

Question Paper

Exam Date & Time: 10-Dec-2021 (02:30 PM - 04:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER BSc. PFT / BSc. RRT & DT / BSc. AOTT / BSc. CVT / BSc. EMT / BSc. CND / BSc. RT DEGREE
EXAMINATION - DECEMBER 2021
SUBJECT: MCB2103 - MICROBIOLOGY
(2020 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) Draw and label bacterial cell structure. Explain the differences between gram positive and gram negative bacterial cell walls. (10)
(4+6 = 10 marks)
- 2) Explain the pathogenesis and laboratory diagnosis of cholera. (10)
(5+5 = 10 marks)

3. Write short notes on:

- 3A) Bacterial growth curve. (5)
- 3B) Mechanism of type 1V hypersensitivity reaction. (5)
- 3C) Pathogenesis of HIV infection. (5)
- 3D) Laboratory diagnosis of pulmonary tuberculosis. (5)

4. Answer the following:

- 4A) Classification of immunity. (2)
- 4B) Morphological forms of Entamoeba histolytica. (2)
- 4C) List FOUR predisposing factors of UTI. (2)
- 4D) List FOUR virulence factors of Streptococcus pyogenes. (2)
- 4E) Immunoprophylaxis of poliomyelitis. (2)

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Question Paper

Exam Date & Time: 13-Dec-2021 (02:30 PM - 04:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER BOT / BPT / BSc. MIT / BSc. RRT & DT / BAOTT / BSc. PFT / BSc. CVT / BSc. EMT / BSc. RT / B.Sc.
RTT DEGREE EXAMINATION - DECEMBER 2021
SUBJECT: PAT 2103 - PATHOLOGY
(2020 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

Draw diagrams wherever necessary.

- 1A) Describe the events in wound healing by primary intention with diagrams. (6)
- 1B) Explain the factors that influence wound healing. (4)
- 2A) Define anemia. Classify anemia based on etiology. (3)
(1+2 = 3 marks)
- 2B) Describe clinical features, etiology and basic laboratory investigations for iron deficiency anemia. (7)
(2+2+3 = 7 marks)
- 3A) Describe four cardinal signs and list two causes of acute inflammation. (5)
- 3B) Mention five differences between benign and malignant tumors. (5)
- 3C) Describe the morphology of primary, secondary and miliary tuberculosis. (5)
- 3D) Describe the pathogenesis and list two causes of hypovolemic shock. (5)
- 4A) Define metaplasia. Give an example. (2)
- 4B) List four causes of thrombocytopenia. (2)
- 4C) Define aneurysm and mention the types of aneurysm. (2)
- 4D) Mention any four clinical features of hyperthyroidism. (2)
- 4E) List the modes of transmission of Hepatitis B. (2)

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Question Paper

Exam Date & Time: 15-Dec-2021 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER B.Sc. CARDIOVASCULAR TECHNOLOGY DEGREE EXAMINATION - DECEMBER 2021
SUBJECT: CVT2101 - ULTRASOUND PHYSICS AND DOPPLER PRINCIPLES
(2020 SCHEME)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1) Explain the working principle and components of a ultrasound transducer with neat labelled diagram and explain the clinical application of ultrasound transducer in brief. (20)
- 2) Write Bernoulli's equation and explain the derivation of formula with its applications and limitations. (20)
- 3) Briefly explain the technical aspects of image creation in echocardiography. (10)
- 4) Explain the principles of tissue harmonic imaging in brief. (10)
- 5A) Discuss the biological effects of Ultrasound. (5)
- 5B) Write a short note on technical limitations of Color Doppler imaging. (5)
- 5C) Discuss various components of resolution. (5)
- 5D) Explain the five difference between pulse and continuous wave Doppler. (5)
- 5E) Draw a neat labelled diagram of parasternal short axis view at aortic and different levels of Left ventricle. (5)
- 5F) Discuss the ultrasound and tissue interaction in brief. (5)
- 6A) Write the association of frequency and depth with the image quality. (2)
- 6B) Define refraction and scattering. (2)
- 6C) Write the equation of Proximal Isovelocity Surface Area derived mitral valve area. (2)
- 6D) What is the normal range of Left ventricle and Right Ventricle TEI index? (2)
- 6E) Define Doppler flow masking. (2)

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Question Paper

Exam Date & Time: 17-Dec-2021 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER B.Sc. CARDIOVASCULAR TECHNOLOGY DEGREE EXAMINATION - DECEMBER 2021
SUBJECT: CVT2102 - CARDIAC STRESS TESTS
(2020 SCHEME)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1) Briefly explain patient selection, procedure, interpretation and limitations of Positron Emission Tomography scan. (20)
- 2) Discuss the protocol, interpretation of ECG and echo images in pharmacological stress test. (20)
- 3) Explain the coronary and non- coronary indications of exercise stress test. (10)
- 4) Explain the various types of exercise stress test and the advantage of exercise stress testing. (10)
- 5A) Write a short note on MUGA scan. (5)
- 5B) Explain the response of cardiovascular system during stress test. (5)
- 5C) Explain the end points for termination of tread mill test. (5)
- 5D) Explain the electrocardiographic variation observed in response to stress test. (5)
- 5E) Discuss the use of beta blocker and digitalis in exercise stress test. (5)
- 5F) Write a short notes on radiotracers and technical artifacts of SPECT scan. (5)
- 6A) What is duke's criteria? (2)
- 6B) Draw the bull's eye representation used to diagnose underlined coronary artery disease. (2)
- 6C) List two contraindications of atropine test. (2)
- 6D) Define metabolic equivalent with normal range. (2)
- 6E) Write two difference between stunned myocardium and hibernation. (2)

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