

M.Sc. (INSTRUMENTATION) EXAMINATION, 2019

(2nd Year, 2nd Semester)

BIOMEDICAL INSTRUMENTATION

Time : Four hours

Paper-XVI (T-401)

Full Marks : 100

PART - I

Answer any three of the following questions

Two marks have been allotted for general proficiency.

1. (a) What are the common uses of CT imaging? b) Mention the phases of CT imaging.
(c)What are Ray, Ray sum, View and Attenuation Profile

(3 + 5 + 8)

2. (a) How does the CT procedure work? (b) Explain the data accusation phase of CT with a figure. (c) Describe the limitations of conventional radiography.

(6+6+4)

3. (a) How the MR signal is created? What are T1 and T2 weighted scans? (b) What are the advantages of using resistive magnate in MRI? (c) Mention the contraindications for MRI.

(6+2+4+4)

4. (a) What do you mean ultrafiltration? (b) State the basic principles of dialysis. (c) How does osmosis involved in dialysis procedure? (d) Differentiate between hemodialysis and peritoneal dialysis? (e) State the importance of dialysis.

(2+5+3+3+3)

5. (a) Describe the gene switching of hemoglobin from embryonic development with the site of erythropoiesis and α or β like clustur. (b) Mention the cause and physiological symptoms of following: Sickle cell anaemia, hemoglobin crystalisation disease. (c) What is methemoglobinemia? How does it affect oxygen transport? (d) Mention the cause of β thalassamia.

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M.Sc.(Instrumentation) second year second semester-2019**Subject: Biomedical Instrumentation Time: 4 hrs Full Marks: 100****PART - II**

Attempt any five ,10 marks for each question

1. Describe, in brief, 5 physiological systems of the body. How come the miracle factor ? What are Biometry and Biometrics?
2. What is man- instrument system ? What is black box and why it is so called? What are the main objectives of the above-said instrumentation ?
3. Temperature profile can be the first step towards diagnosis-- elaborate. Discuss any two semi-invasive measurement of systemic temperature and their uses . Explain: thermograph, thermogram and thermovision .
4. How understanding the chemical profile can help diagnosis ? What are the main chemical factors that are studied ? In this connection, describe chloridimeter and flame photometer.
5. Explain the terms : Angiography, angiogram and angioplasty . What are stereoradiography and CT scan ? Explain their uses .
6. What are Biosensors ? Explain with examples various kinds of Biosensors . Elaborate with a block diagram how biosensors work . How nano sized materials can be utilized to make biosensors ?
7. Explain with a block diagram the functional units of Biotelemetry. Elucidate the utilities and necessities of Biotelemetry. What is WMTS ?