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**MANIPAL INSTITUTE OF TECHNOLOGY**  
(A Constituent Institute of Manipal University)  
Manipal – 576 104



**SIXTH SEMESTER B.E. DEGREE END-SEMESTER EXAMINATIONS MAY 2008.**

**SUBJECT: REHABILITATION ENGINEERING (BME 312.1 )**  
(REVISED CREDIT SYSTEM)

Monday, May 26, 2008 : 9.00 a.m. to 12 Noon

**TIME: 3 HOURS**

**MAX. MARKS: 100**

**Instructions to Candidates:**

1. Answer any FIVE full questions.
2. Draw labeled diagram wherever necessary

1. (a) Discuss the reasons for failure of a rehabilitation aid and the role of follow-up program in the delivery of rehabilitation services 08
- (b) List the advantages and disadvantages of a paperless Braille system. 04
- © Write note on types of hearing aids used for hearing impaired. 08
2. (a) Explain the working of a myoelectric arm prosthesis in detail. 12
- (b) Discuss in detail the design considerations for conversation aids. 08
3. (a) A non vocal person has lost control over larynx, tongue and lip. What do you recommend for as a portable aid that would provide speech output. Explain the aid. 10
- (b) What are the three methods of generating computer synthesized speech and digitally recorded speech? 10
4. (a) Explain the human gait cycle. 10
- (b) Write note on footswitches and the various gait parameters that can be obtained from them. 10
5. (a) With the help of a block diagram explain the powered wheel chair controller.. 06
- (b) Give differences between special purpose and general purpose devices for manipulation 06
- (c) List the five degrees of tissue breakdown and the role of timing devices in minimizing it. Discuss the warning device for use by paraplegics and quadriplegics. 08
6. (a) Explain the role and working of a phrenic nerve stimulator in controlling respiratory insufficiency. 12
- (b) Explain the voice controlled wheel chair and movement averaging wheel chair controller 08

