

**BACHELOR OF SCIENCE (RADIOLOGY & IMAGING TECHNOLOGY) (CBCS-2019 COURSE)**

**B.Sc. (R&IM) Sem-VI :SUMMER- 2022**

**SUBJECT : SPECIAL TECHNIQUES IN ULTRASOUND**

Day : Friday

Time : 10:00 AM-12:00 PM

Date : 29-07-2022

**S-22549-2022**

Max. Marks : **20**

**N.B.**

- 1) There are **THREE** section as  
Section – A = Objective Types 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 within 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.**

- 1) Sound waves when travelling from one medium to another:
  - a)  Undergoes reflection
  - b)  Undergoes refraction
  - c)  Gets absorbed
  - d)  All of the above
- 2) Doppler angle should be
  - a)   $60^{\circ}$
  - b)   $20-30^{\circ}$
  - c)   $30-40^{\circ}$
  - d)   $0^{\circ}$
- 3) Piezoelectric effect is defined as
  - a)  Conversion of electrical energy to mechanical energy
  - b)  Conversion of mechanical energy to sound energy
  - c)  Conversion of sound energy to mechanical energy
  - d)  All of the above
- 4) Which of the following is false?
  - a)  Higher Doppler frequency, more tissue attenuation
  - b)  Decrease Doppler angle, increase in aliasing
  - c)  Increase in Doppler angle, increase in aliasing
  - d)  Doppler angle should be  $60^{\circ}$

P.T.O.

- 5) Piezoelectric crystals are made of
- a)  Zinc Titanate
  - b)  Lead Zirconium Titanate
  - c)  Lead sulphite
  - d)  Zinc phosphide
- 6) M-mode ultrasound is not used to see
- a)  Echocardiography
  - b)  Foetal heart rate
  - c)  Assessing cardiac movement
  - d)  Blood flow
- 7) What are the functions of linear transducer?
- a)  Breast imaging
  - b)  Eye imaging
  - c)  Thyroid imaging
  - d)  All of the above
- 8) Overall increase in brightness is known as:
- a)  Depth
  - b)  Gain
  - c)  Zoom
  - d)  Focus
- 9) Real time, grey scale ultrasound is
- a)  A mode
  - b)  B mode
  - c)  M mode
  - d)  Z mode
- 10) Power Doppler is better than colour Doppler because
- a)  It is not dependent on Doppler angle
  - b)  It has more aliasing
  - c)  It has more noise artefacts
  - d)  None of the above

Total Marks Obtained : \_\_\_\_\_ Signature of Invigilator : \_\_\_\_\_

Signature of Examiner : \_\_\_\_\_

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Time : 10:00 AM-12:00 PM  
Max. Marks : **40**

**N.B.**

- 1) There are **THREE** section as  
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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 the **SAME** answer book.

**SECTION – B**

**Long Answer (Attempt ANY TWO)**

**(20)**

- 1) What are the different types of transducers? Write their function in detail.
- 2) What is Doppler effect? Discuss its role in imaging? What is the use of Doppler Sonography?
- 3) Name different modes of ultrasound. Write in detail about B-mode.
- 4) Name ultrasound artefacts and write in detail any three.

**SECTION – C**

**Short Answer (Attempt ANY FOUR)**

**(20)**

- 1) Discuss aliasing.
- 2) What is ultrasound wave? Discuss the properties of sound wave.
- 3) Draw and label the parts of a transducer.
- 4) Write a short note on ultrasound gel.
- 5) Piezoelectric effect.
- 6) What is spatial resolution?

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