Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160310 Date:28-11-2024

Subject Name:Rehabilitation Engineering

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define Prosthesis, Residual Limb and Augmentation	**03**
	(b)	Discuss the human components in rehabilitation engineering.	**04**
	(c)	What is Rehabilitation Engineering? Explain the applications of it.	**07**
Q.2	**(a)**	Describe the epidemiology of rehabilitation.	**03**
	(b)	Explain the classifications of types of amputation.	**04**
	(c)	Draw and explain the components of lower limb prosthesis.	**07**
		OR	
	(c)	Describe the design concept of various prosthetic for lower limb.	**07**
Q.3	**(a)**	Define the vision substitution technique.	**03**
	(b)	Describe the structure and applications of various types of wheelchairs.	**04**
	(c)	Write a note on components of upper extremity orthosis.	**07**
		OR	
Q.3	**(a)**	Define 1. Biomechanics 2. Orthosis 3. Motor substitution.	**03**
	(b)	Write a short note on ultrasonic cane.	**04**
	(c)	What is hearing impairment? Give the classification of hearing impairment and explain devices for hearing augmentation.	**07**
Q.4	**(a)**	Describe the structure of hearing aids.	**03**
	(b)	What is text voice converter?	**04**
	(c)	Draw and explain the structure of eye.	**07**
		OR	
Q.4	**(a)**	Describe the principle of cochlear implant.	**03**
	(b)	Define the applications of robotics in Rehabilitation Engineering.	**04**
	(c)	Explain with diagram the brain computer interface (BCI).	**07**
Q.5	**(a)**	Explain the auditory substitution devices.	**03**
	(b)	Describe the applications of laser cane.	**04**
	(c)	What is gait cycle? Write a short note on working operation of gait trainer.	**07**
		OR	
Q.5	**(a)**	Define the principle of speech trainer.	**03**
	(b)	Describe the dynamic splints for RN palsy.	**04**
	(c)	Explain the working of electric power wheelchair.	**07**

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