह्लुएं दी चर्चा करो। **(30)**

(ब) मधुकर कवि दी 'शीशा' जां 'कोह्लू' कविता दे अधार उप्पर उसदियें भावगत ते शिल्पगत विशेशताएं पर रोशनी पाओ। **(25)**

2. रामायण महाकाव्य दे 'बालकांड' दे अधार उप्पर राम जी दे बालरुप चित्रण बारै कवि दे काव्यगत विशेशताएं दा उल्लेख करो। **(35)**

3. डोगरी गज़ल दे खेतरा च रामलाल शर्मा जां वीरेंद्र केसर दी गज़लगोई बारै विस्तार च लिखो। **(35)**

4. पदमा सचदेव दी काव्य रचना दे हवाले कन्नै स्पश्ट करो जे कवित्री दे भाव–छुआले डुग्गर धरती कन्नै अथाह् लगाव प्रकट करदे न। **(35)**

SECTION - B

हिदायत – सुआल नं. 5 जरुरी ऐ। बाकी त्रंऊं सुआलें (6,7 ते 8) चा कोई दो सुआल करो।

5. ''डोगरी क्हानी दा स्तर भारत दियें दूइयें भाशाएं दी क्हानी कन्नै पूरी चाल्ली बरोबरी करदा ऐ।'' इस कथन दी पुश्टी च प्रमुख क्हानीकारें दे हवाले कन्नै अपने विचार प्रकट करो। (55)

(जां/OR)

हेठ दित्ती दियें पुस्तकें चा कुंनें पंजें दे बारै उंदी साहित्यक म्हत्ता बारै सारगर्भत जानकारी देओ।
(5×11=55)

(क) नीला अंबर काले बदल

(ख) चीड़ ते चनार

(ग) जमीन

(घ) बर्फ

(ङ) चाननी दे सेक

(च) न्हेरे दा समुंदर

(छ) चाननी रात

(ज) टनकोर

(झ) खुशी दे अत्थरुं

(ञ) चेता

6. 'केद्दी' उपन्यास दे अधार उप्पर डुग्गर दे ग्राईं–प्हाड़ी समाज च नारी जीवन दियें दुश्वारियें बारै अपने विचार प्रकट करो। (35)

7. 'सक्के अजनवी' जां 'रिसर्च स्कालर' एकांकी दी साहित्यक समीक्षा करो। (35)

8. विश्वानाथ खजूरिया जां श्यामलाल शर्मा हुंदे निबंधें बारै विस्तार च चर्चा करो। (35)

Total No. of Printed Pages-3]

CC(M)

ECONOMICS

(OPTIONAL)

PAPER - II

[21]

Time Allowed - Three Hours | ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No. 1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

iii) If you encounter any typographical error, please read it as it appears in the text book.

iv) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page should be left in between answers to various questions.

SECTION - A

Answer the following questions in about 150 words. **(5×10=50)**

1. a) Examine how the British rule has been responsible for the stagnation and deterioration of Indian agriculture.

b) What is the difference between vertical and horizontal fiscal imbalance?

c) What are the reforms in personal income tax and corporate taxes proposed in the direct tax code (DTC)?

d) Analyse the widening gap between rural and urban wages in India after the 1991 Economic reforms.

e) Explain how public goods are different from private goods with suitable examples.

2. a) Analyse the striking regional inequalities witnessed after independence. How Tamil Nadu, Kerala and Goa have progressed impressively? Discuss **(20)**

b) Analyse the impact of land tenure system in British India on the productivity of Indian agriculture and impoverishment of small farmers. **(15)**

c) What are the objectives of a monetary policy in developing nations? What are the policy instruments used by a Central bank to formulate a sound monetary policy? **(15)**

3. a) What is incidence of taxation? Explain how the elasticity of supply and demand curves determine the tax burden. **(20)**

b) Explain how regulation can also solve the problem of negative externality? **(15)**

c) What do you mean by ' foreign exchange rate'? How is the fixed exchange rate different from the flexible exchange rate? **(15)**

4. a) What are the terms of reference of the 14th - Fourteenth Finance Commission (FFC) ? Discuss the major recommendations by FFC with regard to revenue sharing with states, Grants in aid, GST, fiscal consolidation and fiscal federalism. **(20)**

b) Explain the role of the Fiscal responsibility and budget management act (FRBM) in attaining the goal of fiscal consolidation in India. Is it feasible to apply FRBM in the present economic and political scenario? **(15)**

c) Explain in detail the concepts of primary deficit, revenue deficit and fiscal deficit in a budget. **(15)**

SECTION - B

Answer the following questions in about 150 words. **(5×10=50)**

5. a) Explain how, according to gravity model, the size of GDP's of two countries and the distance between them determine the volume of trade between these countries.

b) What do you understand by 'demographic dividend? Is our government implementing appropriate policies to exploit this dividend for the benefit of our country?

c) Explain the concept of 'Intellectual property rights' (IPR). Will it's implementation help the economic growth of a country? Can it work as a hindrance to growth?

d) The on-going Digital revolution in India and Apps, like UPI, Google Pay etc have strengthened Indian economy. Discuss giving examples.

e) Distinguish between progressivity, elasticity and buoyancy of a tax giving suitable examples and diagrams.

6. a) What is market failure? Explain with suitable examples and diagrams, how public goods, externalities, asymmetric information and imperfect competition leads to market failure. **(20)**

b) " India's achievements in education sector has been one of the mixed success stories".

Elaborate and suggest measures to improve school education and ensure equitable access of education to all. **(15)**

c) What are the major benefits of implementing GST in India? Can GST be a Panacea for all the problems faced by Indian economy? Elaborate. **(15)**

7. a) Critically examine the performance of Public sector enterprises (PSEs) in India since independence. Do you suggest for the dis-investment of PSEs in the current changed economic environment? Give reasons in support of your answer. **(20)**

b) The recent farmers protest, highlights the problem of agricultural food policies favouring consumers at the cost of producers. Elaborate. **(15)**

c) Analyse the impact of green revolution on agricultural productivity, employment, income and regional inequalities in India. Is second green revolution the need of the hour? **(15)**

8. a) Explain the concept of inclusive growth. Analyse the impact of economic reforms of 1991 on income inequalities, regional imbalances in growth, poverty and inclusive growth. **(20)**

b) Discuss the positive and negative impacts of populist policies like subsidies (freebies) and welfare schemes on development expenditure, fiscal consolidation, labour supply and human capital. **(15)**

c) What are the various special programs of the Government to tackle the problems of poverty and unemployment in India? Elaborate with examples using relevant data. **(15)**

Total No. of Printed Pages-7]

43

CC(M)

ELECTRICAL ENGINEERING

(OPTIONAL)

PAPER - II

[23]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please go through the following instructions carefully before attempting the paper.

*i) There are **Eight** questions divided in **Two** Sections A and B candidate has to attempt **Five** questions in **All**. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks assigned to a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) The answer should be precise and coherent.

iii) For any typographical error, please read it as it appears in the question paper.

iv) Diagrams/Figures,maybe drawn wherever required in the space provided.

v) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

vi) No continuation sheets shall be provided to any candidate under any circumstances.

vii) No blank page should be left in between answers to various questions.

viii) Non Programmable Calculators are allowed.

SECTION - A

1. a) A unity feedback control system has its forward path transfer function as

$$G(s) = \frac{K}{s(sT+1)}$$

Determine the change in the factor K to reduce the maximum overshoot in unit response from 60% to 20%. **(10)**

b) An 11 kV, 3-phase alternator has positive, negative and zero sequence reactances of 0.6Ω, 0.5Ω, and 0.2Ω per phase, respectively. If the alternator is unloaded with a voltage of 10.4 kV across its terminals, calculate the fault current when a solid line-to-line fault occurs at its terminals. **(10)**

c) Two LOOK-UP tables are stored in two isolated (non-overlapped) sequential memory locations starting from X and Y respectively. Write main program and a subroutine EXCHANGE to exchange the contents of two tables. The starting locations of the two tables "ADDR_1" and "ADDR_2" are passed on to subroutine through stack. The length of the array is passed on through register C. Document (comment) your program properly. **(10)**

d) The control spring torque of a certain moving iron ammeter is 40×10^{-6} Nm/radian. Its inductance is expressed as

$$L = -0.5 + 6\theta - 0.5\theta^2 \,\mu\text{H},$$

where θ is the deflection in radians from the zero position. When the meter carries a current of 4 A, find (i) the deflection of the pointer (radian), (ii) rate of change of inductance with deflection, (iii) deflecting torque (Nm), and (iv) inductance of the coil. **(10)**

e) Consider a uniform quantizer which is operating at a sampling rate of 2 kHz and data rate of 12×10^3 bits per second. The resulting signal-to-quantization noise ratio is 10 dB, which is unsatisfactory as the minimum required signal-to-quantization noise ratio is 20 dB. What should be the minimum data rate of the system that would meet the requirement of signal-to-quantization noise ratio? **(10)**

2. a) Consider a pulse code modulator (PCM) system that uses binary signalling to provide a data rate of 10×10^3 bits per second using 10 bits per sample and a satisfactory signal-to-quantization noise ratio of 50 dB. The available transmission bandwidth is 3 kHz. If the PCM system is replaced by a differential pulse code modulator (DPCM) system to transmit the signal using same bandwidth, determine the minimum prediction gain (in dB) to maintain the signal-to-quantization noise ratio of 50 dB. **(20)**

b) Two alternators of rating 200 MW and 400 MW are operating in parallel to share a load of 600 MW. Assume free governor operation. If the alternators are operating at 50 Hz at no load, determine the load sharing between the two alternators and corresponding system frequency, if

(i) the speed-droop characteristics of their governors are 4% and 5%, respectively, from no load to full load.

(ii) the speed-droop characteristics of both governors are 4% from no load to full load. **(20)**

c) Two resistors R_1 and R_2 are having a tolerance of 1% each. The equivalent resistance of parallel combination of R_1 and R_2 in high range is 12.12 Ω. The equivalent resistance of series connection of those resistors in low range is 49.5 Ω. Find (i) the value of product of those resistors, and (ii) the possible values of these resistors. **(10)**

3. a) The open loop transfer function of a unity feedback system is $G(s)=\frac{K}{s^2}$.

Design a suitable compensator to meet the following specifications:

(i) Acceleration error constant $K_a = 10$

(ii) Phase margin $\geq 45°$ **(20)**

b) The neutral-point of a 20 MVA, 11 kV, 3-phase, 50 Hz, star connected alternator is grounded through a resistance to limit the maximum earth-fault current to 80% of the full load value. The earth-fault relay of the alternator is supplied from a current transformer of ratio 1000/5 connected in neutral circuit and is set to operate at a current of 0.75 A. Neglecting the impedance of stator winding of alternator, determine

(i) the value of the grounding resistance,

(ii) the percentage of winding protected by relay. **(20)**

c) An n-bit Gray code number $g_{n-1}\, g_{n-2}.....g_0$ is converted to a n-bit binary number using the following algorithm:

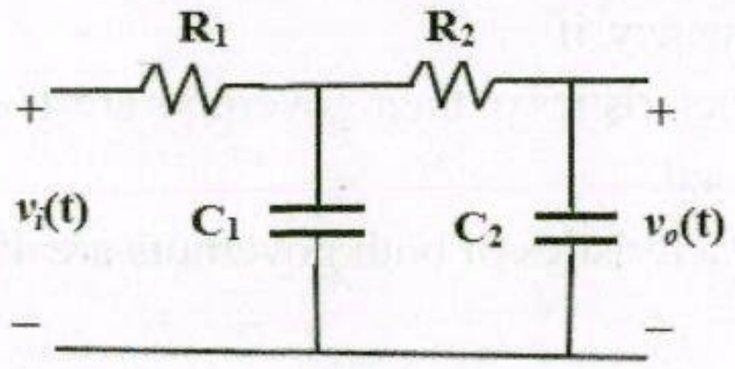
$b_{n-1} = g_{n-1}$ for MSB

$b_i = b_{i+1} \oplus g_i (0 < i < n-2)$ for non-MSBs

Write a program which converts the 8-bit number of A-register from Gray code to binary with the result in A-register. **(10)**

4. a) Consider a message signal $m(t)$ that has a bandwidth of 5 kHz and exhibits a maximum rate of change of 1 volt/second. The signal $m(t)$ is sampled at 40 kHz and then quantized using a delta modulator (DM). Determine the minimum step-size required to avoid slope overload distortion. **(20)**

b) Draw a signal flow graph for the circuit shown in figure, representing each element by a block. Voltage $v_i(t)$ is the input and voltage $v_o(t)$ is the output. Determine the transfer function of the circuit using Mason's gain formula. **(20)**



c) The inertia constant H for a 50 Hz, 100 MVA hydroelectric generator is 4 MJ/MVA. If the input to the generator is suddenly increased by 15 MVA, what acceleration is imparted to the rotor? **(10)**

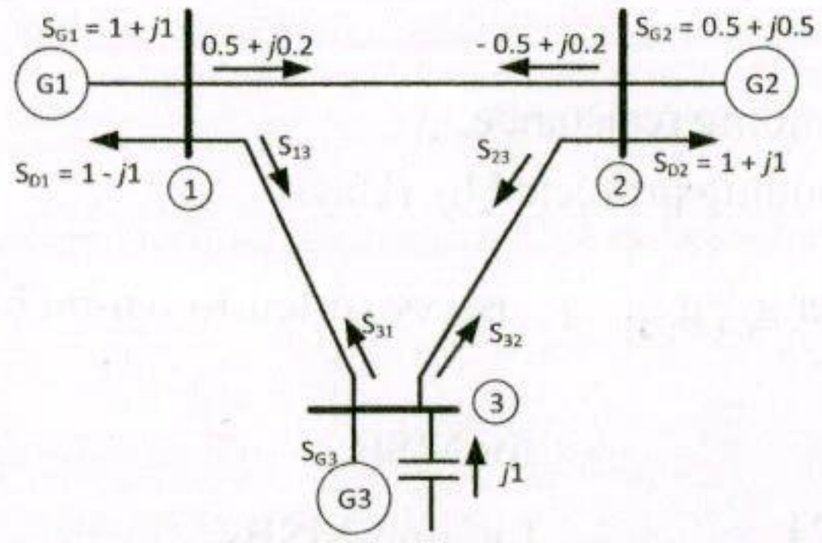
SECTION - B

5. a) Derive the transfer function of an armature-controlled dc servo motor. Mention the assumptions used. **(10)**

b) A three-bus transmission system is shown in the figure below, where S_{Gi} represents the per unit (pu) complex apparent power from the generator at bus i, S_{Di} represents the pu complex apparent power to the load at bus i, and S_{ij} represents the pu complex apparent power from bus i to bus j. Repressing each line by an equivalent inductance such that $S_{ij} = -S_{ji}^*$, determine the following **(10)**

(i) $S_{13}, S_{31}, S_{23}, S_{32}$, and S_{G3}.

Total transmission loss in this system.



c) An overcurrent relay of 5 A current rating has a plug setting of 125% and time multiplier setting (TMS) of 0.6. The current transformer supplying the overcurrent relay has a ratio of 400/5. Determine the operating time of the relay for a fault current of 4000 A. At TMS = 1, operating time at various plug-setting multiplier (PSM) are given in the table below:

PSM	2	4	6	8	10	12	14	16	18	20
Operating Time (sec)	8.90	5.50	4.25	3.50	3.00	2.75	2.50	2.25	2.15	2.10

(10)

d) A $3\frac{1}{2}$ digit voltmeter and a $4\frac{1}{2}$ digit voltmeter are used for a voltage measurement of 0.5678 V.

(i) Find the resolution of both the meters on 1 V range.

(ii) How would 0.5678 V be displayed on both the meters on 1 V range?

(iii) Find the resolution of both the meters on 10 V range.

(iv) How would 0.5678 V be displayed on both the meters on 10 V range ?

(v) Which case or cases among (ii) and (iv) show the correct display of 0.5678 V without loss of any digit? **(10)**

e) Assume that the binary data is transmitted over a channel using coherent binary phase shift keying (BPSK) signalling scheme. Consider coherent BPSK at the receiver. Determine the minimum bit energy to noise spectral density (E_b/N_0), in terms of inverse Q-function, required at the receiver to maintain a probability of error $P_e \leq 10^{-3}$. **(10)**

6. a) A 132/33 kV, 3-phase, 50 Hz transformer is connected in delta on the low voltage side and in solidly earthed star on the high voltage side. For protecting the transformer by differential scheme, determine

(i) the connection of current transformers on each side of the transformer,

(ii) the ratio of current transformers employed on the high voltage side, if the current transformers employed on the low voltage side have a transformation ratio of 500/5. **(20)**

b) The open loop transfer function of a unity feedback system is given by $G(s)=e^{-\tau s}G_1(s)$, where $G_1(s)$ is a minimum phase system. If $G_1(s)$ is $\frac{100}{S(S+2)(S+10)}$ and the delay ô is 0.2 sec.

(i) Sketch the approximate Bode magnitude plot of the open loop transfer function.

(ii) Determine the phase margin of the system.

(iii) How much the value of delay ô should be reduced for the closed loop system to be marginally stable? **(20)**

c) Consider the following generator matrix for a (7, 4) linear block code:

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 & 0 & 1 \end{bmatrix}$$

If the received erroneous codeword is [1 1 0 1 0 1 1], then determine the corresponding syndrome. **(10)**

7. a) The fuel input characteristics for unit 1 and unit 2 are given by

$F_1 = \left(80 + 8P_1 + 0.024P_1^2\right)$ million Btu per hour

$F_2 = \left(120 + 6P_2 + 0.04P_2^2\right)$ million Btu per hour

where, P_1 and P_2 are the generation from unit 1 and unit 2, respectively, in MW. The maximum and minimum generation limits of these units are 100 MW and 10 MW, respectively. Considering the cost of fuel as ₹2 per million Btu, determine the total minimum cost of generation to supply the following daily load:

Time (hours)	Load (MW)
12 am – 6 am	50
6 am – 6 pm	150
6 pm – 12 am	50

(20)

b) An 8085A system is configured using two 2732A EPROM, four 6116 RAM, and two 8255 PPIs. The relevant control pins of these chips are given below:

2732A EPROM (4kx8): $\overline{OE}$, $\overline{CE}$

6116 RAM (2kx8): $\overline{OE}$, $\overline{WE}$, $\overline{CE}$

8255A PPI: $\overline{RD}$, $\overline{WR}$, $\overline{CE}$, A1, A0, RESET

The peripheral devices are interfaced with the processor using Isolated I/O. Draw the neat connection diagram for interfacing these chips to the system bus. Assume that system bus is available. Use 74LS138 for decoding. Give the addresses of all memory chips and peripheral devices.

Hence, write sequence of instructions to program ports of PPI in mode-0 (PA- Input, PB-Output, PCL- Input and PCU-output) and to generate a square wave at PC7 bit of Port –C using bit set/rest feature. Assume the delay subroutine DELAY for (T/2) period is available. **(20)**

c) The stray capacitance of a coil is measured using a Q-meter. The first measurement was performed at $f_1 = 1$ MHz and C_1 was 850 pF. The second measurement was at $f_2 = 3$ MHz and C_2 was 50 pF. Determine the distributed capacitance and inductance of the coil. **(10)**

8. a) For a four-bus transmission network, the line impedances are given in the table below. The shunt admittance at all the lines is assumed to be negligible.

(i) Find Y_{BUS}.

(ii) What modifications need to be carried out in Y_{BUS} if a new line is connected between bus 1 and bus 2 having an impedance of $0.05 + j0.15$ pu? **(20)**

Line	Line impedances (pu)	
	R	X
1–3	0.10	0.30
2–3	0.15	0.45
2–4	0.10	0.30
3–4	0.05	0.15

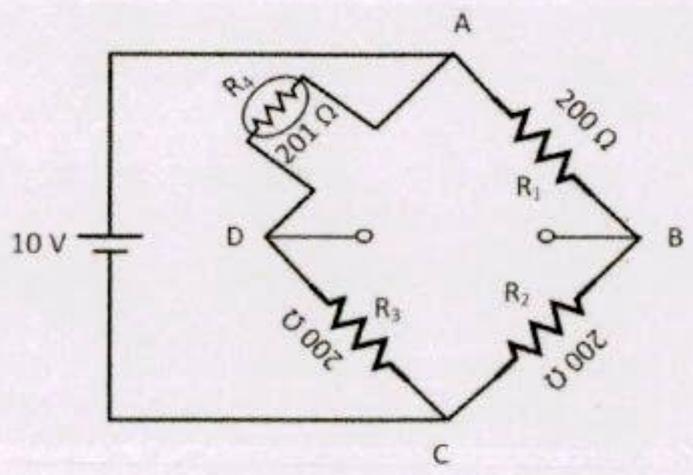
b) Consider the bridge circuits shown in figure (a) and (b), that use strain gauges of nominal value 200 Ω.

(i) Find the expression for the unbalanced voltage V_{BD} for (a).

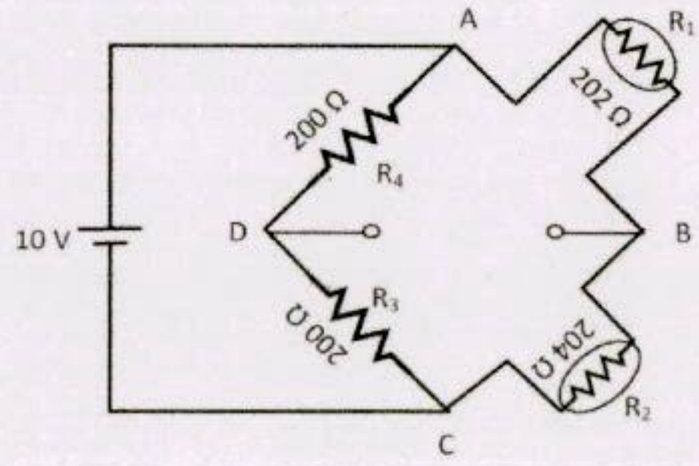
(ii) Find the expression for the unbalanced voltage V_{BD} for (b).

(iii) Find the unbalanced voltage V_{BD} across B and D terminals of bridge structure shown in (a) and (b).

(iv) Comment on the types of bridge, based on the results obtained in (iii). **(20)**

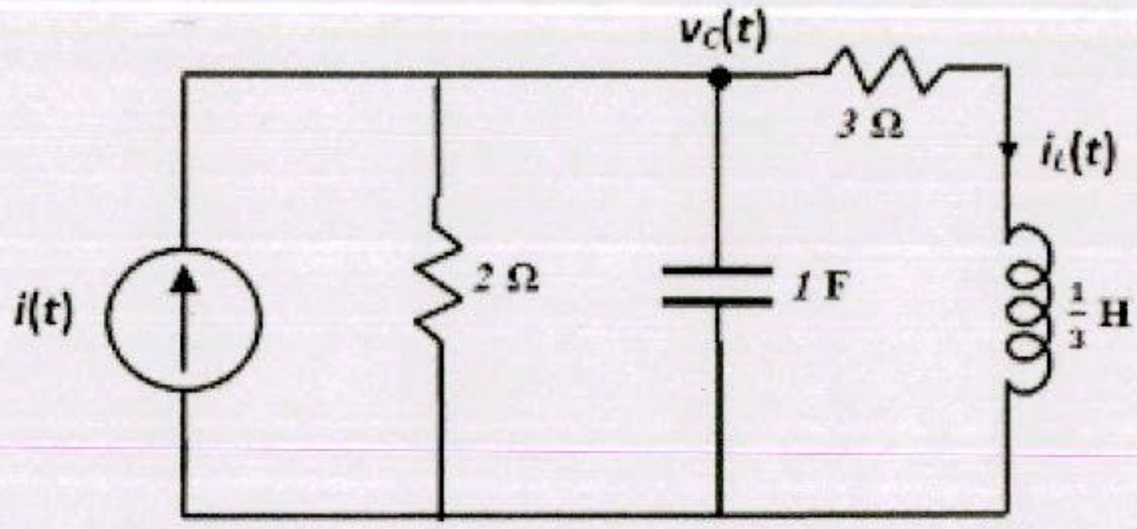


(a)



(b)

c) Solve the state equation $\left(\dot{X} = AX + Bu\right)$ of the circuit shown in figure and obtain the state variables $v_c(t)$ and $i_L(t)$. Assume the initial voltage of the capacitor and initial current through the inductor are zero, and $i(t)$ is unit impulse function.



(10)

44

Total No. of Printed Pages-4]

CC(M)

ENGLISH LITERATURE

(OPTIONAL)

PAPER - II

[25]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in All. Questions **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

iii) If you encounter any typographical error, please read it as it appears in the text book.

iv) Candidates are in their Own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page should be left in between answers to various questions.

SECTION - A

1. Critically comment on the following passages in about 150 words each. (5×10=50)

i) Let us go then, you and I,
When the evening is spread out against the sky
Like a patient etherized upon a table;
Let us go, through certain half-deserted streets,
The muttering retreats
Of restless nights in one-night cheap hotels
And sawdust restaurants with oyster-shells (T.S.Eliot) **(10)**

ii) The darkness drops again; but now I know
That twenty centuries of stony sleep
Were vexed to nightmare by a rocking cradle,
And what rough beast, its hour come round at last,
Slouches towards Bethlehem to be born?(W.B.Yeats) **(10)**

iii) Behind them, at intervals,
Stand husbands in skilled trades,
An estateful of washing,
And the albums, lettered
Our Wedding, lying
Near the television:
Before them, the wind
Is ruining their courting-places (Philip Larkin) **(10)**

iv) When she was four or five
she sat on a village swing
and her cousin, six or seven,
sat himself against her;
with every lunge of the swing
she felt him
in the lunging pits
of her feeling;
and afterwards
we climbed a tree, she said,

not very tall, but fall of leaves
like those of a fig tree,

and we were very innocent
about it. (A.K.Ramanujan) **(10)**

v) Soul and body have no bounds:
To lovers as they lie upon
Her tolerant enchanted slope
In their ordinary swoon,
Grave the vision Venus sends
Of supernatural sympathy,
Universal love and hope;
While an abstract insight wakes
Among the glaciers and the rocks
The hermit's carnal ecstasy.(W.H.Auden) **(10)**

2. a) Write an essay on immortality and transcendence in 'Sailing to Byzantium' by W.B.Yeats. **(20)**

b) Comment on representations of religion and faith in Samuel Beckett's existentialist world view in *Waiting for Godot.* **(15)**

c) Write a critical note on T.S.Eliot's use of the metaphor of journey in his religious/ spiritual quest in 'Journey of the Magi'. **(15)**

3. a) Critically discuss the significance of the anti hero in John Osborne's *Look Back in Anger.* **(20)**

b) Comment on the arbitrariness of maps and boundaries as articulated in the poem 'Partition' by W.H.Auden. **(15)**

c) Write an essay on the poetic cosmos of A.K.Ramanujan discussing any two poems prescribed in your syllabus. **(15)**

4. a) *Waiting for Godot* by Samuel Beckett posed a challenge to Aristotelian norms of theatre and performance. Give a reasoned answer. **(20)**

b) Analyse and discuss the problematics of representation and subjectivity in Philip Larkin's poetry. **(15)**

c) Discuss John Osborne's *Look Back in Anger* as a kitchen sink drama. **(15)**

SECTION - B

Write a brief note on the following in about 150 words each. **(5×10=50)**

5. a) Stream of Consciousness in Virginia Woolf's *Mrs.Dalloway.* **(10)**

b) Autobiographical element in D.H. Lawrence's *Sons and Lovers.* **(10)**

c) Imperialism in E.M.Forster's *A passage to India.* **(10)**

d) James Joyce's *A Portrait of the Artist as a Young Man* as a fragmented narrative. **(10)**

e) History and memory in Raja Rao's *Kanthapura.* **(10)**

6. a) James Joyce's *A portrait of the Artist as a Young Man* has been seen as symptomatic of the literary transitions taking place from the Victorian to the Modern era. Comment. **(20)**

b) Does Clarissa Dalloway in Virginia Woolf's *Mrs.Dalloway* conform to normative notions of femininity. Give a reasoned answer. **(15)**

c) Write an essay on nationalist discourse in Raja Rao's *Kanthapura.* **(15)**

7. a) Critically analyse alternative versions of sexuality and gender performativity in D.H.Lawrence's *Sons and Lovers.* **(20)**

b) Examine critically the politics of the Raj in E.M. Forster's *A Passage to India.* **(15)**

c) Write an essay on Joseph Conrad's *Lord Jim* as a modernist romance. **(15)**

8. a) Offer a critical study of D.H. Lawrence's *Sons and Lovers* in the light of Freudian and Lacanian studies on Psychoanalysis. **(20)**

b) In what ways does the character of Stephen Dedalus in A portrait of the Artist as a Young Man cast James Joyce's novel in classical mould. **(15)**

c) Write a critical note on V.S.Naipaul's A House for Mr.Biswas as a modernist/(post) modernist novel. **(15)**

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Total No. of Printed Pages-3]

45

CC(M)

GEOGRAPHY

(OPTIONAL)

PAPER - II

[27]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page should be left in between answers to various questions.*

SECTION-A

1. a) On the outline map of India provided to you, mark the location of the following. Write in your QCA booklet the significance of these locations whether physical/commercial/ economic/ecological/environmental/cultural in news recently in not more than 30 words. **(10×2=20)**

   i) Silkyara Tunnel
   ii) Bahanaga Bazar
   iii) Lakshadweep Islands
   iv) Mangarh Hillock
   v) Nongkhnum Island
   vi) Galathea Bay
   vii) Zuari Bridge
   viii) Indrayani River
   ix) Munroe Island
   x) Palghat

   b) Briefly discuss the impact of climate on the vegetation of India. **(10)**

   c) Discuss the problems and prospects of Metro Rail Projects across Indian Cities. **(10)**

   d) Discuss the major problems of the Indian Tribes. **(10)**

2. a) Give a comparative assessment of the traditional and modern concept on the mechanism of Monsoons in determining the climate of India. **(20)**

   b) Discuss the trend of urban population growth in India and associated problems of resource management. **(15)**

   c) Explain the impact of digital economy on rural development. **(15)**

3. a) Briefly discuss the significance of the Himalayan mountains to India. **(20)**

   b) Explain the impact of successful launch of Chandrayaan-3 mission to the Indian space programme. **(15)**

   c) Discuss the major ecological problems in mining areas of Eastern India. **(15)**

4. a) Briefly discuss the growth, development and problems of paper industries in India **(20)**

   b) What is crop combinations? Briefly discuss the importance of crop combinations in Indian agriculture systems. **(15)**

   c) Discuss the distribution of wildlife resources and its conservation in India. **(15)**

SECTION - B

Answer the following questions in 150 words. **(5×10=50)**

5. a) Give an account of the non-conventional sources of energy in India.

   b) Explain the impact of jet stream on Indian monsoon.

   c) Discuss the production trends of minerals in India.

   d) Discuss the benefits of 'One District One Product' approach of the Aatmanirbhar Bharat Abhiyan.

   e) Describe the impact of soil degradation in India.

6. a) 'PM GatiShakti programme is a transformative approach for economic growth and sustainable development' - Elaborate with suitable examples. **(20)**

   b) Explain the role of language and religion in the formation of cultural regions of India. **(15)**

   c) Give an account of the functional classification of Indian cities. **(15)**

7. a) Describe comprehensively how the Indian agriculture has to move to feed the increasing population. **(20)**

   b) Give an account of the present day energy crisis in India. **(15)**

   c) Briefly explain the benefits of 'Purple Revolution' to the farmers of Jammu and Kashmir. **(15)**

8. a) What is 'Vibrant Villages Programme'? Describe how it will improve border security? **(20)**

   b) 'Smart Port Cities' is an ambitious plan of Government of India. Elaborate. **(15)**

   c) Give an account of the Physiographic Regions of India. **(15)**

Total No. of Printed Pages-3|

46

CC(M)

GEOLOGY

(OPTIONAL)

PAPER - II

[29]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

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vi) *No blank page should be left in between answers to various questions.*

SECTION - A

Answer the following in about 150 words each. **(5×10=50)**

1. a) What is double refraction? Name one mineral and its crystal system which prominently displays this phenomenon. **(10)**

b) Describe poikilitic and porphyroblastic textures relating these to the rocks in which these textures are observed. **(10)**

c) In wind erosion processes discuss the difference between saltation and suspension. **(10)**

d) "In metamorphism of mafic rocks epidote-amphibolite facies is absent in low P-high T path". Justify the statement. **(10)**

e) Describe "centre of symmetry". How it is manifested in crystals macroscopically? **(10)**

2. a) Discuss the principle and application of X-rays in crystallography. **(20)**

b) Explain the difference between tie-line flip and rotation of tie lines in chemographic phase diagrams for the metamorphic rocks. What is the fundamental difference in the reactions involved in these two transformations? Illustrate with examples. **(15)**

c) Discuss components of mud-rocks. What kind of sedimentary environment will favour formation of black shales? **(15)**

3. a) What does terms "peritectic" and "eutectic" imply? Illustrate your answer with model binary or ternary magma systems. **(20)**

b) What is the general formula of amphibole and what are the broad basis of classification of amphiboles? Draw and describe I-beam of amphibole structure annotated with crystal chemical sites. **(15)**

c) What are post-depositional sedimentary structures? Illustrate your answer with labelled diagrams. **(15)**

4. a) Describe the millimeter and the phi scales for sediments. Also describe the methods used for measuring the size of sediments. **(20)**

b) Define limits of metamorphism. Derive Gibbs phase rule. **(15)**

c) What are the two primary factors that govern explosive or non-explosive behaviour of lava flow? Give characteristic field features related to these two type of eruptions. **(15)**

SECTION - B

Answer the following in about 150 words each. **(5×10=50)**

5. a) Define "weighted average" and illustrate it in computing the average grade of an ore body through analytical data of length-unequal core samples. **(10)**

b) Describe and define the divisions of marine areas in context of the Law of the Sea. **(10)**

c) Discuss the role of geological disposal in the final disposal of high-level radioactive waste. **(10)**

d) Describe, in brief, the process of formation of layered chromite deposits. **(10)**

e) Discuss in brief on environmental impact of use of fertilizers. **(10)**

6. a) Describe gravity method for exploration of mineral deposits. Mention the principle, reduction of data for common errors and application. **(20)**

b) Explain the importance of metal complexing in the formation of hydrothermal ore bodies. **(15)**

c) Describe major geochemical characteristics of different major layers of the earth. **(15)**

7. a) Describe geological setting and formation of orogenic gold deposits. Illustrate your answer with appropriate sketches. **(20)**

b) What do you understand by "sample"? Describe consideration involved in stream sediment sampling during geochemical exploration. What is mean, mode and median? **(15)**

c) Describe parameters required for preparing a landslide hazard zonation map with examples. **(15)**

8. a) What do you understand by the 'Rattling' effect in relation to the coordination number? Derive minimum cation to anion ratios for coordination numbers 8 and 6. **(20)**

b) Discuss the distribution of Gondwana coal deposits in India. With which stratigraphic unit these deposits are mainly associated? **(15)**

c) Discuss the cross-cut method of mining illustrating this with an example from a metallic deposit of India. **(15)**

Total No. of Printed Pages-4]

47

CC(M)

HINDI

PAPER - II

[28]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instruction carefully before attempting questions.

*i) There are **EIGHT** questions divided in two Sections and printed in **HINDI.***

*ii) Candidate has to attempt **FIVE** questions in all.*

*iii) Questions No. 1 and 5 are compulsory and out of the remaining, **THREE** are to be attempted choosing at least **ONE** question from each Section.*

iv) The number of marks carried by a question/part is indicated against it.

v) Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

vi) Word limit in questions, wherever specified, should be adhered to.

vii) Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

खंड–1

किन्हीं दो अवतरणों की सप्रसंग व्याख्या कीजिए। **(2×25=50)**

1. क) प्रकृति के यौवन का श्रृंगार, करेंगे कभी न बासी फूल
मिलेंगे वे जाकर अति शीघ्र, आह उत्सुक हैं उनकी धूल
एक तुम,यह विस्तृत भू–खंड, प्रकृति वैभव में भरा अमंद
कर्म का भोग,भोग का कर्म,यही जड़ चेतन का आनंद

ख) मेरा मन सुमिरै राम को, मेरा मन रामहि आहि
अब गन रामहि हवै रहा,सीस नवावौ काहि..
चकई बिछुरी रैन की, आइ मिली परभाति
जे जन बिछुटे राम सौं,ते दिन मिले न राति..

ग) बिलग जनि मानहु ऊधौ प्यारे
वह मथूरा काजर की कोठरि, जे आवहिं ते कारे
तुम कारे, सुफलकसुत कारे, कारे मधुप भंवारे
तिनके संग अधिक छबि उपजत, कमलनैन मनिआरे
मानहु नील माट तें काढ़े,लै जमुना ज्यौं पखारे
ता गुन स्याम भई कालिंदी,सूर स्याम गुण न्यारे...

घ) सच पुछों तो शर में ही
बसती है दीप्त विनय की
संधि वचन संपूज्य उसी का
जिसमें शक्ति विजय की
सहनशीलता क्षमा दया को
तभी पूजता जग हैं
बल का दर्प चमकता उसके
पीछे जब जगमग हैं

2. क) लोकजागरण काव्य के रुप में भक्ति काव्य का मूल्याङ्कन कीजिए। **(20)**

ख) ''कामायनी मानव मन एवं मानवता के विकास की कहानी है'' इस मत का विश्लेषण कीजिए। **(15)**

ग) 'असाध्य वीणा' कविता के आधार पर अज्ञेय की काव्य संवेदना की समीक्षा कीजिए। **(15)**

3. क) भाषा, भाव एवं विचार की दृष्टी से निराला की कुकुरमुत्ता कविता का मूल्याङ्कन कीजिए।। (20)

ख) बिहारी की बहुज्ञता पर विचार कीजिए। (15)

ग) 'भारत भारती' में निहित नवजागरण की चेतना पर प्रकाश डालिए। (15)

4. क) ''कबीर मनुष्य के जीवन में भीतर–बाहर उजाला करने वाले कवि थे'' इस कथन के आधार पर कबीर का मुल्यांकन कीजिए। (20)

ख) ''जायसी लोक संस्कृति से साक्षात्कार कराने वाले लोकवादी कवि थे''– इस कथन के अलोक में जायसी की लोकसंवेदना का विश्लेषण कीजिए। (15)

ग) ''सूरदास का काव्य जीवन उत्सव का काव्य हैं''– इस कथन के आधार पर सूरदास की काव्य संवेदना का मूल्यांकन कीजिए। (15)

खंड–2

किन्हीं दो अवतरणों की सप्रसंग व्याख्या कीजिए। **(2×25=50)**

5. क) संसार से तटस्थ रह कर शान्ति–सुख पूर्वक लोक–व्यवहार सम्बन्धी उपदेश देने वालों का उतना अधिक महत्व हिन्दु धर्म में नहीं है, जितना संसार के भीतर घुसकर उसके व्यवहारों के बीच सात्विक विभूति की ज्योति जगाने वालों का है। हमारे यहाँ उपदेशक ईश्वर के अवतार नहीं माने गए हैं। अपने जीवन द्वारा कर्म सौन्दर्य संघटित करने वाले ही अवतार कहे गए हैं।

ख) भारत समग्र विश्व का है, और वसुंधरा इसके प्रेम पाश में आबद्ध है। अनादिकाल से ज्ञान की, मानवता की ज्योति यह विकीर्ण कर रहा है. वसुंधरा का हृदय भारत–किस मूर्ख को प्यारा नहीं हैं।

ग) इस बार तो देख लिया सबने कि जनता की एकता में बड़ा जोर है। तूफान आता है तो बड़े बड़े पेड़ो को जड सहित उखाड़ फेंकता है, जनता एक होती हैं तो बड़े बड़े राज्य उलट देती है. फिंका हुआ आदमी ही इस बात को सबसेज्यादा महसूस करता हैं. कुर्सी पर बैठना है तो जनता में फूट डालो.... कुर्सी बचानी है तो जनता में फूट डालो जनता की एकता कुर्सी के लिए सबसे बड़ा खतरा है समझ रहे हैं न आप लोग मेरी बात?

घ) मैं फिर काम शुरु करुँगा–यहीं,इसी गाँव में। मैं प्यार की खेती करना चाहता हूँ. आँसू से भीगी हुई धरती पर प्यार के पौधे लहराएंगे. मै साधना करुँगा, ग्रामवासिनी भारत माता के मैले आँचल तले! कम से कम एक ही गाँव के कुछ प्राणियों के मुरझाये ओठों पर मुस्कूराहट लौटा सकूं, उनके हृदय में आशा और विश्वास को प्रतिष्ठित कर संकू....।

6. क) 'गोदान' किसान जीवन के संघर्ष और पराभव का मार्मिक आख्यान है''– विश्लेषित कीजिए। (20)

ख) 'मैला आंचल' में निहित सामाजिक–राजनीतिक यथार्थ पर प्रकाश डालिए। (15)

ग) 'यही सच है' कहानी की कथा संवेदना पर प्रकाश डालिए। (15)

7. क) पठित निबंध के आधार पर आचार्य शुक्ल के प्रौढ़ चिंतन और तर्कपूर्ण विवेचन पर प्रकाश डालिए। (20)

ख) 'भारत दुर्दशा' नाटक में निहित नवजागरण की चेतना पर प्रकाश डालिए। (15)

ग) "आषाढ़ का एक दिन" नाटक की वस्तु संवेदना पर प्रकाश डालिए। (15)

8. क) स्त्री विमर्श की दृष्टि से दिव्या उपन्यास की वस्तु संवेदना पर प्रकाश डालिए। (20)

ख) "एक और जिन्दगी' कहानी स्त्री पुरुष के बदलते संबंधो की कहानी है" विश्लेषित कीजिए। (15)

ग) 'स्कंदगुप्त' नाटक के माध्यम से जयशंकर प्रसाद के नाट्य कर्म की समीक्षा कीजिए। (15)

018256

Total No. of Printed Pages-4]

48

CC(M)

HISTORY

(OPTIONAL)

PAPER - II

[31]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page should be left in between answers to various questions.*

SECTION-A

Write short notes in not more than 150 words in each of the following. (5×10=50)

1. a) In the year 1858, how did the implementation of the Government of India Act mark a shift in British administration in India?

   b) Evaluate the significance of 'Treaty of Amritsar' (1846).

   c) What were the key factors and outcomes of the Battle of Plassey in 1757?

   d) How did the Danish presence in the Indian subcontinent, particularly in places like Tranquebar, influence regional dynamics and trade during the colonial period?

   e) How has the Reserve Bank of India (RBI) contributed to the economic development and stability of India since its establishment in 1935?

2. a) Examine and evaluate the impact of post-independence industrial reforms in India on economic growth, employment, and the overall industrial landscape, considering both the successes and challenges faced in the process. **(20)**

   b) How does Sarojini Naidu's vision, as reflected in her statement 'We want deeper sincerity of motive, a greater courage in speech and earnestness in action,' resonate with the post- independence socio-political landscape of India, and how have these ideals influenced the nation's development? **(15)**

   c) In the context of colonial India, employing a critical analysis, evaluate the strategies, challenges, and outcomes of tribal resistance movements. To what extent did these movements contribute to shaping the discourse on indigenous rights and autonomy in the post-colonial era? **(15)**

3. a) Examine and assess the motivations, key events, and the impact of the Civil Disobedience Movement in colonial India, considering its role in the struggle for independence and its implications for the broader socio-political landscape of the time. **(20)**

   b) Analyzing Sardar Vallabhbhai Patel's role in post-independence India, how did his efforts towards unification and consolidation impact the nation's political stability and territorial integrity, and what enduring legacy did he leave in the process of nation-building? **(15)**

   c) In the context of Indian independence, evaluate the role and impact of Khan Abdul Ghaffar Khan, popularly known as Frontier Gandhi, in advocating non-violence and promoting unity in the face of religious and ethnic diversity in the Northwest Frontier Province. How did his principles influence the broader freedom struggle? **(15)**

4. a) To what extent were the moderate leaders in colonial India successful in advocating for constitutional reforms and gradual political change? **(20)**

b) In the context of colonial India, examine the impact of British policies on the princely state of Jammu and Kashmir. How did the historical and administrative developments during the colonial period contribute to the complexities surrounding the region's accession to India after gaining independence? **(15)**

c) How did the Brahmo Samaj, founded by Raja Ram Mohan Roy, influence the socio-religious landscape of 19th-century India? Analyze the key principles, reforms, and contributions of the Brahmo Samaj to the cultural and religious discourse during the colonial period. **(15)**

SECTION - B

Write short notes in not more than 150 words in each of the following. (5×10=50)

5. a) How did the Industrial Revolution contribute to the rise of capitalism in Europe?

b) Evaluate the significance of NATO in the context of collective defense and transatlantic relations.

c) How did military tactics employed during World War II, such as blitzkrieg, island hopping, and strategic bombing, shape the course and outcome of the conflict?

d) How does the North-South divide impact global socio-economic dynamics?

e) How did the Philadelphia Convention of 1787 contribute to the formation of the United States Constitution?

6. a) How did the French Revolution (1789-1799) impact France politically, socially, and economically, and what were the key events and ideologies that drove this transformative period in European history? **(20)**

b) What were the key factors and events that led to the abolition of slavery in the United States, and how did the abolitionist movement contribute to shaping the nation's socio-political landscape in the 19th century? **(15)**

c) What role did key figures like Giuseppe Garibaldi and Count Cavour play in the Italian Risorgimento, and how did their strategies and alliances contribute to the unification of Italy in the 19th century? **(15)**

7. a) How would you evaluate the impact of the Chinese Revolution of 1949 on the transformation of China's political structure, societal norms, and economic policies? **(20)**

b) Evaluate the significance of the 1921 Revolution in shaping the trajectory of the Russian Civil War and the establishment of the Soviet state. **(15)**

c) How did the Second World War impact global geopolitics, economies, and societies, and what were the key events and strategies that shaped the course and outcome of the conflict? **(15)**

8. a) How did Napoleon Bonaparte's rise to power and subsequent rule both reflect and depart from the ideals of the French Revolution? Evaluate the ways in which Napoleon influenced and transformed the revolutionary principles, institutions, and socio-political landscape in France during the early 19th century. **(20)**

b) How did the concept of the Third World and the policy of non-alignment contribute to shaping the international relations during the Cold War era? **(15)**

c) How has the European Union evolved since its inception, and what are the key political, economic, and social implications of its integration? **(15)**

Roll No._____ Total No. of Printed Pages - 4

CC(M)

KASHMIRI - II

[30]

Time Allowed : 3 Hours **Maximum Marks : 250**

(Answer must be written in Kashmiri)

جواب دِنہٕ بزٕوٚنہٕ پٮٛرٕ سوالن متعلق خاص ہِدایات۔

۱۔ یَتھ پرچس چھِ اَٹھ سوال یم دون حِصن (سیکشن) پٮٛٹھ مشتمل چھِ۔

۲۔ توٚہٕ چھِ کُل پَنٛزٕ سوالن ہِندٕ جواب دِنٛ۔

۳۔ سوال نمبر 1 (اکھ) تہٕ سوال نمبر 5 (پَنٛزٕ ک) جواب دِیُن چھُ لازمی۔

۴۔ دو یو سیکشنو منٛز چھِ باقی ترٕ ہ سوالن ہِندٕ جواب دِنٛ۔ مگر پرتھ سیکشن کیٚو سوالو منٛز چھِ کم کھوتہٕ کم اکہٕ سوال جواب دِیُن ضرٕوری۔ پرتھ سوالس تہٕ سوالکس حِصس بزٕوٚنہٕ کنہٕ چھِ نمبر (Marks) درٕج کرنہٕ آمتی۔

۵۔ سوالن ہِندٕ جواب دِنہٕ باپتھ چھُ لفظن ہُنٛد تعداد مُقرر کرنہٕ آمُت۔ اچ پابندی کرٕنی چھِ لازمی۔

۶۔ سوالن ہِندٕ ہ جوابن یٚیہٕ ترتیب وار اہمیت دِنہٕ۔

۷۔ اگر کُنہٕ سوالُک یا تمکہٕ کُنہٕ حِصُک لیکھنہٕ آمُت جواب توٚہٕ مُجراہ چھُنہٕ یژھان تھاوٚن، تتھ گٹھ کرٕاس دِیُن۔ تتہٕ یٚیہٕ سُہ جواب تصوٚر کرنہٕ۔ یوٚ دوٚے سُہ جواب اڈٕلیوٚ کے تہٕ آسہٕ۔

۸۔ کاٚنہٕ صفحہ یا صفحُک حِصہٕ اگر خالی روزِ تتھ گٹھ کرٕاس دِیُن۔

SECTION - A

1. یمن پٹھ لیکھو نوٹ۔ (پرتھ سوالک جواب 100 لفظن منز) (50)

(الف) للہ واکھن ہُند فن (10)

(ب) حبہ خاتون تہ لُکہ لہجہ (10)

(ج) کاشر س منز نعت (10)

(د) کرشن جو راز دان سُند شو لکن (10)

(ہ) رسول میر ذ غزل (10)

2. یمن سوالن لیکھو جواب۔ (50)

(الف) کاشر مثنوی منز گلر پز ہنز اہمیت؟ (200 لفظن منز) (20)

(ب) کاشر وژن تہ امکو فنی محاسن؟ (200 لفظن منز) (20)

(ج) عبدالاحد نادم سُند نعت؟ (100 لفظن منز) (10)

3. یمن سوالن ہندی جواب لیکھو۔ (50)

(الف) وُہمہ صدی ہنز کاشر شاعری ہُند امتیاز کیاہ چھُ؟ (200 لفظن منز) (20)

(ب) عبدالاحد آزاد نہ کُنہ نظمہ ہُند تنقیدی جایزہ؟ (200 لفظن منز) (20)

(ج) دینا ناتھ نادم ہنز نظم ''پگاہ واعد چھم تس'' خلاصہ؟ (100 لفظن منز) (10)

4. یمن سوالن ہندی جواب لیکھو۔ (50)

(الف) کاشر تنقید کتھ پاٹھی آو بارس؟ (200 لفظن منز) (20)

(ب) اہم کاشر نقاد کم چھ؟ (200 لفظن منز) (20)

(ج) کاشرس منز نوٚ وتنقید؟ (100 لفظن منز) (10)

SECTION - B

5. یہٕ کنہٕ دِنہٕ آمتی اقتباس وبژھنأو یۄٚکھ پنہٕ نس پوٚت منظرس منز۔ (50)

(ا) ''اما اتھ لبہٕ اپارِ کنہٕ کُس آسہٕ یا کیاہ آسہٕ؟ مےٚ وۄن ناۄنہٕ چھُم انبر۔ میانٕن أچھن چھُ از تہٕ صِرف کزٕ یہٕنیارُک باس مگر ووٚنی چھُم اتھ کزٕ یہٕنیارس منز سفیدُک تہٕ احساس گنان۔ تہٕ أمی احساسن سورس، نتہٕ کیاہ، یہٕمہٕ یوراوسمہٕ کانہٕ مژر..... مےٚ چھِ نشکو تم دوہ یاد پیوان یہٕلہٕ مس اوسُم کاوِ پکھ ہیوٚ تہٕ أندریم شاہ پأزنیلس آ کاشس پٹھ پکھ زۄہر تھ ساری ہے کا پناتس وحاطہٕ کران۔''

(10)

(ب) ''پیتہٕ بڈ مُلکچ پیژ بٔڈ راز دأنی! تہٕ یہٕیے أس وُنلہٕ پۄرِ پأٹھی منہگلا وہژ۔ بس ستا پکہٕ شیڈ تہٕ تتھ کل دون ژون بسہٕ پزارن والبن علاوِ اوس نہٕ بیٕیہٕ کیٚنہٕ تہٕ لبنہٕ یۄان۔ صِرف اوس ژھنہٕ طرفہٕ وُنلہٕ منز کلہٕ کُڈتھ اکبر ہوٹلک ووگن گوٚٹ آ کارتہٕ..... کھورِ طرفہٕ رنگ روڈ اپارِ بیکاجی کاما پلیس چن تھزن عمارٕ ژن تہٕ حیات ریجنسی ہوٚ ٹلچ تہٕ ژھا پنھ ہش در پٹھ گژھان۔'' (10)

(ج) ''خبر تہٕ چھُم نہٕ خبر'' ونان ونان پھیر سودۄ یمس طرفس کُن۔ زن سو کیا ہتام کھُٹھ أس تھوٚن یژھان۔ تہٕ مےٚ باسیوٚ وزِ سو چھنہٕ صِرف بسہٕ پزارنک عذاب کم کرنہٕ خاطِرے یوت کتھ زیٚتھر اوان مگر خبر کیا زِ اوسُس نہٕ بہٕ توتہٕ پنہٕ نس اتھ باسنس پٹھ أندر زنمہٕ زنمن ہُند کر تچھر ووتلتھ۔'' (10)

(د) ''تہٕ تھس شاہد سُند بیانہٕ مُلزس خلاف پزُن یہٕ مُجراہ دیٚن چھُ اِنصافس ناش کرنس برابر۔ یہٕن تہٕ ہیکہٕ یہٕ مبالغہٕ بغارٕ پزُتہٕ صحیح راے قائیم کرتھ زِیم چیز اتھ کُتھس منز جمع أسۍ متۍ چھِ تم چھِ امی کُنہٕ عداوتہٕ کزٕ نمتۍ یا ضایہٕ کرۍ متۍ۔ مُمکن چھُ زِ کُنہٕ لالچہٕ تہٕ یا عداوتہٕ ما چھُن یہٕ لفافہٕ تہٕ نمُت۔'' (10)

(ہ) ''ہۄنۍ کنڈۍ کمالِ ہُنر مندی سان زمینہٕ تل اُڈِج تہٕ گوونکھ پہن لُکۍ گوگرِس کُن اتھ ٹکنہٕ، جمأ ژ ژۄن اِشارِ تہٕ کیٚڈ کھ پنٛز پنٛز پھُٹ۔ درویشن کیٚڈ خرقہٕ بگلہٕ منٛز اکھ دوا پۄڑ ی تہٕ تھُر پھرِ تھ نفرِ ہنٛز بوتلہٕ منٛز چۄن آبہٕ گۄل۔ ''بَب سفر چھُ کرِ یٚوٹھ تہٕ آب موختصر۔'' (10)

6. یمن سوالن ہُنٛد جواب لیکھو۔ (50)

(الف) ''کھشِر ۍ لدہۄنۍ'' ہنٛدِس اردلس منٛز افسانس ہِنٛیو تنقیدی سام؟ (20)
(200 لفظن منٛز)

(ب) ''شرز'' افسانٛک تھیم کیاہ چھُ؟ (200 لفظن منٛز) (20)

(ج) ''ژے چھُکھ ژے چھُکھ'' افسانٛک خلاصہٕ لیکھو؟ (100 لفظن منٛز) (10)

7. یمن سوالن ہُنٛد جواب لیکھو۔ (50)

(الف) ''مُجرِم'' ناولہٕ ہُنٛد تھیم کیاہ چھُ؟ (200 لفظن منٛز) (20)

(ب) ''ناٹک کرِ وبند'' ڈرامہٕک تنقیدی جأیزٕ؟ (200 لفظن منٛز) (20)

(ج) ''رازایڈیس'' ڈرامہٕک مرکزی خیال؟ (100 لفظن منٛز) (10)

8. یمن سوالن ہُنٛد جواب لیکھو۔ (50)

(الف) کاشرِ لکہٕ شاعری ہنٛدۍ موضوٗع؟ (200 لفظن منٛز) (20)

(ب) کاشُر لکہٕ تھیٹر، اِمتیازی خصوصیٚز؟ (200 لفظن منٛز) (20)

(ج) محمد سُبحان بھگتس پٮٹھ لیکھو نوٹ۔ (100 لفظن منٛز) (10)

Roll No._____ Total No. of Printed Pages-6

CC(M)

KASHMIRI

PAPER - II

[30]

Time Allowed - 3 Hours *Maximum Marks - 250*

(Answer Must be written in kashmiri)

جواب دِنہٕ بروٚ نہٕ پُرو سوالن متعلق خاص ہدایات۔

۱۔ یتھ پرچس منز چھِ اَٹھ سوال یم دون حصن (سیکشنن) پٹھ مشتمل چھِ۔

۲۔ توٚہٕ چھِ کل پانزٕہ سوالن ہندٕ ی جواب دِنٛ۔

۳۔ سوال نمبر 1 (اکھ) تہٕ سوال نمبر 5 (پانزٕہ ک) جواب دِیُن چھُ لازمی۔

۴۔ دویو سیکشنو منز چھُ باقی تزٕہ سوالن ہُند جواب دِیُن۔ مگر پزٕ تھ سیکشن کہٕ سوالو منز چھُ کم کھوتہٕ کم اکہٕ سوالک جواب دِیُن ضروری۔ پزٕ تھ سوالس تہٕ سوالکس حصس برونہٕ کنہٕ چھِ (Marks) درج کرنہٕ آمتی۔

۵۔ سوالن ہُند جواب دِنہٕ باپتھ چھُ الفاظن ہُند تعداد مقرر کرنہٕ آمت۔ اَچ پابندی کرٕ نی چھےٚ لازمی۔

۶۔ سوالن ہندٕ ن جوابن یٚہٕ ترتیب وار اہمیت دِنہٕ۔

۷۔ اگر کُنہٕ سوالک یا تمامہٕ کُنہٕ حصٕ ک لکھنہٕ آمت جواب تٚہٕ مُجرا چھونہٕ یزٕ ھان تھا وٗن، تتھ گزٕ ھ کراس دِیُن۔ نتہٕ یٚہٕ سُہ جواب تصور کرنہٕ، یُد وٚے سُہ جواب اڈلیو کے تہٕ آسہٕ۔

۸۔ کانہٕ صفحہ یا صفحٕ ک کانہٕ حصہ اگر خالی روزٕ، تتھ گزٕ ھ کراس دِیُن۔

(ب) ''سوکتہ چھے یٚنتہ۔ تسے ووٚنی ترے ربتھ گژھن وآرکِ وِس منز'' ملہٕ قادرن وونُس فخرِ سان۔ زن تہٕ تُمٕ فتح آس زینٕ ہژ۔ ''نہٕ سہ میاٚنٕ دِرے چھے! ہری کرشنس آیہٕ نہٕ پژھے۔ تاجیٕ ہباچھ۔'' ژنے چھے ناخبر؟ ملہٕ قادرن وونُس شکایت کرنہٕ کس انداز منز۔ وِدس ہے خبر چھ۔ خدا صاب تھاوٚنس اور جان۔ سوے یٚنہٕ وول نیرنس تام مصرس نشی ہتھ آس۔ پرن لکھن نبا چھنہٕ رووُمت۔ یا گوژھ وُچھن کس طریقہٕ تہٕ تمیز دیٚتن مصرس۔ ہری کرشنس گیہٕ پانس پٹھ ندامت۔ تُمٕ وونس اِدسہ تہٕ مے نے خبرے۔ گرس منز تُمٕ نہٕ یہٕ کتھ تہٕ کانسہٕ۔ گوڈنتھ نہٕ مے پانس موکجارتہٕ۔'' (10)

(ج) ''یٚمہٕ وندِ پیٚوٚ وشین بے وایہٕ۔ خلقو ترآوکِ ترنے ترنے شین۔ شین تراونس منز اوس سہ طاق۔ سہ پلز یود پر ہتھ کانسہٕ تہٕ چھیکرس ہآوکِ تمس تہٕ وندن وند۔ یٚیلہٕ سہ سونتہٕ کالہٕ کامن کو چن، دجن ڈورہن آوکورٕ تمس آس ببسآکھی اگادِ گامژ۔ سہ اوس نہٕ اکھ قدم تہٕ امہٕ ورآے کنڈتھ ہبکان۔ اُچھ آسس وارے اور کِ ژا مژ۔ گوڈ آسکِ تمس ساری چایہٕ ہن، بتہٕ ہن اور کِ نان۔ مگر ووٚنی اوس سہ ٹھک ٹھک کران پانے چایہٕ موقعہ وآتھ پیوان۔ سہ اوس لگ بھگ ووٚنی مشتھے گومت۔ یا ممکن چھ پانس ہوے ما آسہٕ ہمکھ ووٚنی باسان۔ یا گامک یوہے اکھ بیاکھ کُل کوٹ ہیوٚ۔'' (10)

(د) ''دلہٕ وآتھ باسیو پوشہٕ کُجہٕ نوٚوے عالم۔ تمہٕ تروو پھر بکھ ہیوٚ۔ سآرکِ ہے ژھنٕ تو بلاے گوڈ چھنہٕ مسلمانے کنہٕ بآد۔ ژوپآرکِ چھ پنٕنٕ بٹہٕ باے۔ دودِ وول تہٕ بٹے، کانڈ رتہٕ بٹے۔ یٚنہٕ موکلاوکِ بگوان تس ہآنزنہٕ نش۔ یہٕ آس پوشہٕ کُجہٕ بیاکھ فراغت۔ سو ''ہانزنی'' یعنی پنٕنٕ زٹھ نوش یاد پنہٕ ستی کھرس ترہش۔ کتھ کتھ پٹھ آس رانٹہٕ ہندِ پآٹھکِ اگادِ گژھان۔ مجلس منز زانہٕ ہے نہٕ تس ناو کانہٕ مگر تمہٕ کنڈ آڈ آڈ۔ اِد بگوان تہٕ چھس وُچھتھے پوٚ کمت۔ نتہٕ کیاہ۔ گاشہٕ تہٕ صابہٕ چھ آکِ ہے ماجہٕ ہندِ کبر۔ وُچھتو صابہٕ کیاہ چھ یٚنتہٕ یہاتہٕ کران۔ تہٕ تس چھ تتہٕ بتہٕ کامژ۔ آکِ ہے ہانزنہٕ ہندِ شکس لد طالع کنِ۔ تمہٕ اوس فاصلہٕ کو رمت زِ سوترنہٕ ربتہٕ کالہٕ تہٕ کشیر واپس۔'' (10)

(ہ) ژٕنہٕ ژوٗر! تمواوسُس حأران گژھتھ وۄنمت ۔اَ ہنۄ اِ کیاہ۔توہٕ چھُو نابوزمُت زِیلہٕ ہہٕ جنگلہٕ منز نیرتھ کُنہٕ گامس منز چھُ اژان، گریسی چھِ شورتُلان ۔ژنہٕ ژوٗر رہو۔ژنہٕ ژوٗر رہو۔مأریۄنو۔ژنہٕ ژوٗر ناد بۄزتھ چھِ ہہٕس تراژان۔تُمس چھےٚ تھرتھراژان۔سُہ چھُ دستہٕ چھکان تہٕ ژلان ۔یہ چھےٚ گریستہٕ ہنز زبردست چال آسان۔اگر تم کربکہٕ دِن ۔ہہٕ ہا چھُ ہہٕ۔ژوٗر رۄزی تو۔تیلہٕ گژھ ہہٕس پننہٕ زورن ہنٗد احساس تہٕ ہہٕ نہناوِ سأرِ ہے گامس۔سُہ اوس تمن ونان۔ توہٕ تہٕ چھُو ژنہٕ ژوٗر گوٗمُت ۔توہٕ چھُو ہہٕ پننہٕ طاقتک احساس۔اگر توہٕ منز احساس پأوِ سپدِ تیلہٕ ژارِو ہہٕ سُلطان زانہٕ تہٕ لکہٕ۔ہٕمن روپیٚن پٹھ کڈِ ہہٕ ہنٗد خون۔زچھ تہٕ ہاکہٕ منٚچھ پٹھ ہیٚہٕ وہٕ توہٕ سُہ مُلکی۔ (10)

6. یمن سوالن ہنٗد جواب لیکھو۔ (50)

(الف) 'ژس' افسانکٕن فکری تہٕ فنی پہلوون ہیٚو سام۔ (۲۰۰ الفاظ منز) (20)

(ب) 'کوکر جنگ' افسانک تنقیدی جایزٕ کرِو پیش۔ (۲۰۰ الفاظ منز) (20)

(ج) ''حالس چھُ روتُل''افسانک مرکزی خیال لیکھو۔ (۱۰۰ الفاظ منز) (10)

7. یمن سوالن ہنٗد لیکھو جواب۔ (50)

(الف) 'مُرن۔۔۔اوان الیچن' ناولٕک مرکزی خیال۔ (۲۰۰ الفاظ منز) (20)

(ب) ''پأتھر چھُ جأری''اوٗک انگی ناٹکس منز کمن چیزن پٹھ چھُ طنز؟ (۲۰۰ الفاظ منز) (20)

(ج) ''راز ایڈیپس''ڈرامٹک مرکزی خیال۔ (10)

8. ہیٹھ سوالن ہُندا جواب لکھو۔ (50)

(الف) لکھ پاتھر تہ امکی قسم۔ (۲۰۰ الفاظ منز) (20)

(ب) لکھ ادب تہ امکی قسم۔ (۲۰۰ الفاظ منز) (20)

(ج) اوک انگی ناٹک ''مزارِ شعرا'' ہک مرکزی خیال۔ (۱۰۰ الفاظ منز) (10)

Roll No._____ Total No. of Printed Pages-6

CC(M)

KASHMIRI

PAPER - II

[30]

Time Allowed - 3 Hours *Maximum Marks - 250*

(Answer Must be written in kashmiri)

جواب دِیہٕ بروٗ نہٕ پُرِ وسوالن متعلق خاص ہدایات۔

۱۔ یتھ پرچس منز چھِ آٹھ سوال یم دون حصن (سیکشنن) پٹھ مشتمل چھِ۔

۲۔ توہٕ چھِ کل پانزٕن سوالن ہندٕ جواب دِنٛے۔

۳۔ سوال نمبر 1 (اکھ) تہٕ سوال نمبر 5 (پانزٕک) جواب دِیُن چُھ لازمی۔

۴۔ دویو سیکشنو منز چُھ باقی تزٕ ہن سوالن ہُند جواب دِیُن۔ مگر پزٕ ہتھ سیکشن کہٕ سوالو منز چُھ کم کھٕ تہٕ کم اکہٕ سوالک جواب دِیُن ضروری۔ پزٕ تھ سوالس تہٕ سوالکس حصس برونہٕ کنہٕ چھِ (Marks) درج کرنہٕ آہٕتہٕ۔

۵۔ سوالن ہُند جواب دِنہٕ باپتھ چُھ الفاظن ہُند تعداد مقرر کرنہٕ آمت۔ اَچ پابندی کرٕنی چھٕنے لازمی۔

۶۔ سوالن ہندٕ ہن جوابن یٚیہٕ ترتیب وار اہمیت دِنہٕ۔

۷۔ اگر کُنہٕ سوالک یا تمکہٕ کُنہٕ حصٕک لکھنہٕ آمت جواب تُہٕ مُجرا چھونہٕ یزٕ ھان تھا وٗن، تتھ گزٕ ھ کراس دِیُن۔ نتہٕ یٚیہٕ سٕہ جواب تصور کرنہٕ، یُد وٕ سٕہ جواب اڈلیو کٕے تہٕ آسہٕ۔

۸۔ کانہٕ صفحہ یا صفحٕک کانہٕ حصہ اگر خالی روزِ، تتھ گزٕ ھ کراس دِیُن۔

SECTION - A

1. ہیٹھ کنہِ دِنہِ آمتھن شعرن کُرِ تشریح تہِ شاعرِ سُند حوالہِ دِتھ ہیو شعری اُسلوبس سام۔ (5×10=50)

(الف) آمہِ پننہِ سۆ درس ناوِ چھس لمان — کنہِ بوزِ دے میون مینہِ دیہِ تار
آمن ٹاکن پوٹی زن شان — زۆ چُھم بزمان گھرِ گژھ ہا

(ب) یتھ واہِ ہالے ژونگ گس زالے — تِلہِ کنہِ زالے علم تہِ دین
پزکتھ تراوتھ سوکتھ پالے — سوُرے علم چُھ الف لام میم

(ج) شزاوُن شپین زن بو گلان آلیس — باغس پھوٗ جس بو ہی
چوئے باغ تے ژے وولو چھاوان — ژنے کہو زِگی میاٗنے دے

(د) سوچھِ کرال کران تس مرحبا — یُس گوٗ و زنے دیوانے
مُرتھ بُران تس مرتبہ — ہبا یہ چُھی گمانے

(ہ) دچھہِ راٗنتھ گھرۆ بلہِ بلہِ — تتھ ما ور زانہہ دراو
کاٗرِ گر کوتاہ دلہِ — کہو کلہِ کر ٹھبرا و

2. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) للہہ واکھن ہنزِ فی خوبیہ۔(۲۰۰ الفاظن منز) (20)

(ب) للہہ واکھ تہِ شیخہِ شرکن منز ہشر تہِ ہن۔ (۲۰۰ الفاظن منز) (20)

(ج) حبہ خاتونہِ ہندِس کلامس منز نسوٗانی اظہار۔(۱۰۰ الفاظن منز) (10)

3. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) محمود گامی سند بن وزن ہنز خوبیہ۔ (۲۰۰ الفاظ منز) (20)

(ب) 'گلریز' مثنوی منز منظر نگاری تہ جذبات نگاری۔ (۲۰۰ الفاظ منز) (20)

(ج) کاشر صوفی شاعری پیٹھ فکری اثرات۔ (۱۰۰ الفاظ منز) (10)

4. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) رسول میر ؒ سراپا نگاری۔ (۲۰۰ الفاظ منز) (20)

(ب) نظم ''گریسی کوٚر'' چھے روایتی شاعری نشہ انحراف۔ (۲۰۰ الفاظ منز) (20)

(ج) آزادؔ ''شکویہ کشمیر'' نظمہ ہُند تنقیدی جایزہ۔ (۱۰۰ الفاظ منز) (10)

SECTION - B

5. ہونہ کنہ دِنہ آمتھن نثری اقتباس ہنز کرِ وتشریح تہ فنی پہلوٚن بیٚو جایزہ۔ (5×10=50)

(الف) ''یہ چھنہ ووٚنی کانسہ تہ خبر سہ کوٚت گیاو۔ تو پتہ تیٚوت بہ کارتہ کُس چُھ تس متعلق بیٚہیہ دریافت کرنہ۔ پٮ۪ڈ کچل، اسمانٛ ملا یکن زوٚرِ اوسے بٕر یمانہ وآنسا ہتھ پھیران۔ پیٹھہ کتھہ کتاکٕ۔ ووٚنی گو دمیانہن شرٕن چُھ کنہ دوہ یاد پیوان۔ شُرٕن کیاہ؟ تمن اوسے تٛمٕ سنزن کتھہ بکواسس مزٕ دہ بیٹھان۔۔۔ یمہ دوہ سہ سون بیہ ہے، سہ دوٚکٕ دوہ اوس پندٕ کٕ نیران۔ کانسہ یارس دوستس اوسا منے بنان یُن۔ تمس وٚچھتھ اوس پرٕ ہتھ اکھا پوٚت کھوری واپس زٚلان۔ تٛمٕ کُس اکھا اوس کن کھنہ رؤس تروومُت۔ کتھ پیٹھ اوسے ونان ''یوز تاریخ وٚنے۔'' (10)

(ب) ''سو کتہ چھے بیٚنہ۔ تسے وونی ترنے رتھ گژھن وآرکہ وِس منز'' ملہٕ قادرن وونُس فخرِ سان۔ زن تہٕ تُمہٕ فتح آس زٕنٛ ہژ۔ ''نہٕ سہ میاٚنی دِرے چھے! ہری کرشنس آیہ نہٕ پژھے۔ تاچُے ہباچھ۔'' ژنے چھے ناخبر؟ ملہٕ قادرن وونُس شکایت کرنہ کس اندازس منز۔ وِدس بے خبر چھ۔ خدا صاب تھاوکنس اور جان۔ سوے بیٚنہ وول نیرنس تام مصرس نشی بیتھ آس۔ پرُن لبکھن نبا چُھنہٕ رووُمت۔ یا گوژھ وُچھن کُس طریقہ تہٕ تمیز دیٚتن مصرس۔ ہری کرشنس گیہ پانس پٹھ ندامت۔ تُمہٕ وونس اِہ سہ تہٕ مے نے خبر ے۔ گرس منز نُچ نہٕ یہٕ کتھ تہٕ کانسہ۔ گوڈنتھ نہٕ مے پانس موکجارتہٕ۔'' (10)

(ج) ''یمہٕ وندِ پیٚوٗ شپن بے وایہٕ۔ خلقو تراوکر ترنے ترنے شپن۔ شپن تراونس منز اوس سہ طاق۔ سہ پلز یود پر بتھ کانسہ تہٕ چھیکرس ہاوکر تُمس تہٕ وندن وند۔ یٚیلہٕ سہ سونتہٕ کالہٕ کامبن کوچن، وجن ڈورہن آو کوزر، تُمس آس ببأ کھ اگادِ گامژ۔ سہ اوس نہٕ اکھ قدم تہٕ امہٕ ورأے کنڈتھ ہمکان۔ أچھ آسس وارے اور کر ژا مژ۔ گوڈ أسکی تُمس ساری چایہٕ ہن، بتہٕ ہن اور کر نان۔ مگر وونی اوس سہ ٹھک ٹھک کران پانے چایہٕ موقعہ وآتھ پٚوان۔ سہ اوس لگ بھگ وونی مشتبے گومت۔ یا ممکن چھ پانس ہوٚے ما آسہٕ ہمکھ وونی باسان۔ یا گا نمک یٚوٗ ہے اکھ بیا کھ کُل کوٹ ہیٚوٗ۔'' (10)

(د) ''دلہٕ وآتھ باسیو پوشہٕ کُجہٕ نوٚوٗ ے عالم۔ تمہٕ تروو پھر بکھ ہیٚوٗ۔ سارکر ہے ژھنی تو بلاے گوڈ چھنہٕ مسلمانے کُنہٕ بٚوٗد۔ ژوپار کر چھ پٚنٛ بٹہٕ باٚے۔ دودِ وول تہٕ بٚٹے، کانذرتہٕ بٚٹے۔ یٚیہٕ موکلاوکر بگوان تس ہاٚنزنہٕ نش۔ یہ آس پوشہٕ کُجہٕ بیا کھ فراغت۔ سو ''ہانزنی'' یعنی پٚنٛ زٹھ نوش یاد پیٚنہٕ ستی کھرس ترنش۔ کتھ کتھ پٹھ آس رانٹہٕ ہندر پاٹھ کر اگادِ گژھان۔ محلس منز زانہٕ ہے نہٕ تس ناو کانبہٕ مگر تمہٕ کنڈ أڈ أڈ۔ اِہ بگوان تہٕ چھس وُچھتے پوکمت۔ نتہٕ کیاہ۔ گاشہٕ تہٕ صاٚبہٕ چھ أکہ ہے ماجہٕ ہندر گبر۔ وُچھتو صاٚبہٕ کیا وُچھ یٚیہٕ یہاتہٕ کران۔ تہٕ تس چھ تتہٕ بتہٕ کاٚمژ۔ أکہ ہے ہاٚنزنہٕ ہندِ شکس لد طالع کنی۔ تمہٕ اوس فاصلہٕ کو رمت زِ سوتر نہٕ رہتہٕ کالہٕ تہٕ کُشیر واپس۔'' (10)

(ہ) ژہہ ژۆر ا! تمواونس حأران گژھتھ وۆنمت ۔اَ ہنۆ اِ کیاہ۔توہہ چُھو نابوزمت زیٹیلہ ہہہ جنگلہ منز نیرتھ گنہ گامس منز چُھ اژان، گریسی چھ شورتُلان۔ژہہ ژۆر رہو۔ژہہ ژور رہو۔ مأریونو۔ژہہ ژۆر ناو بۆزتھ چھ ہہس بژاژان۔ تُمس چھے تھرتھر اژان۔ سُہ چُھ دستہ چھکان تہ ژلان۔ یہ چھے گریستہن ہنز زبردست چال آسان۔اگر تم کرکہ دِن۔ہہہ ہا چُھ ہہہ۔ژۆر رۆزی تووَ۔تیلہ گژھ ہہس پتہن زورن ہُند احساس تہ ہہہ نہناوِ سأرۆ ہے گامس۔سُہ اوس تمن دنان۔ توہہ تہ چُھو ژہہ ژۆر گۆمت ۔توہہ چُھو ہہ پتہ طاقتک احساس۔اگر توہہ منز احساس پأد سپد تیلہ ژارِو ہہ سُلطان زانہہ تہ لکہ۔ہَن روپَن پٹھ کڈ ہہ تُہند خۆن۔زچہ تہ ہا کہ منچہ پٹھ ہیہ وِ ہہ توہہ سُہ مُلکی۔ (10)

6. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) 'ژس' افسانکہن فکری تہ فنی پہلوون پیٹوسام۔ (۲۰۰ الفاظ منز) (20)

(ب) 'کوکر جنگ' افسانک تنقیدی جأیزکرِو پیش۔ (۲۰۰ الفاظ منز) (20)

(ج) ''حالس چُھ روتُل'' افسانک مرکزی خیال لیکھو۔ (۱۰۰ الفاظ منز) (10)

7. یمن سوالن ہُند لیکھو جواب۔ (50)

(الف) 'مُرن۔۔۔اوان الیچن' ناولٹ مرکزی خیال۔ (۲۰۰ الفاظ منز) (20)

(ب) ''پأتھر چُھ جأری'' اوٹک انگی نائکس منز کمن چیزن پٹھ چُھ طنز؟ (۲۰۰ الفاظ منز) (20)

(ج) ''راز ایڈیپس'' ڈرامہٹک مرکزی خیال۔ (10)

8. ہیمن سوالن ہُند جواب لیکھو۔ (50)

(الف) لکھ پاتھر تہ امکو قسم۔ (۲۰۰ الفاظن منز) (20)

(ب) لکھ ادب تہ امکو قسم۔ (۲۰۰ الفاظن منز) (20)

(ج) اوک انگی ناٹک ''مزارِ شعرا'' ہک مرکزی خیال۔ (۱۰۰ الفاظن منز) (10)

Total No. of Printed Pages-3]

49

CC(M)

LAW

(OPTIONAL)

PAPER - II

[33]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

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v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page should be left in between answers to various questions.*

SECTION - A

Write short notes on the following. **(5×10=50)**

1. a) Examine the maxim *"actus me invito factus non est mens actus"*

b) Joint tort feasors

c) Contributory negligence as a defence under civil/criminal proceedings.

d) Disrobing

e) Definition of 'Consumer'

2. a) Define "Defamation" and discuss the various defences available to the defendant in a suit for defamation? Also discuss the main differences between the Indian and English Laws on Defamation. **(20)**

b) "All torts are civil wrongs, but all civil wrongs are not torts". Discuss the above statement in the light of the essential ingredients of a Tort. **(15)**

c) Legal damage is neither identical with actual damage, nor is it necessarily pecuniary. Discuss. **(15)**

3. a) "While the members of a group may have a common object, their individual intentions may vary" Examine the above statement and explain the difference between common intention and common object. **(20)**

b) Distinguish between private and public nuisance. When can an individual have a right of action in respect of a public nuisance? **(15)**

c) What kind of cases are covered under the rarest or rare category so as to warrant death penalty under the law? **(15)**

4. a) Discuss the law relating to right of private defence under the IPC with the help of judicial decisions in respect of offences against human body with special reference to commencement and continuance of this right, extent of force that can be used, the limitations on the exercise of this right and the circumstances under which this right can be used even against public servants. **(20)**

b) What are the principal changes introduced in our substantive Criminal law by the Bharatiya Nyaya Sanhita, 2023? Discuss. **(15)**

c) "A conspiracy consists not merely in the intention of two or more, but in the agreement of two or more, to do an unlawful act, or to do a lawful act by unlawful means." Explain the above statement with the help of relevant examples . **(15)**

SECTION - B

Write short notes on the following. **(5×10=50)**

5. a) *Caveat- emptor*

b) National Green Tribunal

c) Mediation

d) Doctrine of 'fair use'

e) *Consensus-ad-idem*

6. a) "The doctrine of frustration is really an aspect of the law of discharge of contract by reason of supervening impossibility of the act agreed to be done and hence comes within the purview of Section 56 of the Indian Contract Act." Analyse the above statement and discuss the different remedies available to an aggrieved party as a result of a breach of contract? **(20)**

b) Discuss the law governing communication of acceptance and explain when communication of acceptance is complete in cases where acceptance is sent by post, e-mail, Whats App or conveyed over telephone. **(15)**

c) How can surety be discharged from his liability in contract of guarantee? **(15)**

7. a) Who is unpaid seller under Sale of Goods Act, 1930? When can unpaid seller exercise right of stoppage in transit? How does seller lien differ from right of stoppage in transit? Discuss. **(20)**

b) A stranger to consideration can sue? Are there any exceptions to this rule? Discuss. **(15)**

c) A minor, falsely representing himself to be a major, induces a person to enter into a contract with him. Would the minor be estopped from pleading his minority to avoid the contract? Discuss in the light of provisions regarding capacity to contract under the Indian Contract Act. Also cite leading cases to support your answer. **(15)**

8. a) What are anti-competitive agreements? Explain the orders that the CCI can pass in case of anti-competitive agreement or abuse of dominant position? **(20)**

b) What is the procedure prescribed for obtaining information under the Right to Information Act, 2005? Also discuss what information cannot be disclosed under the Act. **(15)**

c) What do you understand by 'Geographical Indications of Goods'? Discuss the Procedure laid down under law for Registration of Geographical Indications? **(15)**

Total No. of Printed Pages-03]

50

CC(M)

MANAGEMENT

(OPTIONAL)

PAPER - II

[35]

Time Allowed - 3 Hours	*Maximum Marks - 250*

INSTRUCTIONS

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SECTION - A

Describe the following in about 150 words each. **(5×10=50)**

1. a) Define Index Number. State the uses of Index Number. **(10)**

b) What is meant by Plant Layout? Explain the various types of Plant Layout. **(10)**

c) Explain the statistical quality control. Discuss its various techniques in brief. **(10)**

d) What is Enterprise Resource Planning (ERP)? What are its benefits? **(10)**

e) What is Foreign Exchange Risk? Suggest ways to manage it. **(10)**

2. a) What is business forecasting? What are its limitations? Discuss some forecasting techniques. **(20)**

b) What is the difference between correlation and regression? **(15)**

c) Answer the following questions based on probability analysis:

i) A coin is thrown three times. What is the probability that at least one head is obtained?

ii) Find the probability of getting a numbered card when a card is drawn from the pack of 52 cards.

iii) What is the probability of getting a sum of 7 when two dice are thrown?

(5+5+5=15)

3. a) i) Calculate Economic Order Quantity (EOQ) from the following: **(5)**

Annual consumption: 6,000 units

Cost of ordering: Rs.60

Carrying costs : Rs.2

ii) Calculate the **Ordering Level, Minimum Level, and Maximum Level** from the following data: **(5+5+5=15)**

Re-order quantity: 1,500 units

Re-order period: 4 to 6 weeks

Maximum Consumption : 400 units per week

Average Consumption : 300 units per week

Minimum Consumption : 250 units per week

b) What is Material Requirement Planning? What are its objectives? **(15)**

c) Define the term plant location. Describe the factors in selecting plant location. **(15)**

4. a) What are the major types of information systems? **(20)**

b) Discuss the importance of Flexibility in information systems. **(15)**

c) What management of data resources? Why is it important? **(15)**

SECTION - B

Describe the following in about 150 words each. **(5×10=50)**

5. a) Briefly discuss various types of cyber-crimes. **(10)**

b) Write short note Impact Matrix as a technique of strategic analysis. **(10)**

c) Explain the role of consumer organisations and NGOs in protecting and promoting consumers interests. **(10)**

d) Elucidate the concept of Core competence of business. **(10)**

e) Discuss importance of Country Risk Analysis in international trade. **(10)**

6. a) Briefly explain Consumer Rights and Responsibilities in India. **(20)**

b) Discuss responsibilities of business as well as government to protect the environment. **(15)**

c) What are the schemes for development of backward areas in India? **(15)**

7. a) What is a competitive analysis? What is the purpose of a competitive analysis? Discuss steps to conduct a competitive analysis. **(20)**

b) Explain GEC Mode of strategic analysis. **(15)**

c) Briefly explain strategic profile of an organisation. What are the steps in developing strategic profile of any organisation? **(15)**

8. a) What do you understand by cross border mergers and acquisitions? What are their benefits and challenges? **(20)**

b) Discuss the steps in Import Export Procedure. **(15)**

c) What are the various sources of finance for international trade? **(15)**

Total No. of Printed Pages-4|

51

CC(M)
MATHEMATICS
(OPTIONAL)
PAPER - II
[37]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. a) Suppose that H is a subgroup of a group G such that whenever $Ha \neq Hb$ then $aH \neq bH$. Prove that H is a normal subgroup of G. Is the converse true? Justify. **(10)**

b) Show that the series $1+\frac{e^{-2x}}{2^2-1}-\frac{e^{-4x}}{4^2-1}+\cdots$ is uniformly convergent for all real $x \geq 0$. **(10)**

c) If $f(z)$ is an analytic function of $z=(x+iy)$, then prove that

$$\left(\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right)\left|\mathrm{Re}\left(f(z)\right)\right|^2=2\left|f'(z)\right|^2. \quad \textbf{(10)}$$

d) Prove that a basic feasible solution to a linear programming problem corresponds to an extreme point of the convex set of feasible solutions. **(10)**

e) Prove that the surface whose tangent planes cut off an intercept of constant length a from the z - axis is $z=x\varphi(y/x)+a$, where φ is an arbitrary function. **(10)**

2. a) Let G be a non-Abelian group, and $Z(G)=\{x \in G : xg=gx, \forall\, g \in G\}$, then prove that

i) $Z(G)$ is a normal subgroup of G, and quotient group $G/Z(G)$ cannot be cyclic.

ii) If H is a normal subgroup of G with $|H| = 2$, then $H \subseteq Z(G)$. **(20)**

b) State Cauchy's integral formula and prove that $\oint_c \frac{\exp(i\pi z)}{2z^2-5z+2}dz=\frac{2\pi}{3}$, where C is the circle $|z|=1$ **(15)**

c) Let $f:[a,b]\to\mathbb{R}$ be a continuous function. Prove that f is Riemann integrable. **(15)**

3. a) Let R be a ring such that $\{0\}$ and R are the only right ideals of R. Show that either R is a division ring or has prime number of elements such that $ab=0,\ \forall\ a,b \in R$. **(20)**

b) Show that the function $f(x, y, z)=\log(x^2+y^2+z^2)^3-2(x^3+y^3+z^3)$, $(x, y, z)\neq(0,0,0)$ has only one extreme value, $\log(3/e^2)$. **(15)**

c) Find three different Laurent series representations for the function $f(z)=\frac{3}{2+z-z^2}$ involving powers of z. **(15)**

4. a) Using contour integration, evaluate $\int_0^{2\pi}\frac{\cos 2\theta}{1-2a\cos\theta+a^2}d\theta,\ -1<a<1$. **(20)**

b) Solve, by simplex method, the system of linear equations

$x_1+x_2=1$

$2x_1+x_2=4$ **(15)**

c) Let D be an integral domain. Let $a, b \in D$ be such that $a^m=b^m$, $a^n=b^n$ for two relatively prime positive integers m and n. Prove that $a=b$. Is the result true, if D is not an integral domain? Justify. **(15)**

SECTION - B

5. a) By solving the dual of the following linear programming problem, show that the given problem has no feasible solution.

Minimize $z = x_1 - x_2$

$$2x_1 + x_2 \geq 2,$$

Subject to $- x_1 - x_2 \geq 1,$

$$x_1, x_2 \geq 0.$$ **(10)**

b) Find the surface which intersects the surfaces of the system $z(x + y) = c(3z + 1)$ orthogonally and which passes through the circle $x^2 + y^2 = 1,\ z = 1$. **(10)**

c) Find the root of the equation $xe^x = 3$ by Regula-Falsi method correct to three decimal places. **(10)**

d) Find the general solution of the partial differential equation

$(4D^2 - 4DD' + D'^2)\, z = 16 \log (x + 2y)$, where $D \equiv \frac{\partial}{\partial x}$ and $D' \equiv \frac{\partial}{\partial y}$ **(10)**

e) Prove that the liquid motion is possible when velocity at (x, y) is given by

$$\left[\frac{ax - by}{x^2 + y^2}, \frac{ay + bx}{x^2 + y^2}, 0\right]$$

Also determine the velocity potential and pressure at any point (x, y). **(10)**

6. a) Find the initial basic feasible solution of the following transportation cost problem by Vogel's approximation method and use it to find its optimal solution. **(20)**

		Destination A	B	C	D	Availability
Source	S_1	1	2	1	4	30
	S_2	3	3	2	1	50
	S_3	4	2	5	9	20
Demand		20	40	30	10	

b) Solve the following system of linear equations

$10x_1 + x_2 + x_3 = 12$

$2x_1 + 10x_2 + x_3 = 13$

$2x_1 + 2x_2 + 10x_3 = 14$

correct up to 4 significant figures by Gauss-Seidel iterative method. **(20)**

c) Write the dual of the following linear programming problem:

maximize $z = 8x_1 + 3x_2 - 2x_3$

subject to $x_1 - 6x_2 + x_3 \geq 2$

$5x_1 + 7x_2 - 2x_3 = -4$

$x_1 \leq 0, x_2 \geq 0, x_3$ unrestricted

Also verify that the dual of dual is primal. **(10)**

[Turn Over

7. a) A tank in discharging water through an orifice at a depth of x meter below the surface of the water whose area is A m^2. The following are the values of x for the corresponding values of A.

A	1.257	1.39	1.52	1.65	1.809	1.962	2.123	2.295	2.462	2.650	2.827
x	1.5	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	3.00

Using Simpson's 1/3 rule in the formula $(0.018)T = \int_{1.5}^{3} \frac{A}{\sqrt{x}}\, dx$, calculate T the time in seconds for the level of the water to drop from 3.0 m to 1.5 m above the orifice. **(20)**

b) i) Write the Boolean expression $(x \wedge (y' \vee z)) \vee z'$ in both disjunctive and conjunctive normal forms.

ii) Let a non-negative integer < 10 be given by its binary representation: $a_3\, a_2\, a_1\, a_0$

If A_i is the statement that a_i is 1, construct a logic circuit corresponding to the condition that the given integer is prime. **(15)**

c) Two sources, each of strength m are placed at the points $(-a, 0)$, $(a, 0)$ and a sink of strength $2m$ at the origin. Show that the stream lines are the curves

$(x^2 + y^2)^2 = a^2 (x^2 - y^2 + \lambda xy)$, where λ is a variable parameter.

Show also that the fluid speed at any point is $\frac{2ma^2}{r_1\, r_2\, r_3}$, where r_1, r_2, r_3 are the distances from the sources and the sink. **(15)**

8. a) Find a complete integral and the singular integral of the non-linear partial differential equation given by

$2xy\,(px + qy) + pq = 4\,xyz\;;\; p = \partial z / \partial x,\; q = \partial z / \partial y$ **(20)**

b) A hollow cylinder of radius a is fixed with its axis horizontal, inside it rolls without slipping a solid cylinder of radius b, whose velocity in its lowest position is given. If the moving cylinder makes small oscillations about the lowest point of the fixed cylinder, then show that the time period of the small oscillation is $2\pi\sqrt{\frac{3(a-b)}{2g}}$. **(15)**

c) Using Runge-Kutta method of second order, solve for $y(0.1)$ and $y(0.2)$ given that

$\frac{dy}{dx} = x^2 - y,\; y(0) = 1$ **(15)**

Total No. of Printed Pages-8|

52

CC(M)

MECHANICAL ENGINEERING

(OPTIONAL)

PAPER - II

(39)

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

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iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Diagrams/Figures, wherever required shall be drawn in the space provided for answering the question itself.*

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vii) *No blank page should be left in between answers to various questions.*

viii) *Non Programmable Calculators are allowed.*

SECTION – A

1. **a)** Let a one-dimensional velocity field be $u = u(x, t)$, with $v = 0 = w$. The density varies as $\rho = \rho_0 (a - \sin \omega t)$ where ρ_0, a, and ω are constants. Find an expression for $u\ (x, t)$ if $u(0, t) = U$. **(10)**

b) Consider air at a free stream temperature of 10 °C and free stream velocity of 15 m/s flowing parallel to a flat plate of 1.5 m length and held at a temperature of 90 °C. Calculate the heat transfer from one side of the plate to the air stream, considering unit width of the plate. Air properties at film temperature are: density ρ = 1.088 kg/m^3, kinematic viscosity v =18.65×10^{-6} m^2/s, thermal conductivity k =0.0281 W/mK, and Prandtl number Pγ = 0.703. Use a suitable correlation among those given below:

Nu=0.023$Re^{0.8}$ P$\gamma^{0.3}$

Nu=0.332$Re^{1/2}$ P$\gamma^{1/3}$

Nu=0.0296$Re^{4/5}$ P$\gamma^{1/3}$

Nu=(0.037$Re^{0.8}$-871.3) P$\gamma^{1/3}$. **(10)**

c) Explain the quantities - Emissive power (E), Irradiation (G) and Radiosity (J). Write the relationship between these quantities for an opaque surface. Discuss the number of shape factors required for an enclosure comprising a set of N surfaces exchanging radiation energy amongst each other. Subsequently determine the number of shape factors that need to be calculated directly for a 3-surface enclosure. **(10)**

d) Explain the differences between fire-tube and water-tube boilers. With the help of a schematic diagram, explain the working of the Benson boiler. **(10)**

e) Explain four limitations of CO_2 as a refrigerant in vapour-compression refrigeration systems. **(10)**

2. **a)** Consider condensation of saturated vapour on a vertical flat plate of length L and width b. The condensate forms a thin film on the plate as shown in Figure 1. Laminar flow can be assumed in the liquid film. Both the plate and the vapour are maintained at constant temperatures of T_s and T_{sat}, respectively. The properties of the liquid (ρ_l, μ_l, k_l) and the vapour (ρ_v, μ_v, k_v) can be assumed to be constant. Assume that acceleration and convection within the liquid film are negligible. The vapour exerts no shear force on the condensate layer. Under these conditions, derive the expressions for liquid film thickness (δ) and local heat transfer coefficient (h_x) at any location x along the plate. The latent heat of vaporization is h_{fg}. **(20)**

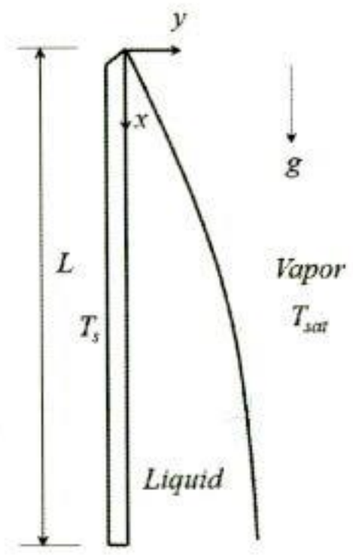


Figure 1.

b) A four-stroke, six-cylinder petrol engine develops 46.5 kW at 3000 rpm. The volumetric efficiency of the engine taking air (R = 0.287 kJ/kgK) into account is 85% at 1 atm and 0 °C. The bore is equal to the stroke, and the thermal efficiency of the engine is 25%. The calorific value of the fuel is 44.1 MJ/kg, and the air-fuel ratio is 15:1. Calculate the values of cylinder bore and stroke. **(15)**

c) Consider steady operation of a water-to-water counter-flow heat exchanger as shown in Figure 2. Hot water enters the heat exchanger at 95 °C while cold water enters at 20 °C. The exit temperature of hot water is 15 °C greater than that of cold water, and the mass flow rate of hot water is 50 percent greater than that of cold water. The product of heat transfer surface area and the overall heat transfer coefficient is 1.4 kW/K. Assume c_p=4.18kJ/kgK for both hot and cold water.

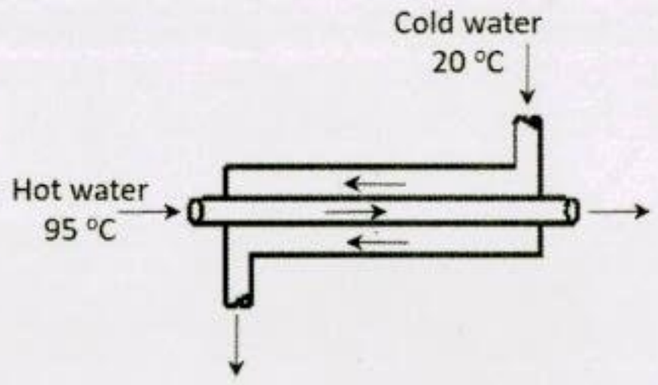


Figure 2.

The effectiveness-NTU relation for a double pipe counter-flow heat exchanger is expressed as $\varepsilon = \frac{1 - exp\left[-NTU\ (1-C)\right]}{1 - C\ exp\left[-NTU\ (1-C)\right]}$, where $C = \frac{(\dot{m}\, c_p)_{min}}{(\dot{m}\, c_p)_{max}}$

Determine the following:
Outlet temperature of the cold water
Effectiveness of the heat exchanger
Mass flow rate of cold water, Heat transfer rate. **(15)**

3. a) The following data is given for a combined gas-turbine-steam-turbine cycle power plant:

Air condition at inlet to compressor	1 bar, 300 K
Compressor pressure ratio	10
Temperature of gas at turbine inlet	1200 K
Isentropic efficiency of compressor	0.9
Isentropic efficiency of gas turbine	0.9
Net power output of gas turbine	50 MW
c_p of air/gas	1.02 kJ/kgK
Ratio of specific heats of gas, γ_g	1.3
Ratio of specific heats of air, γ_a	1.4
Pinch point temperature difference	30 °C
Condition of steam at inlet to steam turbine	50 bar, 700 K, h=3256 kJ/kg
Condition of steam at exit from steam turbine	Saturated at 0.2 bar, h_f=252 kJ/kg, h_g= 2610 kJ/kg
Steam properties at 50 bar	T_{sat} = 537 K, h_f = 1154 kJ/kg

Neglect mass of fuel added to gas turbine cycle and pump work in steam cycle. Draw a detailed schematic of the power plant. Show the entire process on T-S diagram. Determine the net power output of the power plant, the thermal efficiency of gas turbine cycle and overall thermal efficiency of the combined cycle. **(20)**

b) A vapour-absorption refrigeration system takes heat energy from a source at 400 K and rejects a portion of heat into the atmosphere at 300 K. It is employed to provide refrigeration for a region maintained at a constant temperature of 280 K. Derive an expression and determine the value of maximum possible value of COP for the given vapour absorption system. **(15)**

c) Hot humid air enters the refrigeration coil of an air conditioning unit at 40° C DBT, 100 kPa pressure and 60 % relative humidity with a mass flow rate of 1.0 kg/s of dry air as shown in Figure 3. The air leaves as saturated at a DBT of 25°C and 100 kPa. Determine the refrigeration load on the coil in tons. Assume the following properties: enthalpy of humid air at inlet and exit as 114 kJ/kg and 76 kJ/kg, respectively. The saturation pressure of water at 40° C and 25° C is 7.38 kPa and 3.17 kPa, respectively. The enthalpy of condensate is 104.87 kJ/kg. **(15)**

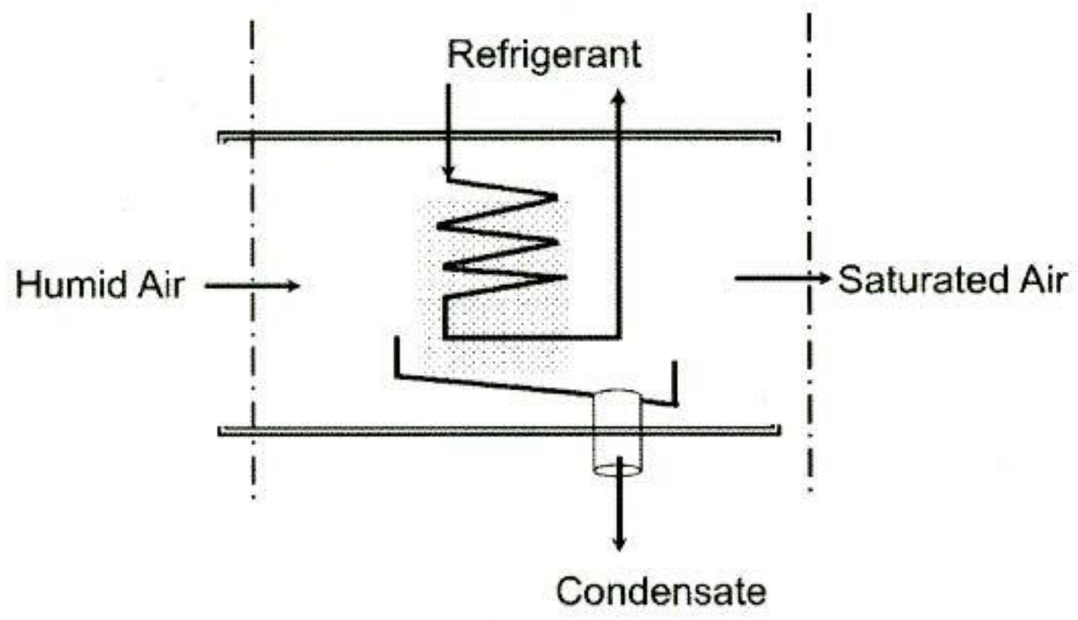


Figure 3.

4. a) A cylinder fitted with a frictionless piston contains water. A constant hydraulic pressure on the back face of the piston maintains a cylinder pressure of 5 MPa. Initially, the water is at 400°C, and the volume is 0.25 m^3. The water is now cooled and condensed to saturated liquid. The heat released during this process (Q_H) is supplied to a cyclic heat engine which rejects heat to the ambient air at 25°C. Draw the schematic diagram of the system and *p-v* diagram of the cooling process. Calculate the heat released by the water Q_H. If the overall process (cooling of cylinder plus cyclic process in the heat engine) is reversible, what is the net work output and thermal efficiency of the heat engine?·

Properties of water at 5 MPa, 400°C

$v = 0.05784$ m^3/kg, $u = 2907.5$ kJ/kg, $h = 3196.7$ kJ/kg, $s = 6.6483$kJ/kgK

Properties of saturated liquid water at 5 MPa

$v_f = 263.94$ m^3/kg, $u_f = 1148.1$ kJ/kg, $h_f = 1154.5$ kJ/kg, $s_f = 2.9207$ kJ/kgK

where v is the specific volume, u is the specific internal energy, h is the specific enthalpy and s is specific entropy. **(20)**

b) Stagnation properties (denoted by subscript zero) and sonic properties (denoted by *) are commonly used as reference values in compressible flow computations. For an isentropic flow of a perfect gas, derive relations for p_0/p, T_0/T, and ρ_0/ρ^* as functions of the Mach number. Further, for an isentropic flow of a perfect gas, derive relations for p^*/p, T^*/T, and ρ^*/ρ as functions of the Mach number. **(15)**

c) Two circular water jets collide and form one homogeneous jet as shown in Figure 4. The effect of gravity is negligible. Ignore the force due to atmospheric pressure. Assuming the fluid velocity to be uniform across the cross-section of the jets, for the combined jet determine the following:

(i) mass flow rate,
(ii) speed, V,
(iii) direction, θ and
(iv) cross-sectional area. **(15)**

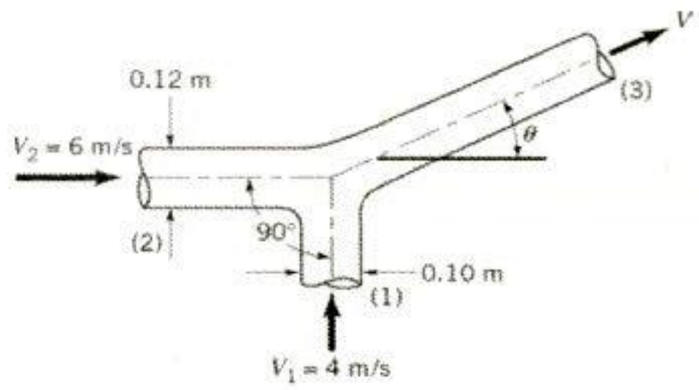


Figure 4.

SECTION – B

5. **a)** Briefly explain five possible mechanisms of formation of hydrocarbon emissions in spark-ignition engines. **(10)**

b) A four-cylinder petrol engine with 70 mm bore and 90 mm stroke is tested at constant speed. The brake power output of the engine with all cylinders firing is 11.9 kW at 1400 rpm. The fuel supply is fixed at 0.065 kg per minute, and the plugs of the four cylinders are successively short-circuited without change of speed, the brake torque being correspondingly adjusted. The brake torque measurements (in Nm) are as follows:

* With cylinder no.1 short-circuited = 57.7;
* With cylinder no.2 short-circuited = 58.4;
* With cylinder no.3 short-circuited = 58.6;
* With cylinder no. 4 short-circuited = 58.

For these conditions, determine:

- Indicated power of the engine,
- Mechanical efficiency of the engine,
- Indicated thermal efficiency (η_{th}) of the engine,
- Ratio of η_{th} with air standard efficiency (γ_{air}=1.4).

The calorific value of the fuel is 43500 kJ/kg, and the clearance volume of one cylinder is 69500 mm^3. **(10)**

c) A certain aircraft flies at the same Mach number regardless of its altitude. Compared to its speed at 12000 m standard altitude, it flies 127 km/h faster at sea level. Determine its

(i) Speed at sea level and 12000 m altitude, and
(ii) Mach number. Note that the standard temperature at sea level is 15 °C, and at 12000 m altitude is -56 °C. (For air, γ= 1.4 and R = 287 J/kgK) **(10)**

d) A large tank at 500 K and 200 kPa supplies air to a nozzle. The flow through the nozzle may be assumed as isentropic. At a given section of the nozzle, area is 0.15 m^2 and pressure is 120 kPa. Compute the flow velocity at this section and mass flow rate through the nozzle. (For air, γ= 1.4 and R = 287 J/kgK) **(10)**

e) For a steam thermal power plant, draw an ideal simple Rankine cycle on h-s diagram, explaining all processes. Also, explain the natural draught system with the help of a schematic diagram. **(10)**

6. a) A vehicle is equipped with a flexible-fuel 4 cylinder SI engine running on a mixture of methanol (CH_3OH) and petrol (C_8H_{15}) at an equivalence ratio of 0.95. The exhaust of the engine comprises of CO_2, H_2O, O_2, and N_2 only. If the fuel flow to the engine shifts from 10% methanol by mass (M10) to 85% methanol by mass (M85), calculate the change in the air-fuel ratio. The molecular weight of air is 29 kg/kmol. **(20)**

b) The compression ratio (r) of an engine working on Diesel cycle is 18, and the air-fuel ratio is 25:1. The temperature and pressure of the charge at the beginning of compression is 426 K and 1 bar, respectively. The calorific value of the fuel is 42000 kJ/kg. Assume the index n for compression process is 1.35, and combustion commences at end of compression during which any molecular changes can be neglected. The specific heat at constant volume for the charge varies with temperature (T) as $c_v = 0.71 + 1.6 \times 10^{-4} T$ kJ/kgK, and characteristic gas constant $R = 0.287$ kJ/kgK. Determine the percentage of stroke at which constant pressure combustion stops. **(15)**

c) A cylindrical rod of diameter d containing uniform heat source per unit volume Q_g is connected at its ends to two fixed temperature bodies as shown in Figure 5. The rod is also exposed to an environment with convection coefficient h and temperature T_∞. Assuming that substantial temperature gradients occur only along the length of the rod, obtain an expression for the temperature distribution in the rod. The thermal conductivity of the rod is k. **(15)**

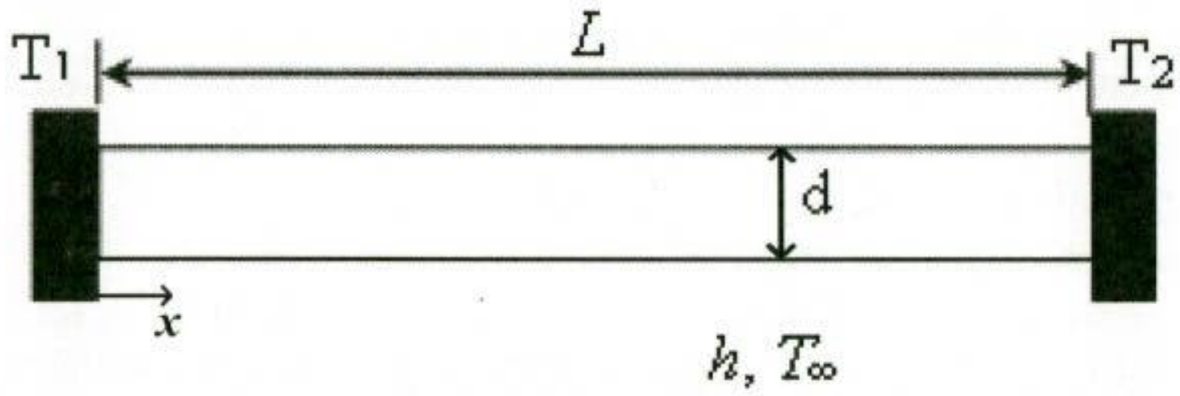


Figure 5.

7. a) A vapour-compression refrigeration system employs two-stage compression with intercooling as shown in Figure 6. The refrigerant employed is NH_3. The condenser and evaporator pressures are 15 bar and 2.5 bar, respectively. The intermediate saturation temperature is 0 °C. The refrigerant leaves the condenser as saturated liquid and leaves the evaporator and heat exchanger as saturated vapour. Draw the processes on the p-h diagram, and determine the COP of the system. **(20)**

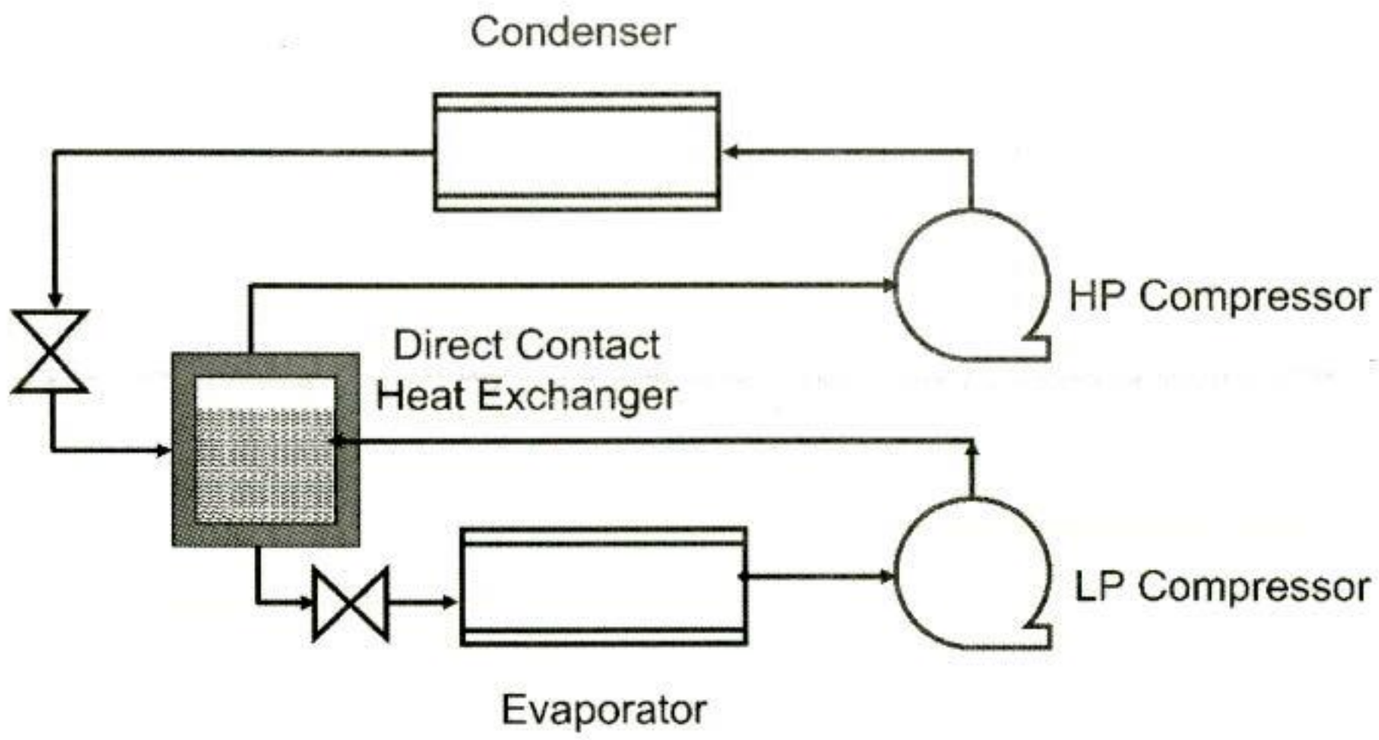


Figure 6.

Saturation Properties of NH_3				
p(bar)	T (°C)	h_f(kJ/kg)	h_g(kJ/kg)	s_g(kJ/kgK)
15	39	365	1469	4.88
8.6	20	274	1460	5.08
4.3	0	180	1442	5.33
2.5	-14	115	1425	5.52
Superheated Properties of NH_3				
p (bar)	T (°C)		h(kJ/kg)	s(kJ/kgK)
4.3	20		1492	5.52
4.3	6		1455	5.33
15	120		1705	5.52
15	90		1625	5.33

b) Superheated steam expands in a converging-diverging nozzle from 10 bar, 220 °C (h = 3051.2 kJ/kg, v = 0.26 m³/kg, s = 7.12 kJ/kgK) to 4 bar at a rate of 0.1 kg/s. Neglect inlet velocity of steam in the nozzle. If the flow is super-saturated with $pv^{1.3}$ = constant, determine the exit area of the nozzle and degree of saturation. **(15)**

c) A steam turbine operates with an inlet enthalpy of 3500 kJ/kg and exit enthalpy of 2300 kJ/kg. The bucket velocity is limited to 250 m/s. Flow may be assumed to be frictionless. If turbine stages operate at maximum efficiency, determine the number of stages in the turbine when.

* All stages are simple impulse type with the nozzle angle given as 20°.
* All stages are 50% reaction stages with the nozzle angle given as 25°. **(15)**

8. **a)** A single-entry centrifugal compressor rotates at 15000 rpm. Air enters the compressor axially at inlet stagnation temperature of 298 K and pressure of 100 kPa. Impeller tip diameter is 0.5 m. Radial velocity at exit is 60 m/s. Impeller is backward swept with an air angle of 76°. Isentropic efficiency of the compressor is 87%, slip factor is 0.9 and work input factor is 1.03. Compute

(i) the impeller tip speed,

(ii) the flow coefficient and actual tangential velocity component at impeller exit,

(iii) specific work input, and (iv) the static temperature and absolute Mach number at the impeller exit. Assume $\gamma = 1.4$, $R = 0.287$ kJ/kgK and $c_p = 1.005$ kJ/kgK. **(20)**

b) An air-conditioner cools a house in summer. It reverses and acts as a heat pump to heat the house in the winter. The interior temperature should be 20°C in the winter and 25°C in the summer. Heat transfer through the walls and ceilings is estimated to be 2400 kJ per hour per degree temperature difference between the inside and outside.

(i) If the outside winter temperature is 0°C what is the minimum power required to drive the air-conditioner (as a heat pump)?

(ii) For the same power consumption as in part (i), what is the maximum outside summer temperature for which the house can be maintained at 25°C. Assume that the COP of the air-conditioner is 90% of the ideal (Carnot) heat-pump / refrigerator in the corresponding mode of operation between the same temperature limits. **(15)**

c) Air in a rigid 1.0 m^3 box is at 300 K and 200 kPa. It is heated to 600 K by heat transfer from a reversible heat pump that receives energy from the ambient at 300 K. Draw the schematic diagram of the process. Considering the variation of the tank temperature, derive the relation for infinitesimal work input to the heat pump δW, and thereby evaluate the total work input to the heat pump W during the process. Assume that specific heats remain constant during the process. Take $c_v = 0.717$ kJ/kgK, $\gamma = 1.4$ and $R = 0.287$ kJ/kgK. **(15)**

Total No. of Printed Pages-4]

53

CC(M)

MEDICAL SCIENCE

(OPTIONAL)

PAPER - II

[41]

Time Allowed - Three Hours	*Maximum Marks-250*

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SECTION - A

1. a) Discuss the management of a 2-year -old child with acute diarrhea and dehydration as per IMNCI (INTEGRATED MANAGEMENT OF NEONATALAND CHILDHOOD ILLNESS) Protocol. **(15)**

b) Discuss the pathophysiology, complications, and management of tetralogy of fallot. Discuss the management of hypercyanotic spells. **(5+5+10=20)**

c) What vaccine would you advise for a 6-week-old infant? Discuss the pneumococcal vaccine. **(5+10=15)**

2. a) Write short note on: **(4×5=20)**

i) Fistula in ano

ii) Basal cell carcinoma

iii) Inguinal Hernia

iv) Gynaecomastia

b) Write short notes on: **(4×5=20)**

i) POSHAN Abhiyaan

ii) Sensitivity and specificity of a screening test and its usefulness in public health programs.

iii) Community engagement as an important pillar in TB elimination.

iv) Current status of Infant mortality in India and the initiatives to reduce infant mortality in India.

c) Describe the strategies for elimination of leprosy in India. **(10)**

3. a) Discuss in Brief: **(5+5=10)**

i) ECG Changes related to electrolyte imbalance

ii) Management of Schizophrenia

b) Discuss in Brief: **(10+10=20)**

i) Metabolic syndrome

ii) Spontaneous bacterial peritonitis.

c) A 20 year old female presents with history of chronic diarrhea and weight loss since 6 months. Discuss the approach to evaluation and management of this patient.

(10+10=20)

4. a) Discuss the management of the following: **(5+5+5+5=20)**

i) Acute severe asthma

ii) Hyperglycemic hyperosmolar state

iii) Acute gout

iv) Organophosphorus poisoning

b) Discuss in brief: **(5+5=10)**

i) Newer initiatives under the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD).

ii) Critical appraisal of the staffing pattern in Health and Wellness Centres.

c) What are the causes of breast lump? Describe the management of a 3cm hard lump in the right breast in a 45-year-old lady. **(5+15=20)**

SECTION - B

5. a) Write causes of pain in the epigastric region. Describe the management of a 40-year-old patient with suspected duodenal perforation. **(5+10=15)**

b) Enumerate the stages of cervical cancer oncogenesis. Describe the FIGO staging of Cervical Cancer. How will you manage a case of Ca Cervic Stage 1 B in a 38-year-old woman? **(3+5+12=20)**

c) Describe the clinical features, diagnostic approach, and management of community-acquired pneumonia in adults. **(15)**

6. a) What is TB Preventive treatment (TPT)? What are the guidelines for a cascade of care under Programmatic Management of TPT (PMTPT) in India? Discuss the challenges of implementing PMTPT in our country. **(5+5+10=20)**

b) What is Mission Indradhanush? Briefly describe the Intensified Mission Indradhanush 5.0 (IMI 5.0) campaign. Discuss the Vaccine Logistics and cold Chain Management in India. **(5+10+15=30)**

7. a) A 55-year-old male presents with a history of acute onset of shortness of breath since 1 day. He is a chronic smoker and also suffered from diabetes mellitus for 8 years.

What are the differential diagnosis?

Discuss the evaluation of this patient.

Discuss the management of acute pulmonary thromboembolism. **(2+3+5=10)**

b) Define post-partum hemorrhage (PPH). Enumerate the causes of atonic PPH. How will you manage of case of atonic PPH in a multiparous woman? **(2+4+14=20)**

c) Write short notes on the following: **(4×5=20)**

i) Myxedema coma.

ii) Chronic myeloid leukemia

iii) Evaluation and management of Cushing's syndrome

iv) Post-exposure prophylaxis of dog bite.

8. a) How will you manage severe acne in a 17-year-old male patient? Discuss any two topical agents used in acne. **(10+10=20)**

b) Write Short Notes on: **(10+10=20)**

i) Syndromic Management of Pelvic inflammatory Disease

ii) Long-acting reversible Contraception

c) Describe the steps to be taken for investigating an outbreak of measles in a community. Briefly describe the control measures in a measles outbreak. **(5+5=10)**

54

Total No. of Printed Pages-3]

CC(M)

PHILOSOPHY

(OPTIONAL)

PAPER - II

[43]

Time Allowed - Three Hours	*Maximum Marks-250*

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SECTION - A

1. a) Discuss Justice as a regulating principle of liberty? Give reasons and justifications for your answer.

b) Discuss Laski's views on Sovereignty. Do you think he is sufficiently able to address certain deficiencies with the earlier theories? Critically discuss.

c) How is corruption a threat to democracy? Discuss.

d) Critically discuss the main tenets of multiculturism as presented by Will Kymlicka.

e) "Monarchy as a form of government can coexist with theocracy but not with true democracy". Do you agree with the above statement? Give reasons and justification for your answer.

2. a) "The essence of anarchism lies in the conviction that the burden of proof has to be placed on authority, and that it should be dismantled if that burden cannot be met." Comment upon this statement in your own words.

b) "From each according to his ability, to each according to his needs." Discuss the main tenets of Marxism in the light of this quotation.

c) "Human beings are born with different capacities. If they are free, they are not equal. And if they are equal, they are not free." Comment upon the socialism as a political ideology in the light of this statement.

3. a) "In truth, laws are always useful to those with possessions and harmful to those who have nothing; from which it follows that the social state is advantageous to men only when all possess something and none has too much." Comment with reference to Rousseau's The Social Contract.

b) Write an essay on Ambedkar's view of origination and annihilation of Caste.

c) "A man can give up a right, but he may not give up a duty without being guilty of a grave dereliction". Comment on the relation between Rights and Duties in the light of this statement.

4. a) What arguments do the proponents of Reformative theory of punishment offer against Capital Punishment? Critically discuss.

b) Does economic development of a country have a necessary connection with the social development of a country? Give reasons and justifications in support of your answer.

c) Are legal rights sufficient conditions for combating gender inequality? Give reasons and justification for your answer.

SECTION - B

5. a) Which means of knowledge is used by the Naiyāyikas to prove the existence of God?
   Present a detailed account of any two of different arguments offered by them to prove the existence of God.
   b) Present the main points of Teleological proof for the existence of God.
   c) Present the main tenets of St.Augustine's philosophy with regard to Faith and Reason.
   d) Is the idea of an abiding soul necessary for the idea of liberation? Critically discuss in the context of Buddhist idea of Nirvāṇa.
   e) Is existence necessarily entailed in perfection? Critically discuss in the context of Ontological proof for the existence of God.

6. a) "A Religion without Morality would fail to serve any social purpose". Do you agree with this statement? Give reasons and justification for your answer.
   b) Compare and contrast Rāmānuja's notion of *Iśvara* with that of Spinoza's notion of God.
   c) Discuss the notion of *Sat, Citta, Ānanda* as presented in Vedanta thought in the context of religious experience.

7. a) "A religious path that one chooses to pursue should not necessarily stem from one's faith in God but from one's ethical freedom. One doesn't necessarily need to be believer in order to have a sense of value towards the world that may appear religious or spiritual." Discuss with reference to the Idea of Religion without God.
   b) "Whatever is, is in God, and nothing can be or be conceived without God." Discuss this comment in the light of Spinoza's philosophy.
   c) Can one reconcile the idea of absolute Truth with the idea of religious pluralism? Give reasons and justifications in support of your answer.

8. a) Discuss the cognitivist and non-cognitivist account of nature of religious language.
   b) Why the existence of evil is not compatible with the notion of a benevolent God? What are the different arguments suggested by different philosophers to make them compatible? Critically discuss.
   c) Explain the nature of the world and its relation to *Jīva* according to Śaṅkara and its subsequent critique by Rāmânuja.

Total No. of Printed Pages-4]

45

CC(M)

PHYSICS

(OPTIONAL)

PAPER - II

[45]

Time Allowed - Three Hours	*Maximum Marks-250*

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vii) Non Programmable Calculators are allowed.

SECTION - A

(5×10=50)

1. a) In an experiment the work function of Potassium surface is found to be 2.1 eV. Calculate the threshold wavelength. What should be the wavelength of incident radiation if stopping potential for electron is 0.43 V. **(10)**

b) An X-ray photon is found to have doubled its wavelength on being scattered by 90^0, find the energy and wavelength of incident photon. **(10)**

c) Explain using examples why NOR and NAND gates are called Universal gates. **(10)**

d) Determine the maximum separation of a beam of Hydrogen atom that moves a distance of 20cm with a speed of 2×10^5m/s perpendicular to a magnetic field, whose gradient is 2×10^{-24}T/m and $mH=1.67\times10^{-27}$kg. **(10)**

e) Why a particle in a box cannot have zero energy quantum mechanically? How does it change when the length, 1 of the box tends to infinity? **(10)**

2. a) Explain the concept of wave particle dualism. State the de Broglie hypothesis of matter waves. Derive an expression for de Broglie wavelength of matter particles in terms of kinetic energy and temperature. **(20)**

b) Using uncertainty principle, show that proton, neutron and alpha-particle can exist within the nucleus. **(15)**

c) Estimate the magnetic energy, U_m for an electron in the *2p* state of a hydrogen atom, using Bohr's model whose $n = 2$ state corresponds to the *2p* state. **(15)**

3. a) Prove that the relation $\partial P / \partial t + \vec{\nabla}.J = 0$, *where* J is the probability current density and P is the probability density. Give its physical interpretation taking example from study of electricity. **(15)**

b) Obtain an expression for rotational energy levels of a diatomic molecule and the frequency of rotational spectrum. State the selection rules involved. Show energy levels and rotational spectrum of a diatomic molecule with the help of a diagram.**(25)**

c) An X - ray beam of wavelength 0.97 A^0 is obtained in the third order after reflection at 60^0 from the crystal plane. Another beam is obtained in the first order reflection at 30^0 from the same crystal plane. Find the wavelength of second X - ray beam. **(10)**

4. a) A particle is moving in one dimensional potential given by $V = 0$ for $x < 0$; $V = V_0$ for $x \geq 0$. Assuming that the total energy E of the incident particle is greater than V_0. Obtain an expression for coefficient of reflection and transmission. Discuss the case classically also. **(20)**

b) Explain the concept of virtual ground in OP-AMP with diagram. Show how an OP-AMP can be used as an adder and a subtractor. **(15)**

c) What are leptons? Name any three leptons and their anti-particles. Discuss the properties of leptons in brief. **(15)**

SECTION - B

(5×10=50)

5. a) Show that the wave function $y(x,t) = A\cos(kx - wt)$ does not satisfy time-dependent Schrodinger equation. **(10)**

b) The position and momentum of 0.5 keV electron are simultaneously determined. If its position is located within 0.2nm, what is the percent uncertainty in its momentum? **(10)**

c) Explain the difference between type I and type II superconductors using Meissner effect. **(10)**

d) In a common emitter NPN circuit, the collector current is 3.6mA, and the base current is 30 μ A. The collector current at a fixed collector emitter voltage of 10V increases to 4.7mA when the base current increases to 40 μ A. Calculate the common emitter dc and ac current gain and common base ac current gain. **(10)**

e) Illustrate Heisenberg's uncertainty principle by diffraction of a beam of electrons through narrow slit. **(10)**

6. a) Show that the reciprocal lattice to the body centred cubic lattice is face centred cubic lattice and vice versa. **(20)**

b) In an experiment with Raman scattering, the wavelength of incident radiation is 436.8nm, the wavelength of the first scattered radiation is 462.4nm. Find the wavelength of the next scattered line. **(15)**

c) What do you mean by internal conversion? How does it take place? How is it different from photo-electric effect? **(15)**

7. a) Write the semi-empirical mass formula and explain in detail all the terms giving valid reasons for the correction terms added to the terms obtained using liquid drop model. **(25)**

b) An element crystallizes into face centred lattice structure. Given that 208 grams of the substance contains 4.28×10^{24} atoms, calculate the length of the unit cell if its density is 7200kg/m^3. **(10)**

c) What do you mean by Q value of a nuclear reaction? Discuss the energetics of endoergic and exoergic reactions. **(15)**

8. a) In tabular form, give the difference between the four fundamental interactions considering the particles affected, range, relative strength, exchange particle and their role in the Universe. **(20)**

b) Name and describe in detail the two schemes in which more than one electron contributes orbital and spin angular momenta to the total angular momentum in context with both heavy and light atoms. **(20)**

c) A particle is described by a wave function given by

$$\psi = \begin{cases} \frac{\sqrt{2}}{L}\sin\left(\frac{n\pi x}{L}\right), 0 < x < L \\ 0, \quad elsewhere \end{cases}$$

Find the expectation value of momentum. **(10)**

Useful Data

Velocity of light in vacuum c	=	$3 \times 10^{8}\ m/s$
Mass of electron m_e	=	$9.11 \times 10^{-31}\ kg$
Charge of electron e	=	$1.602 \times 10^{-19}\ C$
Specific charge of electron e/m_e	=	$1.76 \times 10^{11}\ C/kg$
$1\ u = 1\ amu = 1.660566 \times 10^{-27}\ kg$	=	$931.5\ MeV/c^2$
Rest mass energy of electron $m_e c^2$	=	$0.511\ MeV$
Permittivity in free space ϵ_0	=	$8.8542 \times 10^{-12}\ C^2/N/m^2$
Permeability of free space μ_0	=	$4\pi \times 10^{-7}\ N/A^2$
Gas constant R	=	$8.314\ J/mol/K$
Boltzman constant k_B	=	$1.381 \times 10^{-23}\ J/K$
Planck constant h	=	$6.626 \times 10^{-34}\ Js$
$\hbar$	=	$1.0546 \times 10^{-34}\ Js$
Bohr magneton μ_B	=	$9.274 \times 10^{-24}\ J/T$
Nuclear magneton μ_N	=	$5.051 \times 10^{-27}\ J/T$
Fine structure constant α	=	$1/137.03599$
Mass of proton M_p	=	$1.0072766\ u = 1.6726 \times 10^{-27}\ kg = 938.3\ MeV$
Mass of neutron M_n	=	$1.0086652\ u = 1.6749 \times 10^{-27}\ kg = 939.6\ MeV$
Mass of deuteron M_d	=	$2.013553\ u$
Mass of α - particle M_α	=	$4.001506\ u$
Mass of $^{12}_{6}C$	=	$12.0000000\ u$
Stefan - Boltzmann constant σ	=	$5.7 \times 10^{-8}\ Watt/m^2/K^4$
Mass of sun M_S	=	$1.99 \times 10^{30}\ kg$
Radius of sun R_s	=	$6.96 \times 10^{8}\ m$
Gravitational constant G	=	$6.673 \times 10^{-11}\ Nm^2/kg^2$

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Total No. of Printed Pages-3]

56

CC(M)

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

(OPTIONAL)

PAPER - II

[47]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

Answer the following questions in about 150 words each: **(5×10=50)**

1. a) Examine the Political Sociology Approach to the study of Comparative Politics? **(10)**

b) Discuss the key aspects of Globalization and their role in integrating the countries across the globe? **(10)**

c) Explain the UNESCO's contribution in protecting the world heritage? Give some examples in Indian context. **(10)**

d) 'COP-28 signaled the 'beginning of the end of the fossil fuel era'. Comment. **(10)**

e) 'The relationship between India and Latin America opens a window of opportunity in the current international scenario'. Discuss. **(10)**

2. a) 'In terms of regional security and order ASEAN has been more effective than SAARC' Elucidate. **(20)**

b) Discuss the main tenets of Functionalist Approach to the study International Relations? **(15)**

c) Compare the nature and functioning of pressure groups in the political process of U.S.A. and India. **(15)**

3. a) 'In the case of the First-past-the-post system (FPTP) a party may get more seats than votes. Give your reasoned opinion on the pros and cons of the FPTP. **(20)**

b) 'The history is a graveyard of aristocracies'. Explain the Pareto's statement in the light of Elitist theory of Democracy? **(15)**

c) In the words of Antonio Guterres "No age, no culture, no religion, no nationality and no region is immune" to terrorism. What are your reflections on terrorism and violent extremism spreading across Africa at an alarming rate? **(15)**

4. a) 'Climate change and gender equality are inextricably linked'. Examine the role of women and the need for gender balance in the international climate change process. **(20)**

b) 'Conflicts in South Asia have impinged adversely on the autonomy of the region and its countries. Discuss. **(15)**

c) 'Asia's sea lanes remain vulnerable to a variety of threats. Analyse the statement in the context of rising tensions among countries across the region? **(15)**

SECTION-B

Answer the following questions in about 150 words each: **(5×10=50)**

5. a) 'India has always pursued its foreign policy in a liberal and idealistic manner'.Comment. **(10)**

   b) 'Global south is not a coherent group and does not have a single shared agenda'. Examine the role of India as the 'voice of the Global South'? **(10)**

   c) 'India and the EU are the two of the world's largest economies having shared energies and offering significant trade and investment opportunities. Comment. **(10)**

   d) 'Non-Alignment as an ideology rears its head but offers little for the present age'. Discuss. **(10)**

   e) 'As Afghanistan is the gateway to Central Asia, the American military exit from the country has dampened India's interests in the region. Comment. **(10)**

6. a) Elucidate the key aspects of 'India's Neighbourhood First Policy' and how it enables to strengthen relations with countries? **(20)**

   b) Examine the salient features of India's nuclear doctrine and the debates associated with it? **(15)**

   c) Discuss the elements of continuity and change in India's foreign policy? **(15)**

7. a) Elucidate the reasons for India continuing as a non-permanent member in U.N.Security Council? **(20)**

   b) Examine the social, economic and political consequences of illegal cross border migration on the Indian subcontinent and suggest measures for its mitigation? **(15)**

   c) 'Water remains a politically contested issue in south Asia'. Examine India's transboundary water conflicts with its neighbours? **(15)**

8. a) 'India's attitude and response towards the Israeli-Palestinian conflict have changed over time'. What does the future hold for India-Israel Relationship? **(20)**

   b) 'Disarmament is an obsolete concept in international relations. Discuss . **(15)**

   c) 'The new multilateral world order signifies emergence of new forms of cooperation and dialogue among different countries and regions in the 21st century'. Examine the role of India in shaping the new world order. **(15)**

57

Total No. of Printed Pages-3]

CC(M)

PSYCHOLOGY

(OPTIONAL)

PAPER - II

[49]

Time Allowed - Three Hours	*Maximum Marks-250*

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SECTION-A

Answer the following questions in about 150 words each . **(5×10=50)**

1. a) Discuss the concept of benevolent sexism and its potential consequences for both men and women.

b) Discuss the concept of the glass ceiling effect in the context of workplace dynamics.

c) Suggest some measures that can be used to enhance consumer awareness against deceptive multi-level marketing (MLM) tactics.

d) Analyze the importance of social support systems in the rehabilitation process.

e) What models of motivation can be applied to encourage disadvantaged individuals to pursue personal and community development?

2. a) Examine the impact of potential cultural biases in the testing process on the validity of the selection process. **(20)**

b) Compare and contrast two different approaches to entrepreneurship training: skills-based training and mindset development training. Evaluate the strengths and limitations of each approach in fostering successful entrepreneurs. **(15)**

c) Critically analyze the impact of social influence and group dynamics on community consciousness, exploring how shared values and norms contribute to collective action. **(15)**

3. a) Discuss how a collaboration between educational institutions, career counsellors, and employers can create a comprehensive support system for students transitioning into the workforce. **(20)**

b) Analyze the potential psychological consequences of constant information overload that we are facing in these digital times. **(15)**

c) Explore the societal implications of destigmatization and public awareness campaigns, in addressing the challenges associated with delusional disorder. **(15)**

4. a) Discuss the principles of the psychology of advertising that can be utilized to make successful electoral campaigns by political parties. **(20)**

b) How can psychological insights be applied to the design and implementation of effective rehabilitation programs that address the diverse needs of victims of violence and contribute to the prevention of future violence? **(15)**

c) Using suitable examples, discuss how personality traits like conscientiousness and openness to experience influence academic performance and career choices. **(15)**

SECTION-B

Answer the following questions in about 150 words each. **(5×10=50)**

5. a) Discuss the potential challenges and disparities in fostering achievement motivation across diverse socioeconomic groups.

b) Discuss three measures to achieve social integration in diverse societies.

c) Critically evaluate specific interventions aimed at empowering women in India by examining their potential benefits and any unintended consequences.

d) How can researchers adapt surveys to ensure cultural sensitivity and comparability of data across different populations?

e) Discuss the role of group dynamics in sustaining terrorist organizations.

6. a) Critically analyze the potential effects of self-fulfilling prophecies, including issues of bias, discrimination, and the perpetuation of inequality concerning gender. **(20)**

b) Explore the role of psychological assessments and interventions in optimizing the psychological resilience and decision-making skills of military personnel. **(15)**

c) Using psychological principles, design a comprehensive government policy intended to encourage youth entrepreneurship, including initiatives for training, funding, and mentorship. **(15)**

7. a) Describe the clinical picture of 'Schizoid Personality Disorder' and 'Schizotypal Personality Disorder'. **(20)**

b) Analyze the relationship between personality and leadership. Explain how specific personality traits can contribute to successful leadership outcomes. **(15)**

c) Using suitable research evidence, discuss the key psychological factors that contribute to intergroup conflict and prejudice. **(15)**

8. a) Discuss some psychological factors that may help in mitigating the negative effects of relative and prolonged deprivation. **(20)**

b) Provide a critical analysis of the ethical considerations involved in applying psychological principles to address societal problems. **(15)**

c) Discuss the potential conflicts between individual rights and collective well being when implementing psychological interventions on a large scale. **(15)**

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Total No. of Printed Pages-3]

58

CC(M)

PUBLIC ADMINISTRATION

(OPTIONAL)

PAPER - II

[51]

Time Allowed - Three Hours | ***Maximum Marks-250***

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SECTION - A

Answer the following questions in roughly 150 words each: **(5×10=50)**

1. a) Where do you find Kautilya's idea of administration of justice, local government and social welfare in the present day administrative system in India ? Explain with suitable examples. **(10)**

   b) Briefly examine the structures and functions of Mughal administration with special reference to the Mansabdari system. **(10)**

   c) The district administration's role in the Indian federal system plays a pivotal role in implementing policies of both the state and central government. Elaborate your response. **(10)**

   d) 'Globalisation has a profound impact on public administration'. Comment on the above statement in the light of the changing character of new-age administration. **(10)**

   e) What do you understand by 'good governance'? How does good governance add value to the process of administration? Discuss. **(10)**

2. a) Define the meaning and significance of 'budget'. Critically elaborate the salient features of the budget of the government. **(20)**

   b) How far the rural development programmes have achieved the desired objectives of the state since their inception? Elaborate your answer with reference to any two flagship programmes of the government of India. **(15)**

   c) What do you understand by 'decentralisation'? How does democratic decentralisation facilitate people's participation? Discuss. **(15)**

3. a) Stronger centre-state relationship is a fundamental imperative for efficient and effective implementation of centrally sponsored schemes. Elaborate with suitable examples. **(20)**

   b) What do you mean by 'constitutional morality'? How does it impact governance in a federal system? Discuss. **(15)**

   c) 'Panchayati Raj Institutions [PRIs] have been effective instruments of inclusive development and participatory governance. Elaborate the statement with reference to the working of grassroots democracy in India. **(15)**

4. a) Reforms are necessary and indispensable for efficient administration and good governance. Explain with suitable examples of major administrative reforms in recent times. **(20)**

   b) Critically evaluate the role and performance of National Human Rights Commission (NHRC) in India. Do you think there is any scope for further improvement? Give suggestions. **(15)**

   c) What are the various ways through which the legislature exercises its control over the executive? Examine. **(15)**

SECTION - B

Answer the following questions in roughly 150 words each: **(5×10=50)**

5. a) Briefly examine the significance of Community-Based Disaster Risk Management [CBDRM] in disaster mitigation in rural India. **(10)**

b) Evaluate the role and significance of National Development Council [NDC] in the recent times. Do you think Niti Aayog has considerably diminished the scope and jurisdiction of NDC. Examine. **(10)**

c) What is the role and jurisdiction of the investigating agencies of the government? Do you agree that these agencies have helped weeding out corruption and misconduct among bureaucrats and citizens? Examine. **(10)**

d) 'For better policing and effective maintenance of law and order, it is imperative that police-citizen coordination and cooperation should be given priority. Comment. **(10)**

e) Critically examine the role of Prime Minister's Office [PMO] ? Do you think that the overarching influence of PMO over all other ministries and departments has led to concentration of power and authority. Comment. **(10)**

6. a) Dicuss the essential features of the Indian police system. How far has it been effective in prevention of crime in the modern times? Examine. **(20)**

b) Do you agree that good governance can become an effective instrument of inclusive development? Comment. **(15)**

c) Public Sector Units [PSUs] are critical to India's economic development and hence are indispensable. Do you agree? Elaborate your response. **(15)**

7. a) Distinguish between military and paramilitary forces and their respective scope and jurisdiction. Evaluate the role and challenges of the paramilitary forces in counterinsurgency operations. **(20)**

b) What do you understand by 'local versus global' debate? Give your answer with reference to the concept of 'glocalisation'. **(15)**

c) Women's empowerment is complimented and supplemented by gender inclusive policies. Discuss with suitable examples. **(15)**

8. a) How do different ministries coordinate and cooperate with each other for better formulation and implementation of government policies? Discuss the above statement with reference to the structure and functions of the state secretariat. **(20)**

b) 'The functioning of local self governance was rejuvenated through the 73rd and 74th Constitutional Amendment Acts'. Elaborate. **(15)**

c) Briefly examine the various measures that address the issue of corruption in administration? What reforms are required to ensure accountability and transparency? Elaborate. **(15)**

Total No. of Printed Pages-3]

59

CC(M)

PUNJABI

PAPER - II

[34]

Time Allowed - Three Hours	*Maximum Marks-250*

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SECTION - A

ਪ੍ਰਸ਼ਨ: 1

ੳ. ਬਾਬਾ ਫਰੀਦ ਦੀ ਬਾਣੀ ਵਿਚ 'ਬਿਰਹਾ ਤੂੰ ਸੁਲਤਾਨ' ਦੇ ਭਾਵ ਉਪਰ ਚਾਨਣਾ ਪਾਓ। **(10)**

ਅ. 'ਆਸਾ ਦੀ ਵਾਰ' ਵਿਚ ਸਲੋਕਾਂ ਤੇ ਪਾਉੜੀਆਂ ਦਾ ਆਪਸ ਵਿਚ ਕੀ ਸੰਬੰਧ ਹੈ ? ਸਪੱਸ਼ਟ ਕਰੋ । **(10)**

ਏ. ਹੀਰ ਵਾਰਿਸ ਨੂੰ ਸੁਆਦਲਾ ਤੇ ਲੋਕਪ੍ਰਿਯ ਕਰਨ ਵਿਚ ਬੋਲੀ ਦੀ ਕੀ ਭੂਮਿਕਾ ਹੈ ? ਚਾਨਣਾ ਪਾਓ। **(10)**

ਸ. ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਦੇ ਕਲਾਮ ਦੇ ਕਲਾਤਮਕ ਪੱਖ 'ਤੇ ਵਿਸਥਾਰ ਨੋਟ ਲਿਖੋ । **(10)**

ਹ. ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ ਦੀ ਰਚੀ ਬਾਣੀ 'ਜਪੁਜੀ ਸਾਹਿਬ' ਵਿਚ ਆਏ ਪੰਜ ਖੰਡਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ । **(10)**

ਪ੍ਰਸ਼ਨ: 2

ੳ. ਵਾਰਿਸ ਸ਼ਾਹ ਨੇ ਹੀਰ ਦੀ ਕਥਾ ਨੂੰ ਤ੍ਰਾਸਦਕ ਅੰਤ ਦੇ ਕੇ ਇਸ ਨੂੰ ਇਕ ਦੁਖਾਂਤ ਬਣਾ ਦਿੱਤਾ ਹੈ। ਚਰਚਾ ਕਰੋ । **(15)**

ਅ. ਉਹ ਕਿਹੜੇ ਆਧਾਰ ਹਨ ਜਿਹਨਾਂ ਕਰਕੇ ਸ਼ੇਖ ਫ਼ਰੀਦ ਜੀ ਦੀ ਬਾਣੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦਾ ਅੰਗ ਬਣੀ? **(20)**

ਏ. 'ਜਪੁਜੀ ਸਾਹਿਬ' ਵਿਚ ਮਿਲਦੇ ਅਧਿਆਤਮਕ ਪ੍ਰਾਪਤੀ ਦੇ ਮਾਰਗਾਂ ਸੰਬੰਧੀ ਵਿਸਥਾਰ ਚਰਚਾ ਕਰੋ । **(15)**

ਪ੍ਰਸ਼ਨ: 3

ੳ. ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਆਪਣੇ ਕਲਾਮ ਰਾਹੀਂ ਸਮਕਾਲੀ ਰਾਜਨੀਤਿਕ, ਸਮਾਜਕ ਅਤੇ ਆਰਥਕ ਹਾਲਤਾਂ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਦਾ ਹੈ। ਉਦਾਹਰਨਾਂ ਸਹਿਤ ਦੱਸੋ। **(20)**

ਅ. ਹੀਰ ਵਾਰਿਸ ਵਿਚ ਚਿਤ੍ਰਿਤ ਪੰਜਾਬੀ ਜੀਵਨ ਤੇ ਸਭਿਆਚਾਰ ਦੀ ਰੂਪ-ਰੇਖਾ ਬਿਆਨ ਕਰੋ । **(15)**

ਏ. 'ਬਾਰਹਮਾਹ ਤੁਖਾਰੀ' ਅਧਿਆਤਮਕ ਬਿਰਹੋਂ ਦੀ ਉੱਤਮ ਰਚਨਾ ਹੈ। ਸਪੱਸ਼ਟ ਕਰੋ । **(15)**

ਪ੍ਰਸ਼ਨ: 4

ੳ. ਹੀਰ ਵਾਰਿਸ ਸਮਕਾਲੀ ਸਮਾਜ ਦਾ ਚਿਤਰਣ ਹੀ ਨਹੀਂ ਪੇਸ਼ ਕਰਦੀ ਸਗੋ ਪ੍ਰਕਿਰਤੀ ਦਾ ਸਮਕਾਲੀ ਬਿੰਬ ਵੀ ਪੇਸ਼ ਕਰਦੀ ਹੈ। ਵਿਚਾਰ ਕਰੋ । **(15)**

ਅ. ਫਰੀਦ ਬਾਣੀ ਦੀ ਭਾਸ਼ਾ ਉੱਪਰ ਵਿਚਾਰ ਕਰੋ । **(20)**

ਏ. ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਦੇ ਕਲਾਮ ਵਿਚ ਮੁਰਸ਼ਦ ਭਗਤੀ ਜਾਂ ਮੁਰਸ਼ਦ ਨਾਲ ਪਿਆਰ ਦਾ ਵਿਸ਼ੇਸ਼ ਸਥਾਨ ਹੈ। ਉਦਾਹਰਨਾਂ ਸਹਿਤ ਚਰਚਾ ਕਰੋ । **(15)**

SECTION - B

ਪ੍ਰਸ਼ਨ: 5

ੳ. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਦੀ ਪੁਸਤਕ 'ਜ਼ਿੰਦਗੀ ਦੀ ਰਾਸ' ਵਿਚਲੇ ਨਿਬੰਧ ਦੇ ਆਧਾਰ 'ਤੇ 'ਖੁਸ਼ੀ' ਦੀਆਂ ਬੁਨਿਆਦਾਂ 'ਤੇ ਨੋਟ ਲਿਖੋ। **(10)**

ਅ. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਪੁਸਤਕ 'ਸਾਹਿਤਿਆਰਥ' ਵਿਚ ਸ਼ਾਮਿਲ ਨਿਬੰਧ 'ਕਵਿਤਾ ਤੇ ਪ੍ਰਕਿਰਤੀ' 'ਤੇ ਨੋਟ ਲਿਖੋ। **(10)**

ੲ. 'ਚੰਦਨਵਾੜੀ' ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਦੇ ਆਧਾਰ 'ਤੇ ਚਾਤ੍ਰਿਕ ਦੇ ਸਮਾਜਕ ਅਤੇ ਸਦਾਚਾਰਕ ਸਰੋਕਾਰਾਂ 'ਤੇ ਚਾਨਣਾ ਪਾਓ। **(10)**

ਸ. 'ਚਿੱਟਾ ਲਹੂ' ਨਾਵਲ ਬਾਰੇ ਪ੍ਰਿੰਸੀਪਲ ਤੇਜਾ ਸਿੰਘ ਦੇ ਲਿਖੇ ਨਾਵਲ ਦੇ ਮੁੱਖ ਬੰਦ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰੋ। **(10)**

ਹ. ਬਲਵੰਤ ਗਾਰਗੀ ਦੇ ਨਾਟਕ 'ਸੁਲਤਾਨ ਰਜ਼ੀਆ' ਦੀ ਨਾਟ ਸੰਵੇਦਨਾ ਸੰਬੰਧੀ ਵਿਸਥਾਰ ਚਰਚਾ ਕਰੋ। **(10)**

ਪ੍ਰਸ਼ਨ: 6

ੳ. ਬਲਰਾਜ ਸਾਹਨੀ ਰਚਿਤ 'ਮੇਰਾ ਪਾਕਿਸਤਾਨੀ ਸਫ਼ਰਨਾਮਾ' 'ਤੇ ਵਿਸਥਾਰ ਪੂਰਵਕ ਲੇਖ ਲਿਖੋ। **(15)**

ਅ. ਸ਼ਾਹ ਮੁਹੰਮਦ ਦੀ ਰਚਨਾ 'ਜੰਗ ਸਿੰਘਾਂ ਤੇ ਫ਼ਰੰਗੀਆਂ' ਦਾ ਸਾਹਿਤਕ ਪੱਖ ਉਜਾਗਰ ਕਰੋ। **(20)**

ੲ. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਦੀ ਪੁਸਤਕ 'ਮੇਰੀਆਂ ਅਭੁੱਲ ਯਾਦਾਂ' ਵਿਚਲੇ ਲੇਖ 'ਤਾਜ ਅਤੇ ਸਰੂ' ਬਾਰੇ ਆਪਣੇ ਵਿਚਾਰ ਲਿਖੋ। **(15)**

ਪ੍ਰਸ਼ਨ: 7

ੳ. ਬਲਵੰਤ ਗਾਰਗੀ ਦੇ ਨਾਟਕ 'ਲੋਹਾ ਕੁੱਟ' ਦੀ ਕੇਂਦਰੀ ਸਮੱਸਿਆ ਦੀਆਂ ਵਿਭਿੰਨ ਪਰਤਾਂ 'ਤੇ ਚਾਨਣਾ ਪਾਓ। **(15)**

ਅ. 'ਇਕ ਮਿਆਨ ਦੋ ਤਲਵਾਰਾਂ' ਨਾਵਲ ਇਤਿਹਾਸ ਤੇ ਗਲਪ ਦਾ ਸੁਮੇਲ ਹੈ। ਚਰਚਾ ਕਰੋ। **(20)**

ੲ. ਧਨੀਰਾਮ ਚਾਤ੍ਰਿਕ ਪੁਸਤਕ 'ਸੁਫ਼ੀਖਾਨਾ' ਦੀ ਭੂਮਿਕਾ ਸੰਬੰਧੀ ਵਿਚਾਰ ਚਰਚਾ ਕਰੋ। **(15)**

ਪ੍ਰਸ਼ਨ: 8

ੳ. ਬਲਰਾਜ ਸਾਹਨੀ ਦੇ ਲਿਖੇ 'ਮੇਰਾ ਰੂਸੀ ਸਫ਼ਰਨਾਮਾ' ਦੇ ਕਲਾਤਮਕ ਪੱਖ 'ਤੇ ਵਿਸਥਾਰ ਚਰਚਾ ਕਰੋ। **(15)**

ਅ. 'ਪਵਿੱਤਰ ਪਾਪੀ' ਨਾਵਲ ਦੀ ਮੂਲ ਸਮੱਸਿਆ ਕੀ ਹੈ? ਉਦਾਹਰਨਾਂ ਸਹਿਤ ਸਪੱਸ਼ਟ ਕਰੋ। **(15)**

ੲ. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਪੁਸਤਕ 'ਪ੍ਰਸਿੱਧ ਪੰਜਾਬੀ ਕਵੀ' ਵਿਚ ਸ਼ਾਮਿਲ ਕਵੀ ਹਾਸ਼ਮ ਦੇ ਜੀਵਨ ਬਾਰੇ ਦੱਸਦੇ ਹੋਏ ਉਸ ਦੀ ਇਸ ਪੁਸਤਕ ਵਿਚ ਸ਼ਾਮਿਲ ਰਚਨਾ ਸੰਬੰਧੀ ਚਰਚਾ ਕਰੋ। **(20)**

020482

Total No. of Printed Pages-3]

60

CC(M)

SOCIOLOGY

(OPTIONAL)

PAPER - II

[53]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page should be left in between answers to various questions.*

SECTION - A

Answer the following questions in about 150 words each. **(5×10=50)**

1. a) What is dualistic cosmology?

   b) What is four noble truth of Buddhism?

   c) What is Indology?

   d) What is dominant Caste?

   e) What is Civilization and Culture?

2. a) What is social movement? Discuss any social movement in Post-independent India. **(20)**

   b) What is matrilineal kinship system? Discuss with suitable examples. **(15)**

   c) What is Structural violence? Illustrate with an example from Indian society? **(15)**

3. a) Critically illustrate, how colonial policy impacted the tribes in India? **(20)**

   b) What is political elites? Discuss their role in regional politics in India. **(15)**

   c) Critically discuss any recent agrarian problem in India. **(15)**

4. a) What is Social determinants of fertility? Discuss with examples from Indian context. **(20)**

   b) Critically discuss the problems faced by modern families in India? Discuss. **(15)**

   c) What is Social mobility? Discuss and differentiate between horizontal and vertical social mobility in Indian context. **(15)**

SECTION - B

Answer the following questions in about 150 words each. **(5×10=50)**

5. a) What is the difference between Caste and Class?

   b) What is *Wergild*?

   c) What is *Avunculate* and *Amitate*?

   d) What is "tribalisation"?

   e) What is theory of *Karma*?

6. a) Critically discuss the Caste among Muslims in India. **(20)**

b) Do you think Climate induced migration is an important issue in India? Discuss. **(15)**

c) What is *Udaan* scheme? Discuss its relevance for skill development. **(15)**

7. a) What is Gig-economy? Illustrate with suitable examples. **(20)**

b) Discuss and differentiate between Custom and Law in Indian Society. **(15)**

c) Discuss the forms of Endogamy in Indian society with suitable examples. **(15)**

8. a) Discuss the relationship between city life and civil society organization in India. **(20)**

b) Higher education is an authoritative asset of India's rich and middle class, Critically discuss. **(15)**

c) Do you think persistent poverty undermines social justice in India? **(15)**

61

Total No. of Printed Pages -4

CC(M)
URDU
(OPTIONAL)
(LITERATURE)
PAPER - II
[55]

[Maximum Marks - 250] *[Time Allowed - 3 Hours]*

سوالات سے متعلق خاص ہدایات

(سوالوں کے جواب تحریر کرنے سے پہلے درج ذیل ہدایات کو غور سے پڑھئے)

۱۔ اس پرچے میں آٹھ سوالات ہیں جو دو حصوں (سیکشن) پر مشتمل ہیں۔

۲۔ امیدوار کو کل پانچ سوالوں کے جواب دینے ہیں۔

۳۔ صرف پانچ سوالوں کے جواب لکھئے۔ سوال نمبر **1** اور **5** کے جواب لازمی ہیں۔ دونوں سیکشن کے باقی سوالات میں سے صرف تین سوالوں کے جواب دینے ہیں لیکن ہر سیکشن کے سوالات میں سے کم از کم ایک سوال کا انتخاب ضروری ہے۔

۴۔ ہر سوال یا سوال کے حصے کے نمبر اس کے سامنے درج کر دیئے گئے ہیں۔

۵۔ جوابات اُردو میں ہی مطلوب ہیں۔

۶۔ سوالات کے جوابات کے لئے الفاظ کی جو تعداد مقرر کی گئی ہے اس کی پابندی لازمی ہے۔

۷۔ سوالات کے جوابات کو ترتیب وار اہمیت دی جائے گی۔ جب تک کوئی جواب یا اس کا حصہ کاٹ کر مسترد نہ کر دیا گیا ہو سوال کا جواب تصور کیا جائے گا اگرچہ جواب جزوی طور پر ہی حل کرنے کی کوشش کی گئی ہو۔ کوئی صفحہ یا صفحے کا کوئی حصہ اگر چھوڑا جائے تو اس کو کاٹنا ضروری ہے۔

SECTION - A

1. درج ذیل سوالوں کے جوابات دی گئی ہدایات کے مطابق تحریر کیجئے۔ (20+15+15=50)

(الف) مندرجہ ذیل اقتباس کی تشریح سیاق وسباق کے حوالے سے (200 الفاظ میں) کیجئے۔ (20)

''عہد قدیم کے مؤرخ لکھتے ہیں کہ اگلے زمانہ میں فارس کے شرفا اپنے بچوں کے لئے تین باتوں کی تعلیم میں بڑی کوشش کرتے تھے۔ شہسواری، تیراندازی اور راست بازی۔ شہسواری اور تیراندازی تو بے شک سہل آجاتی ہوگی مگر کیا اچھی بات ہوتی اگر ہمیں معلوم ہوجاتا کہ راست بازی کن کن طریقوں سے سکھاتے تھے اور وہ کون سی سپر تھی کہ جب دروغ دیوزاد آکر ان کے دلوں پر تیشۂ جادو مارتا تھا تو یہ اس چوٹ سے اس کی اوٹ میں بچ جاتے تھے۔

اس میں شک نہیں کہ دنیا بری جگہ ہے۔ چند روزہ عمر میں بہت سی باتیں پیش اتی ہیں جو اس مشتِ خاک کو اس دیو آتش ازاد کی اطاعت کے لئے مجبور کرتی ہیں۔ انسان سے اکثر ایسا جرم ہوجاتا ہے کہ اگر قبولے تو مرنا پڑتا ہے نا چار مکرنا پڑتا ہے۔ کبھی ابلہ فریبی کر کے جاہلوں کو پھنساتا ہے۔ جب لقمہ رزق کا پاتا ہے۔ اس کے علاوہ بہت مزے دنیا کے ہیں کہ مکرو دغا ان کی چاٹ لگاتی ہے اور جزوی جزوی خطائیں ہوجاتی ہیں جن سے مکرتے ہی بن آتی ہے۔ غرض بہت کم انسان ہوں گے جن میں یہ حوصلہ واستقلال ہو کہ راستی کے راستے میں ہر دم ثابت قدم ہی رہیں۔

یہ بھی یاد رہے کہ انسان کے سچ بولنے کے لئے سننے والے بھی ضروری ہیں کیونکہ خوشامد جس کی دوکان میں آج موتی برس رہے ہیں اس سے زیادہ جھوٹ کیا ہوگا اور کون ایسا ہے جو اس کی قید کا زنجیری نہیں، ڈرپوک بچارا ڈر کا مارا خوشامد کرتا ہے تابعدار امید کا بھوکا آقا کو خوش کر کے پیٹ بھرتا ہے۔ دوست محبت کا بندہ ہے اپنے دوست کے دل میں اسی سے گھر کرتا ہے۔ بہت سے ایسے بھی ہیں کہ نہ غلام ہیں نہ ڈرپوک انہیں باتوں ہی باتوں میں خوش کر دینے کا شوق ہے۔ اسی طرح جب جلسوں میں نمودئے گدھوں کے دعوے بُل ڈاگ کی آواز سے کئی میدان آگے نکل جاتے ہیں تو ان میں وہ لوگ بھی ہوتے ہیں جنہیں کچھ اُمید، کچھ ڈر، کچھ مروت سے غرض چار و نا چار، کبھی ان کے ساتھ، کبھی پیچھے پیچھے دوڑنا پڑتا ہے۔

(ب) غالبؔ کے خطوط بطور تاریخی دستاویز (150 الفاظ میں) (15)

(ج) پریم چند کی ناول نگاری اور ''گئودان'' (150 الفاظ میں) (15)

2. درج ذیل پر تنقیدی نوٹ لکھئے۔ (20+15+15=50)

(الف) اُردو نثر کی تاریخ میں ''باغ و بہار'' کی اہمیت (200 الفاظ میں) (20)

(ب) ''غبار خاطر'' کے اسلوب کی خصوصیات (150 الفاظ میں) (15)

(ج) ''اپنے دکھ مجھے دے دو'' کی روشنی میں بیدی کا افسانوی امتیاز (150 الفاظ میں) (15)

3. درج ذیل پر تنقیدی مضمون لکھئے۔ (20+15+15=50)

(الف) ''میں نے مراسلے کو مکالمہ بنادیا'' اس قول کی روشنی میں مکتوباتِ غالب کی اہمیت (200 الفاظ میں) (20)

(ب) محمد حسین آزاد کی تخلیقات میں نیرنگ خیال کی اہمیت (150 الفاظ میں) (15)

(ج) مکتوبات ابوالکلام آزاد کی ادبی قدر و قیمت (150 الفاظ میں) (15)

4. درج ذیل پر تنقیدی مضمون لکھئے۔ (20+15+15=50)

(الف) اُردو نثر کے فروغ میں ''باغ و بہار'' کا کردار (200 الفاظ میں) (20)

(ب) پریم چند اور دیہی معاشرت کی ترجمانی ''گئودان'' کی روشنی میں (150 الفاظ میں) (15)

(ج) اُردو انشائیہ نگاری میں محمد حسین آزاد کا مقام و مرتبہ (150 الفاظ میں) (15)

SECTION - B

درجِ ذیل سوالوں کے جوابات دی گئی ہدایات کے مطابق تحریر کیجئے۔

5. درجِ ذیل اشعار کی تشریح مع سیاق و سباق کیجئے۔ (5×10=50)

(الف) مجھ کو شاعر نہ کہو میرؔ کہ صاحب میں نے (100 الفاظ میں) (10)
دردو غم کتنے کیے جمع تو دیوان کیا

(ب) ہوں گرمیِ نشاطِ تصور سے نغمہ سنج (100 الفاظ میں) (10)
میں عندلیبِ گلشنِ نا آفریدہ ہوں

(ج) عروجِ آدمِ خاکی سے انجم سہمے جاتے ہیں (100 الفاظ میں) (10)
کہ یہ ٹوٹا ہوا تارا مہِ کامل مہ بن جائے!

(د) بہت پہلے سے ان قدموں کی آہٹ جان لیتے ہیں (100 الفاظ میں) (10)
تجھے اے زندگی ہم دور سے پہچان لیتے ہیں

(ہ) صبا نے پھر درِ زنداں پہ آ کے دی دستک (100 الفاظ میں) (10)
سحر قریب ہے، دل سے کہو نہ گھبرائے

6. درج ذیل پر تنقیدی مضمون لکھئے (20+15+15=50)

(الف) اختر الایمان کی نظم ''کوزہ گر'' کا خلاصہ (200 الفاظ میں) (20)

(ب) میر حسنؔ کی کردار نگاری (''سحر البیان'' کی روشنی میں (150 الفاظ میں) (15)

(ج) اقبالؔ کی نظم ''ساقی نامہ'' کی فنی وفکری خصوصیات (150 الفاظ میں) (15)

7. مندرجہ ذیل پر تنقیدی تبصرہ کیجئے۔ (20+15+15=50)

(الف) اُردو مثنوی نگاری کی تاریخ میں ''سحر البیان'' کی اہمیت (200 الفاظ میں) (20)

(ب) کلامِ فراق کے شعری محاسن (گلِ نغمہ کی روشنی میں) (150 الفاظ میں) (15)

(ج) غالب کی مرثیہ نگاری (150 الفاظ میں) (15)

8. مندرجہ ذیل پر تنقیدی نوٹ لکھئے۔ (20+15+15=50)

(الف) فیضؔ احمد فیض کی نظم نگاری ''دستِ صباء'' کی روشنی میں) (200 الفاظ میں) (20)

(ب) فراقؔ کی نظموں میں ہندوستانی دیومالائی عناصر (''گلِ نغمہ'' کی روشنی میں) (150 الفاظ میں) (15)

(ج) اختر الایمان کی شاعری کے امتیازات (مجموعہ ''بنتِ لمحات'' کی روشنی میں) (150 الفاظ میں) (15)

Total No. of Printed Pages-3]

CC(M)

ZOOLOGY

(OPTIONAL)

PAPER - II

[57]

Time Allowed - Three Hours	*Maximum Marks-250*

INSTRUCTIONS

Please read each of the following instructions carefully before attempting the paper.

i) *There are **Eight** questions divided in **Two** Sections and printed in English. Candidate has to attempt **Five** questions in all. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least **One** question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page should be left in between answers to various questions.*

SECTION-A

Answer the following in about 150 words each: **(5×10=50)**

1. a) Describe the process of formation of three germinal layers. **(10)**

b) Explain the functions of each hormone and enzyme released by liver and pancreas in digestion of food and maintenance of blood glucose balance. **(10)**

c) Outline the structural and functional characteristics of polytene chromosomes. **(10)**

d) Discuss the rules established by the International Code of Zoological Nomenclature (ICZN) for naming and classifying animal species. **(10)**

e) Describe the process of oxidative phosphorylation in cellular respiration, highlighting its key components and steps. **(10)**

2. a) Differentiate between the rough and smooth endoplasmic reticulum(ER), highlighting the role of each in cellular processes. Discuss the modifications of secretory proteins occurring in the lumen of rough ER. **(20)**

b) Explain Hardy-Weinberg law using appropriate mathematical equation. How does it serve as a fundamental tool in population genetics? Discuss the assumptions underlying the Hardy-Weinberg equilibrium and explain how their violations can lead to deviations from equilibrium. **(15)**

c) With the help of suitable examples, compare genetic and induced teratogenesis in embryonic development. Elaborate on the consequences of teratogenic effects on fetal development and potential preventive measures. **(15)**

3. a) Describe the process of eukaryotic transcriptional regulation, emphasizing the roles of transcription factors and enhancers. Explain how non-coding RNAs, such as micro RNAs and long non-coding RNAs, contribute to post-transcriptional gene regulation in eukaryotes. **(20)**

b) What is the relationship between vitamins and coenzymes in cellular metabolism? With the help of examples of coenzymes derived from vitamins, discuss their functions in various biochemical reactions. Add a note on the diseases caused due to avitaminosis. **(15)**

c) What are the sources and types of stem cells? Explore the potential applications of stem cells in various fields, such as regenerative medicine and disease treatment. Discuss the ethical considerations surrounding the use of embryonic stem cells and compare them with adult stem cells. **(15)**

4. a) Explain different types of genetic mutations. Discuss various endogenous and exogenous factors that contribute to mutagenesis and the mechanisms by which mutagens induce genetic mutations. Add a note on the significance of understanding genetic mutations in disease development, and potential applications in biotechnology. **(20)**

b) Explain the sequential process of synaptic transmission with acetylcholine as neurotransmitter. **(15)**

c) 'Fossils present a strong evidence in support of evolution'. Justify the statement in the light of horse evolution. **(15)**

SECTION-B

Answer the following in about 150 words each: **(5×10=50)**

5. a) Discuss the roles of sex chromosomes, dosage compensation, and the Sxl gene in sex determination in Drosophila. **(10)**

b) Arrange the enzymatic participants in DNA replication in sequential order and describe their distinct roles at each step. **(10)**

c) With the help of a diagram, explain countercurrent multiplier in the kidney and discuss its physiological significance. **(10)**

d) Describe the structure of a cosmid and explain its advantages over a plasmid for gene cloning. **(10)**

e) Explain the sliding filament theory of muscle contraction. **(10)**

6. a) Explain the universal nature as well as redundancy, degeneracy, and specificity of genetic code. Discuss the role of codons, tRNA, and ribosomes in translating genetic information into proteins. Add a note on the implications of mutations on the genetic code and protein synthesis. **(20)**

b) Explain the structure of proteins and the significance of amino acids in protein formation. Discuss the functions of proteins in enzymatic catalysis, structural support, and cellular signaling. **(15)**

c) Describe the process of speciation in evolution, providing examples to illustrate different modes of speciation. **(15)**

7. a) Describe the structure and function of antibodies. Give a detailed account of the key steps involved in the generation of antibodies and their role as an essential component of humoral immunity. **(20)**

b) Using appropriate examples, explain pedigree analysis as a method to illustrate the inheritance patterns of genetic diseases. **(15)**

c) Discuss the physiological processes involved in human vision and visual perception. **(15)**

8. a) Explain the factors and mechanisms involved in the blood coagulation process, highlighting the importance of the regulation of coagulation cascades. Add a note on different types of anticoagulants and their clinical application. **(20)**

b) Explain continental drift with the help of the evidence supporting this geological phenomenon and the relevance of continental drift in understanding present-day animal distributions. **(15)**

c) What is genomics and how do molecular techniques like RFLP, RAPD, and AFLP contribute to genomics research? How does proteomics complement genomics in understanding cellular functions? **(15)**