

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: 180301

Date: 05-06-2014

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.

- Q.1 (a)** Define following terms: (any seven) **07**
- | | |
|--------------------------------|-----------------|
| i. Rehabilitation | v. Prosthesis |
| ii. Rehabilitation engineering | vi. Disability |
| iii. Rehabilitation technology | vii. Impairment |
| iv. Orthosis | viii. handicap |
- (b)** Explain the concepts of engineering in sensory and motor rehabilitation. **07**
- Q.2 (a)** Explain three cardinal considerations for designing of orthopedic orthosis and prosthesis. **07**
- (b)** Give the classification of wheelchair and also explain the ergonomic considerations for wheelchair designing. **07**
- OR
- (b)** Write a note on: intelligent prosthetic knee. **07**
- Q.3 (a)** Write short notes on: **14**
- a) FES system
 - b) HAS
- OR
- Q.3 (a)** Explain the material used in wheelchair designing. Also give overview of frame design. **07**
- (b)** Draw and explain LASER cane. How it overcomes the limitations of conventional cane. **07**
- Q.4 (a)** Explain myoelectric hand and arm prosthesis. **07**
- (b)** Draw and explain the working of OPTACON. **07**
- OR
- Q.4 (a)** Explain the structure of hearing aids with block diagram. **07**
- (b)** Write a note on: cochlear implant **07**
- Q.5 (a)** Explain wheels and casters in wheelchairs. Also explain following terms: **07**
- | | |
|-------------------|--------------|
| a) Caster flutter | c) Tracking |
| b) Caster float | d) Alignment |
- (b)** Explain types of wheelchair frames with advantages and disadvantages. **07**
- OR
- Q.5 (a)** Explain the restoration of standing and walking. **07**
- (b)** Which are the components of power wheelchair electrical system. **07**
