

BACHELOR OF SCIENCE (RADIOLOGY & IMAGING TECHNOLOGY) (CBCS-2019 COURSE)
B.Sc. (R&IM) Sem-V : WINTER :- 2021
SUBJECT: ADVANCED ULTRASOUND

Day : Wednesday
Date 2/2/2022

W-22534-2021

Time : 10:00 AM-12:00 PM
Max. Marks:

N.B.:

- 1) There are **THREE** sections as
Section – A = Objective Type Questions - 20 marks.
Section – B = Long Answer Questions - 20 marks.
Section – C = Short Answer Questions - 20 marks.
- 2) Section A is given in **SEPARATE** sheet and has to be answered on same sheet. This sheet should be completed with the first **20** minutes of starting of the examination. This sheet with Section A only will be collected by Supervisor.
- 3) Section B has four long questions and **ANY TWO** questions have to be answered.
- 4) Section C has six short questions and **ANY FOUR** questions have to be answered.
- 5) You have to make such kind of mark in the box of the appropriate answers.

Seat No. _____

SECTION – A

M.C.Q's

1. Velocity of sound depends on:
 - a) Frequency
 - b) Wavelength
 - c) Nature of the medium
 - d) Amplitude
2. What is the piezo-electric crystals of transducer composed of?
 - a) Lead Sulphate
 - b) Lead Zirconate Trinitrate
 - c) Barium Sulphate
 - d) Lead Phosphate
3. Transducer does the following:
 - a) Conversion of sound waves to electrical waves
 - b) Transmission of sound waves
 - c) Receiver of sound waves
 - d) All of the above
4. Following is false about colour Doppler:
 - a) Overall view of colour flow
 - b) Directional information of flow
 - c) Velocity of flow
 - d) Angle of insonation

P.T.O.

5. The ability of a transducer to differentiate between two objects lying in the axis of beam is known as:
- a) Depth/axial resolution
 - b) Chemical resolution
 - c) Angle of insonation
 - d) Pulse
6. Linear probe is used form imaging of:
- a) Abdomen
 - b) Heart
 - c) Breast and small parts
 - d) Pelvis
7. Frequency of sound waves in audible range:
- a) 18-20000 Hz
 - b) > 20000 Hz
 - c) < 10 Hz
 - d) All of the above
8. Posterior Acoustic shadowing is shown by:
- a) Calculus
 - b) Water
 - c) Blood
 - d) Normal liver parenchyma
9. Relationship of frequency and wavelength of sound wave is:
- a) Wavelength increase, frequency increases
 - b) Wavelength increases, frequency decreases
 - c) Wavelength increases, frequency is constant
 - d) None of the above
10. TCG stands for:
- a) Time gain colour
 - b) Technology gain colour
 - c) Time gain compensation
 - d) Technology gain colour

Total Marks Obtained : _____

Signature of Invigilator

Signature of Examiner

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- 1) There are **THREE** sections as
Section – A = Objective Type Questions - 20 marks.
Section – B = Long Answer Questions - 20 marks.
Section – C = Short Answer Questions - 20 marks.
- 2) Section B has four long questions and **ANY TWO** questions have to be answered.
- 3) Section C has six short questions and **ANY FOUR** questions have to be answered.
- 4) Answer to both the sections should be written in **SAME** answer book.

SECTION – B

Long Answer (Attempt ANY TWO) [20]

- Q.1 What is Doppler Effect? Describe in detail principles and application of Doppler imaging.
- Q.2 Write in detail about Doppler artifacts.
- Q.3 What are the different modes of ultrasound? Describe B-mode ultrasound in detail.
- Q.4 Give a detailed description of piezoelectric effect in ultrasonography.

SECTION – C

Short Answer (Attempt ANY FOUR) [20]

- Q.5 Define ultrasound waves and describe any three characteristics of a sound wave.
- Q.6 Write a short note on ultrasound gel.
- Q.7 What are different ultrasound artifacts? Describe any two in detail.
- Q.8 What are the types of transducers? Write in brief about the application of curvilinear transducer.
- Q.9 Write a short note on image optimization in ultrasonography.
- Q.10 Give a brief note on interaction of ultrasound waves with matter.

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