

B.E. Instrumentation Engineering (Model Curriculum) Semester-VIII
IN803M - Open Elective : Bio-Medical Engineering

P. Pages : 2

Time : Three Hours



GUG/W/23/14365

Max. Marks : 80

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- Notes : 1. All questions carry marks as indicated.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain Instantaneous Heart rate measurement technique and Infrared thermometer for body temperature measurement. **8**
- b) Define Gross and Micro-current shock. What precaution measures would you suggest against electric shock? **8**

OR

2. a) Illustrate non-Invasive technique of BP measurement. **8**
a) Auscultatory method with Korotkoff sounds.
b) Oscillometric method with suitable graph
- b) Discuss Impedance pneumography method of Respiration rate measurement. **8**
3. a) Summarize Pulmonary Function Analyzers with suitable block diagram? **8**
- b) What is need of Anaesthesia? Explain circle system in Patient Breathing System. **8**

OR

4. a) Explain Paramagnetic gas analyzer in detail with schematic diagram. **8**
- b) Define the terms related to pulmonary function analyzer. **8**
a) ERV
b) IRV
c) IC
d) FRC
e) VC
f) TLC
g) FEV
h) FVC
5. a) Write short note for the following term. **8**
a) Spinal cord stimulator.
b) PSWT

- b) Explain in detail simplified circuit diagram of shortwave diathermy in detail. **8**

OR

6. a) Illustrate application techniques for Ultrasonic therapy unit and Shortwave diathermy. **8**
- b) What is Ultrasonic therapy unit explain with suitable block diagram in detail. **8**

7. a) Draw neat sketch of Large intestine? Explain different process supporting digestion with hormones related to Gastro intestinal tract? 8

b) Define Micturition. Explain its steps and reflexes involved with suitable diagram. 8

OR

8. a) What are basic functions of urinary system and different organs associated with it? 8

b) Quote the process of Defecation and give steps involved in its reflexes. 8

9. a) Write short note on types of Lasers. Describe classification of Laser. 8

b) Discuss principle of operation of Laser and briefly explain safety precaution related to Lasers. 8

OR

10. a) Illustrate Helium – Neon Laser with simplified diagram. 8

b) State applications of Lasers in bio-medical field. Describe its classification. 8
