

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160310****Date:06/06/2022****Subject Name:Rehabilitation Engineering****Time:10:30 AM TO 01:00 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**

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|------------|--|-----------|
| <b>Q.1</b> | (a) Define Rehabilitation.   | <b>03</b> |
|            | (b) What is preventive rehabilitation? Explain levels of Preventions.  | <b>04</b> |
|            | (c) Explain the roles and interactions of members of rehabilitation teams.                                     | <b>07</b> |
| <b>Q.2</b> | (a) Give classification of amputation types.   | <b>03</b> |
|            | (b) Define and relate Impairment, disability and handicap.   | <b>04</b> |
|            | (c) Explain the structure and functions of upper and lower limp prosthesis.                                    | <b>07</b> |
| <b>OR</b>  |  |           |
|            | (c) Describe broad classifications of Orthosis.  | <b>07</b> |
| <b>Q.3</b> | (a) Explain about osteoarthritis.  | <b>03</b> |
|            | (b) Which materials are used for making various components of a wheelchair? Justify its usability.             | <b>04</b> |
|            | (c) Draw and explain anatomy of eye. Describe types of visual impairment.                                      | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.3</b> | (a) Explain about polarized ultrasonic travel aids.  | <b>03</b> |
|            | (b) Draw and explain anatomy of ear. Describe the function of ear.   | <b>04</b> |
|            | (c) Broadly explain applications of robotics in rehabilitation engineering.                                    | <b>07</b> |
| <b>Q.4</b> | (a) What is radial nerve palsy? Explain related orthosis.  | <b>03</b> |
|            | (b) Explain various calipers and its components.   | <b>04</b> |
|            | (c) Explain working principle of electric powered wheelchair. Describe all the components with specifications. | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.4</b> | (a) Write a short note on tricycle, walkers and crutches: its use and indications.                             | <b>03</b> |
|            | (b) Explain criteria for design of prosthesis.   | <b>04</b> |
|            | (c) Describe the functions and indications of Knee Ankle Foot Orthosis.  | <b>07</b> |
| <b>Q.5</b> | (a) How a cochlear implant improves hearing ability? Explain its function.                                     | <b>03</b> |
|            | (b) What is Braille reader? Explain various tactile device for visually challenged persons.                    | <b>04</b> |
|            | (c) Explain structure, design aspects and criteria for wheelchair.   | <b>07</b> |

**OR**

- Q.5** (a) What is the use of Brain-Computer Interface? Explain the technology in the field of rehabilitation engineering. **03**
- (b) Draw and explain the structure and function of a Laser cane. **04**
- (c) Explain working operation of GAIT trainer. **07**

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