Question Paper

Exam Date & Time: 18-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER BSc CARDIOVASCULAR TECHNOLOGY DEGREE EXAMINATION-JUNE 2024
SUBJECT: CVT2101- ULTRASOUND PHYSICS AND DOPPLER PRINCIPLES
(2020 SCHEME)

Marks: 100 **Duration: 180 mins.**

Answer all the questions.

1)	Explain the derivation, brief steps and uses of PISA method	(20)
2)	Explain the principles of color flow Doppler echocardiography in detail	(20)
3)	Draw a neat labeled diagram of the ultrasound transducer and discuss the characteristics of each part.	(10)
4)	Explain the derivation, advantages, and limitations of the Bernoulli's equation	(10)
5A)	Write a note on resolution	(5)
5B)	Enumerate the advantages of continuity equation	(5)
5C)	Write a note on the Doppler artifacts of ultrasound imaging	(5)
5D)	Define the Fresnel zone and Fraunhofer zone in the ultrasound beam, Also discuss their relationship with the ultrasound transducer	(5)
5E)	Describe the basic principles of doppler ultrasound beam	(5)
5F)	What are the factors that influence image quality in echocardiography?	(5)
6A)	Define the Coanda Effect	(2)
6B)	Enumerate any four uses of volumetric flow calculation	(2)
6C)	Enumerate the limitations of continuous wave doppler	(2)
6D)	Draw a neat labeled diagram of the apical 4 chamber view	(2)
6E)	Define refraction and scattering	(2)

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