

5713

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7. (a) Describe the components and function of an anesthesia delivery system. (6)

(b) Draw and explain the working of autoanalyzer. (6)

(1000)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5713

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Unique Paper Code : 2512043501

Name of the Paper : Advanced Biomedical
Instrumentation

Name of the Course : B.Sc. (H) Instrumentation
(CORE)

Semester : V

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Use of scientific calculator is allowed.
3. Attempt any 5 questions in all.
4. Question no. 1 is compulsory.
5. All questions carry equal marks.

P.T.O.

1. (a) Name any two medical applications of fiber optics. (3)
(b) Define the term "image reconstruction" in CT imaging. (3)
(c) What is the role of gamma rays in nuclear imaging? (3)
(d) What are breathing circuits? Name any two types. (3)
2. (a) What do you mean by the term "blood count"? Describe the operation of a blood cell counter. (6)
(b) Explain the working principle of a ventilator with the help of a suitable block diagram. (6)
3. (a) Elaborate on the operational principle and functionality of a gamma camera. (6)
(b) Describe the instrumentation of Magnetic Resonance Imaging system. (6)

4. (a) Explain the concept of A-scan and B-scan in ultrasound and provide two applications for each. (6)
(b) Explain the principle and operation of CT (Computed Tomography) scanners. (6)
5. (a) An ultrasound wave in human tissue has a frequency of 3,500 KHz and a wavelength of 5×10^{-4} m. Calculate its velocity of propagation. Discuss the generation of ultrasound in brief. List any two clinical uses of ultrasound. (6)
(b) What is ELISA? State the underlying principle of an ELISA reader. What is it used for? (6)
6. (a) Describe the construction and working of an endoscope. Discuss two types of endoscope. (6)
(b) Explain the working principle and construction of diathermy equipment. (6)