Student Exam No._____

GANPAT UNIVERSITY

B. Tech. VIII Semester Biomedical and Instrumentation Engineering

Regular Examination April – June 2016

2BM802 - Prosthetics & Orthotics

Time: 3 Hours **Total Marks: 70**

Instruction:
1. All Questions are compulsory
2. Answer to question of each section must be written in separate answer book
3. Figures to right indicate marks
4. Assume suitable data if necessary

SECTION: I

Que. 01 [12]

(a) What do you mean by biological heart valves? What are the advantages and disadvantages of Biological Heart valves compare to Mechanical Heart valves. 6

(b) What is the need of air splints? Explain the working of air splint with the help of neat diagram. 6

OR

Que. 01 [12]

(a) Explain the Historical Developments of Artificial hearts along with its applications. 6

(b) What is the significant of Heart-lung Machine? Explain the working of Heart-lung machine using neat diagram. 6

Que. 02 [11]

a) What is Bionic Eye? Which components are required to build Bionic eye? Explain the working of it with the help of diagram. 6

b) What is Hearing Aid? Describe four basic styles of hearing aids used for people with sensorineural hearing loss. 5

OR

Que. 02 [11]

(a) What cause Hearing loss? Briefly explain the types of Hearing loss. 5

(b) What are the disadvantages and risks associated with following prosthetic devices: 4
   1. Cochlear Implant
   2. Bionic Eye

(c) Give the difference between Macular degeneration and Retinitis Pigmentosa. 2

Que. 03 [12]

(a) Which types of materials have been used for the construction of wheel chair? Give the comparison between manual wheelchair and power wheelchair. 6

(b) Write short note on Dynamic splints used for RN palsy. 6

Section – II

Que. 4 [12]

(a) Justify the statement "A common and simple orthotic solution for knee OA with varus (going outside) & valgus (coming inside) situation is a brace working on 3-point leverage system". 6

(b) Write a short note on Design, construction and application of Dynamic response foot. 6

OR

Que. 4 [12]

(a) What is polio? Classify various types of calipers and give reasons in detail why plastic calipers are widely used. 6

(b) Do as Directed: 6
(i) Define Prosthesis
(ii) Define Orthosis
(iii) Define Articulated Joints
(iv) Define End terminal device

Que. 5 [11]

(a) What are the main function of cervical region of spine? Explain hard collar cervical orthosis and soft collar cervical orthosis. 5

(b) Explain why the shape of suspension play a critical role in the overall stability of upper limb prosthesis. 6

OR

Que. 5 [11]

(a) Explain the term Neuroprosthesis in detail. Enlist the recent advancement in the field of neuroprosthesis in upper limb. 5

(b) Enlist the criteria for choosing prosthesis. Explain why cosmetics is major factor which should be taken in to consideration while designing the prosthesis. 6

Que. 6 [12]

(a) Classify upper limb prosthesis on the basis of the powering system. Explain in detail body powered prosthesis and bionic arm in detail. 6

(b) Enlist components of lower limb prosthesis. Explain role of respective component and their material selection in detail. 6

END OF PAPER