Question Paper

Exam Date & Time: 19-Apr-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER B.Sc. CARDIOVASCULAR TECHNOLOGY DEGREE EXAMINATION - APRIL 2022
SUBJECT: CVT 2101 - ULTRASOUND PHYSICS AND DOPPLER PRINCIPLES
(2020 SCHEME)

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

Answer all the questions.

1)	Briefly explain the physical principle and clinical utility of pulsed wave Doppler with advantages and limitations. Brief the significance of high pulse repetition frequency imaging	(20)
2)	Explain the working principle and components of a ultrasound transducer with neat labelled diagram and explain the different types of transducers	(20)
3)	Explain the steps in evaluating regurgitate and stenotic valvular lesion using Proximal Isovelocity Surface Area method	(10)
4)	Explain the principle of continuity equation and its applications in detail	(10)
5A)	Draw a neat labelled diagram of suprasternal views	(5)
5B)	Explain Myocardial Performance Index	(5)
5C)	Discuss the applications of Pressure half time	(5)
5D)	Explain the technical limitations of Color Doppler imaging	(5)
5E)	Discuss Reverberations	(5)
5F)	Explain the biological effects of Ultrasound	(5)
6A)	What are the inter relation between frequency of ultrasound probe and the image quality?	(2)
6B)	Write two limitations of Bernoulli's equation	(2)
6C)	Define spatial resolution	(2)
6D)	Write two limitations of tissue harmonic imaging	(2)
6E)	Write the formula for mitral regurgitant volume and regurgitant fraction flow quantification method	(2)

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Question Paper

Exam Date & Time: 21-Apr-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER B.Sc. CARDIOVASCULAR TECHNOLOGY DEGREE EXAMINATION - APRIL 2022
SUBJECT: CVT 2102 - CARDIAC STRESS TESTS
(2020 SCHEME)

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

Answer all the questions.

1)	Discuss the patient selection for exercise stress test as a screening for Coronary artery disease	(20)
2)	Briefly explain the response of pulmonary and cardiovascular system during exercise stress testing	(20)
3)	Explain the evaluation and clinical applications of positron emission tomography in diagnosis of coronary artery disease	(10)
4)	Explain the normal and abnormal electrocardiographic response during exercise stress testing in detail	(10)
5A)	Explain the abnormal echocardiographic responses in dobutamine stress test	(5)
5B)	Write a short note on potential complications of exercise electrocardiographic testing	(5)
5C)	Explain the protocol and analysis of Single Photon Emission Computed Tomography	(5)
5D)	Explain the interpretation of atropine stress test	(5)
5E)	Discuss the use of calcium channel blockers and vasodilators in exercise stress test	(5)
5F)	Describe the various types of exercise stress test	(5)
6A)	Write two advantages of modified Bruce protocol	(2)
6B)	What is myocardial oxygen uptake?	(2)
6C)	Write the use of aminophylline in dipyridamole stress test	(2)
6D)	List the radiotracers used in nuclear imaging	(2)
6E)	Write two complications of dobutamine stress test	(2)

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