Total No. of Questions : 10]

SEAT No. :

P4550

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[4959]-1194

B.E. (Instrumentation & Control)

ADVANCED BIOMEDICAL INSTRUMENTATION

(2012 Pattern) (Semester - I)

Time : 2.30 Hours] *[Maximum Marks : 70*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figure to right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) What is Biotelemetry? Brief out various biotetemetry applications in medical field. **[6]**

b) Explain the Properties of X rays. **[4]**

OR

Q2) a) Explain the Principle of the finger tip pulse Oximetry **[6]**

b) What is an auto analyzer? Enlist various subsystems of auto analyzer. **[4]**

Q3) a) Draw and explain the rotating anode X-ray Generation method. **[6]**

b) Enlist the frequency ranges used in Ultrasound medical imaging for various applications. Specify the relationship between image resolution and frequency in ultrasound imaging. **[4]**

OR

Q4) a) What are the draw back of X-ray imaging. Explain the principle of method that overcomes these drawbacks. **[5]**

b) Explain the operating principle of PET scans. **[5]**

Q5) a) What is a pacemaker? Explain, briefly the various waveforms used for pacing. **[10]**

b) What is electrosurgical diathermy? What do you mean by bipolar and unipolar modes of ESU? Explain, why patient plate is having more area active electrode is pointed tip type in ESU. **[8]**

P.T.O.

OR

Q6) a) Draw and explain the Heart-Lung Machine. State the type of Pump that is used in HLM. **[10]**

b) Define the term fibrillation? What is defibrillator? Draw and explain DC defibrillator. **[8]**

Q7) a) Explain thermal and non thermal interaction of tissue with LASER. **[8]**

b) Explain the following term with respect to LASER: **[8]**

i) Monochromacity

ii) Directionality

iii) Power

iv) Coherenace

OR

Q8) a) Brief out characteristics of endoscopes. **[8]**

b) Explain applications of LASER for diabetic retinopathy treatement. **[8]**

Q9) a) Explain the following terms in context of wheel chair: **[8]**

i) Flutter

ii) Float

iii) Alignment

iv) Tracking

b) Define arthrosis and prosthesis in rehabilitation engineering. Enlist atleast two applications of arthrosis and prosthesis. **[8]**

OR

Q10)a) Explain in brief various types of dialysers used for hemodialysis. **[8]**

b) Explain with suitable diagram the process of Urine formation in kidney. **[8]**