

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3160310****Date:15-12-2022****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.

- Q.1** (a) Explain the epidemiology of rehabilitation. **03**
- (b) Describe the human components in rehabilitation engineering. **04**
- (c) Write a note on principles of rehabilitation engineering. **07**

- Q.2** (a) Define the following terms: **03**
1. Rehabilitation Engineering
 2. Impairments
 3. Disability
- (b) Write a short note on classifications of types of amputation. **04**
- (c) Explain the components of lower limb prosthesis. **07**

OR

- (c) Write a note on the design concept of various orthotics for lower limb. **07**

- Q.3** (a) Define the following terms: **03**
1. Orthosis
 2. Prosthesis
 3. Sensory Augmentation

- (b) Explain briefly the tactual vision substitution technique. **04**
- (c) Enlist and explain the components of upper extremity prosthesis. **07**

OR

- Q.3** (a) Explain the design aspect of ultrasonic cane to assist visually impaired person. **03**
- (b) What is electric powered wheelchair? Enlist and categorize the components of electric powered wheelchair. **04**
- (c) Give the classification of visual impairment and explain devices for visual augmentation. **07**

- Q.4** (a) Write a short note on cochlear implant. **03**
(b) Explain braille reader. **04**
(c) Draw and explain the basic anatomy of eye. **07**

OR

- Q.4** (a) Describe the application of robotics in Rehabilitation Engineering **03**
(b) Explain the structure of hearing aids with block diagram. **04**
(c) Draw and explain the block diagram of brain computer interface (BCI). **07**

- Q.5** (a) Write a short note on wheelchair standards and tests. **03**
(b) Describe the computer applications in Rehabilitation Engineering. **04**
(c) Write a note on dynamic splints for RN palsy. **07**

OR

- Q.5** (a) Describe the structure of laser cane. **03**
(b) Write a short note on auditory substitution devices. **04**
(c) Draw and explain schematic of stair-climbing wheel chair. **07**
