$\mathbf{R07}$ 

# Set No. 2

### IV B.Tech I Semester Examinations, MAY 2011 REHABILITATION ENGINEERING Bio-Medical Engineering

Time: 3 hours

Code No: 07A71101

Max Marks: 80

## Answer any FIVE Questions All Questions carry equal marks $\star \star \star \star \star$

1.	Explain the working of pneumatic cylinder action in a swing phase controller used in the intelligent prosthetic knee design. [16]
2.	Explain the structure, function and the principle behind the measurement tools. [16]
3.	Describe the word intelligent in the MARCUS hand prosthesis and its merits over other kinds of prosthesis. [16]
4.	Describe the method of analyzing the artificial electronic larynx speech. [16]
5.	Describe the terms: (a) Visual augmentation
	(b) Auditory augmentation. [8+8]
6.	Describe the vector field histogram method for obstacle avoidance. [16]
7.	Explain how ergonomics is related to rehabilitation engineering? Discuss its use with few examples?
8.	Draw the block diagram of environmental control system and explain. [16]

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**R07** 

Set No. 4

### IV B.Tech I Semester Examinations, MAY 2011 **REHABILITATION ENGINEERING Bio-Medical Engineering**

Time: 3 hours

Code No: 07A71101

Max Marks: 80

[16]

[16]

#### Answer any FIVE Questions All Questions carry equal marks \*\*\*\*

- 1. Describe the mechanical hardware implementation of Guidecane device with a neat sketch. [16]
- 2. Discuss the measurement tools used in the rehabilitation processes [16]
- 3. Explain the factors to be considered in the design of Myoelectric hand prostheses.
- 4. Discuss the various types of front panel design possible for the traditional devices.
- 5. Describe the mode of access of environment to computers in controlling the human needs. [16]

#### 6. Write short notes on:

- (a) Outputs
- (b) Acceleration technique [8+8]
- 7. Discuss various Augmentative and substitutive devices for the persons suffering with hearing impairment? [16]
- 8. With neat sketches describe the self aligning orthotic knee joint? [16]

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**R07** 

Set No. 1

#### **IV B.Tech I Semester Examinations, MAY 2011 REHABILITATION ENGINEERING Bio-Medical Engineering**

Time: 3 hours

Code No: 07A71101

Max Marks: 80

#### Answer any FIVE Questions All Questions carry equal marks \*\*\*\*

1. With a neat block schematic explain the concept of NavBelt. [16]2. Describe the terms: (a) Information devices. [8+8](b) Traditional devices. 3. Explain in detail the following terms: (a) Orthopedic prosthesis (b) Orthopedic orthosis. [8+8]4. Discuss the user interface and the outputs when the access to computer is employed in augmentative communication. [16]5. Describe the auditory vision substitution and tactual vision substitution with examples for aiding the visual system. [16]6. With a neat sketch of service robot system, describe its use to the common man. [16]7. Explain the involuntary feedback in a sensory control system employed in Otto Bock prosthesis. [16]8. Describe in detail any two methods of Anthropometric Measurements? [16]

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**R07** 

Set No. 3

### IV B.Tech I Semester Examinations, MAY 2011 **REHABILITATION ENGINEERING Bio-Medical Engineering**

Time: 3 hours

Code No: 07A71101

Max Marks: 80

#### Answer any FIVE Questions All Questions carry equal marks \*\*\*\*

- 1. Make a comparison between any two kinds of hand prostheses taking into consideration the design factors and use. [16]2. What do you mean by environmental control? Explain with example [16]3. Describe the terms: (a) Anthropometry (b) Area measurements. [8+8]A 4. Explain the terms: (a) VDU (b) Information devices. [8+8]5. Explain the terms: (a) Cochlear implants (b) Hearing aid. [8+8]6. In general describe the role of existing devices that helps the visually impaired persons and also discuss the disadvantages of using a standard mobile robot for the [16]same.
- 7. Explain the following terms:

- (b) HAS. [8+8]
- 8. What are AAC systems? Discuss various components of AAC systems? [16]

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