A

Series
A

CODE : 16

Write here Roll Number and Answer Sheet No.

Question Booklet Sl. No.

Roll No.

nswer Sheet No.

Duration : 1 Hour

Total Marks : 100

Declaration by Invigilator :
I Certify that I have checked that the Roll Number and the Answer Sheet Number written by the Candidate on the question paper and the OMR Sheet are correct and the Answer Sheet Number matches the Question Booklet Number exactly.

Signature of the Invigilator with Name

Declaration by andidate :
I undertake not to employ any unfair means in this exam. I have checked the Question Booklet Number and the Answer Sheet Number and both are identical and have been correctly entered by me wherever indicated.

Signature of the Candidate with Name

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS TO CANDIDATES

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1. The Roll No. is a **7** digit No., the candidate needs to circle the Roll No. in the Answer Sheet.
2. The appropriate Circle should be shaded for Roll No. This should be done carefully because only the shaded circles are scanned.
3. Valuation of Answer Sheet will be done on the computer. Candidate should not make any stray marks on the Answer Sheet, tamper with or mutilate it. Otherwise it will not be evaluated.
4. Please check all the pages of the Booklet carefully. In case of any defect, please ask the Invigilator for replacement of the Booklet.
5. You must not tear off or remove any sheet from this Booklet. The Answer Sheet must be handed over to the Invigilator before you leave the Examination Hall.
6. All questions are compulsory and each Question carries **2** marks.
7. **The paper carries negative marking. For each wrong answer 0.50 mark will be deducted.**
8. This Booklet contains 50 questions.
9. Use of Calculator/Palmtop/Laptop/Other Digital Instrument/Mobile/Cell Phone/Pager is **not** allowed.
10. Candidates found guilty of misconduct/using unfair means in the Examination Hall will be liable for appropriate penal/legal action.
11. **No Rough Work is to be done on the Answer Sheet and only single OMR Answer Sheet will be provided.**
12. This booklet contains **12** pages.
13. **Directions** : Each question or incomplete statement is followed by four alternative suggested answers or completions. In each case, you are required to select the one that correctly answers the question or completes the statement and blacken (●) appropriate circle a, b, c or d by Blue / Black Ball-Point Pen provided by the board against the question concerned in the Answer Sheet.
14. Mark your answer by shading the appropriate circle against each question. The circle should be shaded completely without leaving any space. The correct method of shading is given below.

Wrong Method	Wrong Method	Wrong Method	Correct Method
○ ⊗ ○ ○	○ ⊘ ○ ○	○ ◉ ○ ○	○ ● ○ ○

The Candidate must mark his/her response after careful consideration, as it is not possible to change the response once it is marked.

15. There is only one correct answer to each question. You should blacken (●) the circle of the appropriate column, viz., a, b, c or d. If you blacken (●) more than one circle against any one question, the answer will be treated as wrong.
16. Use the space for rough work given at the beginning of the Question Booklet only and not on the Answer Sheet.
17. **You are NOT required to mark your answers in this Booklet. All answers must be indicated in the Answer Sheet only.**

DO NOT WRITE HERE

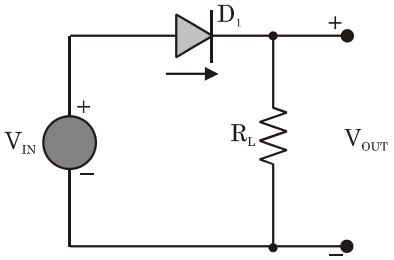
SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

1. Alternating current is generated by rotating a coil in
   (a) Electric field (b) Magnetic field
   (c) Inductive field (d) None of the above

2. _____ is used to measure the width of wires.
   (a) Try square (b) Mallet
   (c) Wire gauge (d) None of these

3. Identify the following circuit



   (a) Half wave rectifier (b) Full wave rectifier
   (c) Bridge rectifier (d) None of these

4. MOSFET is
   (a) Metal Oxide Surface Field Effect Transistor
   (b) Metal Oxide Semiconductor Field Effect Transistor
   (c) Metal Oxidized Selenium Field Effect Transistor
   (d) Metal Of Surface Field Effect Transistor

5. Convert the fractional binary number 0001.0010 to decimal.
   (a) 1.40 (b) 1.1
   (c) 1.20 (d) 1.

6. _____ converts DC electrical power in to mechanical power.
   (a) DC generator (b) DC motor
   (c) DC rotor (d) AC enerator

7. Outermost cover of the DC machine is
   (a) Armature (b) Rotor
   (c) Yoke (d) Pole

8. In a DC machine, internally developed alternating emf is converted to unidirectional emf by

(a) Bearing
(b) rmature winding
(c) Pole shoe
(d) Commutator

9. Number of parallel paths in a lap winding is

(a) 1
(b) 2
(c) Equal to number of poles
(d) alf of the number of poles

10. Which of the following type of transformer has single magnetic circuit ?

(a) Core type
(b) Shell type
(c) Berry type
(d) All the above

11. According to Kirchhoff's current law

(a) In a network, algebraic sum of emfs inside a closed loop is zero
(b) Algebraic sum of all the current meeting at a junction point is always zero
(c) Action and reactions are equal and opposite
(d) None of these

12. In _____, all the poles are projected out from the surface of the rotor.

(a) Salient pole type
(b) Smooth cylindrical type
(c) Non salient type
(d) None of these

13. A 4 pole, 1500 rpm, star connected alternator has 9 slots/pole and 8 conductors per slot. Total number of conductors in this alternator would be

(a) 36
(b) 32
(c) 288
(d) 48

14. A 3 phase, 50 Hz, 6 pole induction motor has a full load percentage slip of 3%. It actual speed is

(a) 1000 rpm
(b) 990 rpm
(c) 100 rpm
(d) 970 rpm

15. In squirrel cage rotor, the slots are skewed because

(a) To reduce losses
(b) To give support
(c) To reduce friction
(d) To reduce magnetic hum

16. Which of the following materials is a good semi-conductor ?

(a) Copper
(b) Mica
(c) Porcelin
(d) Germanium

17. Which of the following is a unit of admittance ?

(a) Ohm
(b) Siemens
(c) Ampere
(d) Coulomb

18. The total 3 phase power in a star or delta connected circuit is

(a) $\sqrt{3}\ V_L\ I_L \cos\phi$
(b) $\sqrt{3}\ V_L\ I_L$
(c) $V_L\ I_L \cos\phi$
(d) $\sqrt{3}\ V_L \cos\phi$

19. In the energy meter, constant speed of rotation of disc is provided by

(a) Shunt magnet
(b) Series magnet
(c) Braking magnet
(d) None of these

20. The type of wires buried under the wall at the time of plastering are called

(a) Surface wiring
(b) Casing capping
(c) Cleat wiring
(d) Concealed conduit

21. This type of wire consists of tinned conductor coated with rubber insulation. This is further covered with protective cotton and bitumen compound and finally finished with wax.

(a) VIR wire
(b) CTS wire
(c) TRS wire
(d) PVC wire

22. Fuse is always connected in _____ with the circuit.

(a) Parallel
(b) Series
(c) Neutral
(d) None of these

23. Which of the following is a disadvantage of PVC wires ?

(a) Chemically inert
(b) Non-hygroscopic
(c) bsorbs moisture
(d) Softens at high temperature

24. Basic difference between bipolar transistor and field effect transistor is that

(a) Bipolar transistor is a current operated device and field effect transistor is a voltage operated device
(b) Bipolar transistor is a voltage operated device and field effect transistor is a current operated device
(c) Both (a) and (b) are true
(d) None of the above

25. A fuse is a

(a) Current limiting device
(b) Protective device
(c) Voltage limiting device
(d) All of these

26. For ideal voltage source, internal resistance is

(a) Infinite
(b) Zero
(c) Constant
(d) None of these

27. ccording to Ohm's law, current flowing in a circuit is inversely proportional to

(a) Voltage
(b) Power
(c) Resistance
(d) ll the above

28. 1 joule = _____ calorie.

(a) 0.21
(b) 0.
(c) 0.28
d) 0.

29. The EMF induced in a conductor is measured in

(a) Ohm
(b) Watt
(c) Volt
(d) Ampere

30. The relationship between the line and phase voltage of a delta connected circuit is given by

(a) $V_L = V_{ph}$ (b) $V_L = \sqrt{3}\ V_{ph}$

(c) $V_L = V_{ph}/\sqrt{2}$ (d) $V_L = (2/\pi)V_{ph}$

31. Resistance of a wire always increases if

(a) Temperature is reduced

(b) Temperature is increased

(c) Number of free electrons available become less

(d) Number of free electrons available become more

32. The moving coil in a electrodynamometer wattmeter is connected

(a) In series with the fixed coil

(b) Across the supply terminals

(c) In series with the load

(d) Across the load

33. n AM transmitter transmits a 80% modulated signal with a carrier power of 120 W. Find the total transmitted power.

(a) 120 W (b) 185.5 W

(c) 158.4 W (d) 581.4 W

34. The resistance of a lamp is 10 ohms and current through it is 2 A. Its power is

(a) 10 W

(b) 20 W

(c) 30 W

(d) 40 W

35. _____ is the variation of the frequency of the modulated signal from the frequency of the carrier signal.

(a) Frequency modulation

(b) Frequency demodulation

(c) Frequency deviation

(d) None of the above

36. One weber is constituted by _____ lines of force.

(a) 10^2 (b) 10^4 (c) 10^6 (d) 10^8

37. If the armature conductors in the DC machine is connected in wave type winding, number of parallel paths for A will be

(a) A = P (b) A = 0 (c) A = 2 (d) A = P/2

38. A 220 V, DC motor has an armature resistance of 0.75 ohm. It is drawing an armature current of 30 A, driving a certain load. Calculate the induced emf in the motor under this condition.

(a) 30 V (b) 197.5 V

(c) 24.76 V (d) 247.6 V

39. The value of resistance is measured by

(a) Wattmeter (b) Ohm meter

(c) Voltmeter (d) Current meter

40. For star connection, the phase voltage is _____ times the line voltage.

(a) $\sqrt{3}$ (b) $1/\sqrt{3}$ (c) $\sqrt{2}$ (d) $1\ \sqrt{2}$

41. verage power consumed by a pure capacitor is

(a) 0 (b) Infinity

(c) 10 W (d) 5 W

42. A 4 pole, 1500 rpm DC generator has a lap wound armature having 24 slots with 10 conductors per slot. If the flux per pole is 0.04 Wb, the emf generated in the armature is

(a) 120 V (b) 240 V (c) 480 V (d) 960 V

43. In a pure inductive circuit

(a) Current leads voltage by 90 degree

(b) Current lags voltage by 90 degree

(c) Voltage lags current by 90 degree

(d) Current and voltage are in phase with each other

44. In Kirchhoff's voltage law, the loops should not be considered involving

(a) Current source (b) Voltage source

(c) Resistor (d) ll the above

45. Two voltmeters A and B, having resistances of 5.2k ohm and 15k ohm respectively are connected in series across 240 V supply. What is the reading on voltmeter B ?

(a) 61.78 V (b) 178.21 V

(c) 52.34 V (d) 240 V

46. A 8 ohm resistor is in series with a parallel combination of two resistors 12 ohm and 6 ohm. If the current in the 6 ohm resistor is 5 A, determine the total power dissipated in the circuit.

(a) 75 W (b) 150 W (c) 450 W (d) 675 W

47. The total number of lines of force existing in a particular magnetic field is called

(a) Magnetic force (b) Magnetic flux

(c) Magnetic field (d) None of these

48. The RMS value of the sinusoidal alternating current is _____ times the maximum or peak value of that alternating current.

(a) 1 (b) $\sqrt{2}$ (c) $1/\sqrt{2}$ (d) $2\sqrt{2}$

49. If the coefficient of coupling K = 1, then the coils are said to be

(a) Loosely coupled

(b) Tightly coupled

(c) Decoupled

(d) None of these

50. In _____, the bipolar transistor is fully-OFF operating as a switch and the collector current is equal to zero.

(a) ctive region (b) Passive region

(c) Saturation region (d) Cut-off region

