

IV B.Tech. I Semester Regular Examinations, November -2005
REHABILITATION ENGINEERING
(Bio-Medical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Explain the engineering concepts in:
 - (a) Communication disorders
 - (b) Motor rehabilitation [8+8]
2. (a) Explain how the restoration of hand function and restoration of standing and walking is done using orthopedic prosthesis.
(b) Explain arm prostheses. [8+8]
3. Explain the concept of sensory substitution. [16]
4. Explain the cochlear implantation. [16]
5. Write short notes on:
 - (a) Cost effectiveness
 - (b) Robotics usage
 - (c) AAC methods [5+6+5]
6. Explain with example, the subjective and objective measurement methods in the process of rehabilitation. [16]
7. How do you characterize the assistive devices? Explain. [16]
8. Regarding computer as an aid, explain the concept of interfaces in compensation for visual perception. [16]

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1. How do you improve the overall performance of motor function? Explain. Define the term 'orthosis'. [16]
2. Discuss the concept of HAS systems. [16]
3. Explain the auditory vision substitution. Write a note on visual augmentation. [16]
4. Explain the use of computer in the design of prosthesis. [16]
5. Write short notes on:
 - (a) Robotic manipulation aids
 - (b) Augmentative communication and control [8+8]
6. (a) Explain the subjective measurement and approaches of measurement in rehabilitation engineering.
(b) Write a note on measurement processes. [8+8]
7. Explain the terms:
 - (a) Characterizing tasks
 - (b) Characterizing over all systems in high level tasks situations. [16]
8. Regarding computer as an aid, explain the concept of interfaces in compensation for visual perception. [16]

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1. Explain with neat sketch, the principle of intelligent prosthetic knee [16]
2. Discuss the concept of HAS systems. [16]
3. Explain in detail about sensory augmentation. [16]
4. Write a note on:
 - (a) Wheel chair concept
 - (b) Cochlear implantation
 - (c) Environmental control systems [6+5+5]
5. Write short notes on:
 - (a) Accelerating Techniques
 - (b) Augmentative communication [8+8]
6. Write short notes on:
 - (a) Measurement tools
 - (b) Measurement processes
 - (c) Delivery in rehabilitation engineering [5+5+6]
7. Explain about different measurements needed for Standard rehabilitation service. [16]
8. Regarding computer as an aid, explain the concept of interfaces in compensation for visual perception. [16]

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1. Explain how engineering methods are useful in Sensory rehabilitation. [16]
2. Describe the principle, design and working of MARCUS intelligent hand prosthesis. [16]
3. Describe the function of the visual system. Explain the process of visual augmentation. [16]
4. Explain the cochlear implantation. [16]
5. Explain the following terms with respect to computer access
 - (a) Robotics usage in rehabilitation.
 - (b) Acceleration techniques [8+8]
6. Regarding measurement tools and processes used in rehabilitation, explain the terms:
 - (a) Structure
 - (b) Performance
 - (c) Behavior [5+6+5]
7. Explain the terms:
 - (a) Characterizing tasks
 - (b) Characterizing assistive devices [8+8]
8. Write short notes on:
 - (a) Compensation for visual perception
 - (b) Orientation and mobility
 - (c) Brain - computer interface. [5+5+6]
