BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(PA)-2021/B.Sc.(PA)-2022
Course Name – Cardio-Vascular & Thoracic Surgery
Course Code - BPAC501
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Observe: During a physical examination of a patient with a suspected pleural disease, what clinical sign may be observed in the presence of a pneumothorax?

a) Increased breath sounds
b) Increased tactile fremitus
c) Diminished chest movement on the affected side
d) Bilateral chest expansion

(ii) Select: In cases of diaphragmatic trauma, the management may involve surgical repair. What is the primary surgical technique used to repair diaphragmatic injuries?

a) Video-assisted thoracoscopic surgery (VATS)
b) Laparoscopic surgery
c) Open thoracotomy
d) Physical therapy

(iii) Define a patient in the post-operative period is found to have a sudden drop in blood pressure and jugular venous distension. Which is the most likely cause?

a) Hypovolemia
b) Cardiac tamponade
c) Tension pneumothorax
d) Tension pneumothorax

(iv) Express Post-operative monitoring of lactate levels in cardiovascular surgery patients is most useful for assessing:

a) Coagulation status
b) Tissue perfusion
c) Renal function
d) Liver function

(v) Predict in patients undergoing CABG, the use of internal mammary artery (IMA) grafts is associated with:

a) Lower risk of post-operative infection
b) Higher rates of graft occlusion
c) Improved long-term graft patency
d) Increased risk of bleeding

(vi) Identify the following is the gold standard diagnostic tool for coronary artery disease (CAD)?

a) Echocardiography
b) Coronary angiography
c) Cardiac MRI
d) Stress test

(vii) Predict in the management of a patient with STEMI (ST-Elevation Myocardial Infarction), what is the first-line intervention if the facility has PCI (Percutaneous Coronary Intervention) capability?

a) Fibrinolysis
b) Coronary artery bypass grafting (CABG)
c) Primary PCI
d) Thrombolysis

(viii) Identify the most common complication after stent placement in a patient with CAD is:

a) Stent thrombosis
b) Coronary artery dissection
c) Stent restenosis
d) Coronary artery spasm

(ix) Select which coronary artery is most commonly involved in inferior wall myocardial infarction?

a) Right coronary artery (RCA)
b) Left anterior descending artery (LAD)
c) Left circumflex artery
d) Obtuse marginal artery

(x) Predict a patient presents with chest pain, elevated troponin levels, and non-ST segment elevation on the ECG. The recommended first-line therapy includes:

a) Anticoagulation and dual antiplatelet therapy (DAPT)
b) Immediate thrombolysis
c) Beta-blockers and diuretics
d) Surgical revascularization

(xi) Tell a patient with a mechanical mitral valve replacement presents with increasing shortness of breath and reduced exercise tolerance. Echocardiography shows elevated gradients across the valve. What is the most likely cause?

a) Paravalvular leak
b) Valve thrombosis
c) Structural valve degeneration
d) Endocarditis

(xii) Interpret a 75-year-old patient with severe symptomatic aortic stenosis and a history of coronary artery bypass surgery (CABG) is evaluated for further management. The preferred treatment approach is:

a) Re-do surgical aortic valve replacement
b) Transcatheter aortic valve replacement (TAVR)
c) Balloon aortic valvuloplasty
d) Medical management only

(xiii) Select in a patient with suspected great vessel injury from blunt trauma, the diagnostic modality of choice is:

a) Chest X-ray
b) Transthoracic echocardiogram (TTE)
c) Computed tomography angiography (CTA)
d) Bronchoscopy

(xiv) Identify the most common cause of hemothorax in blunt thoracic trauma is:

a) Pulmonary contusion
b) Great vessel injury
c) Rib fracture with intercostal artery injury
d) Myocardial rupture

(xv) Interpret a patient with a history of chronic cough and recent weight loss undergoes imaging that reveals a large mass involving the diaphragm. Which of the following is the most likely diagnosis?

a) Diaphragmatic hernia
b) Mesothelioma
c) Pleural effusion
d) Pleural effusion

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Tell What is the primary purpose of cardiopulmonary bypass during cardiac surgery? (3)

a) Echocardiography
b) Coronary angiography
c) Cardiac MRI
d) Stress test

(vii) Predict in the management of a patient with STEMI (ST-Elevation Myocardial Infarction), what is the first-line intervention if the facility has PCI (Percutaneous Coronary Intervention) capability?

a) Fibrinolysis
b) Coronary artery bypass grafting (CABG)
c) Primary PCI
d) Thrombolysis

(viii) Identify the most common complication after stent placement in a patient with CAD is:

a) Stent thrombosis
b) Coronary artery dissection
c) Stent restenosis
d) Coronary artery spasm

(ix) Select which coronary artery is most commonly involved in inferior wall myocardial infarction?

a) Right coronary artery (RCA)
b) Left anterior descending artery (LAD)
c) Left circumflex artery
d) Obtuse marginal artery

(x) Predict a patient presents with chest pain, elevated troponin levels, and non-ST segment elevation on the ECG. The recommended first-line therapy includes:

a) Anticoagulation and dual antiplatelet therapy (DAPT)
b) Immediate thrombolysis
c) Beta-blockers and diuretics
d) Surgical revascularization

(xi) Tell a patient with a mechanical mitral valve replacement presents with increasing shortness of breath and reduced exercise tolerance. Echocardiography shows elevated gradients across the valve. What is the most likely cause?

a) Paravalvular leak
b) Valve thrombosis
c) Structural valve degeneration
d) Endocarditis

(xii) Interpret a 75-year-old patient with severe symptomatic aortic stenosis and a history of coronary artery bypass surgery (CABG) is evaluated for further management. The preferred treatment approach is:

a) Re-do surgical aortic valve replacement
b) Transcatheter aortic valve replacement (TAVR)
c) Balloon aortic valvuloplasty
d) Medical management only

(xiii) Select in a patient with suspected great vessel injury from blunt trauma, the diagnostic modality of choice is:

a) Chest X-ray
b) Transthoracic echocardiogram (TTE)
c) Computed tomography angiography (CTA)
d) Bronchoscopy

(xiv) Identify the most common cause of hemothorax in blunt thoracic trauma is:

a) Pulmonary contusion
b) Great vessel injury
c) Rib fracture with intercostal artery injury
d) Myocardial rupture

(xv) Interpret a patient with a history of chronic cough and recent weight loss undergoes imaging that reveals a large mass involving the diaphragm. Which of the following is the most likely diagnosis?

a) Diaphragmatic hernia
b) Mesothelioma
c) Pleural effusion
d) Pleural effusion

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Tell What is the primary purpose of cardiopulmonary bypass during cardiac surgery? (3)

3. Describe When might a patient require circulatory support during or after cardiac surgery, and what are some common circulatory support devices? (3)
4. Explain What are the common symptoms of valvular heart disease? (3)
5. Describe What is the operative management approach for major cardiovascular trauma, and when is it typically indicated? (3)
6. What is the initial approach to managing a patient with a pneumothorax, and justify how does it differ from the management of empyema? (3)

OR

Jusify Why is a multidisciplinary approach crucial in the management of intrathoracic malignant diseases, including lung cancer? (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Discuss the potential complications and strategies for preventing and managing complications related to cardiopulmonary bypass in cardiac surgery. (5)
8. Distinguish between the Guideline for CABG vs PCI in managment of CAD. (5)
9. Explain the medical management of chronic stable angina in ischaemic heart disease. What are the key pharmacological agents used, and how do they improve symptoms and outcomes? (5)
10. Express the indications and techniques for video-assisted thoracoscopic surgery (VATS) in the management of pleural disorders. What are the advantages of VATS over open thoracotomy in pleural biopsy and decortication? (5)
11. Describe the clinical features and diagnostic approach to tracheal stenosis. What are the indications for surgical intervention, and what techniques are available for tracheal reconstruction? (5)
12. Explain the pathophysiological changes in the left ventricle in response to aortic stenosis. How do these changes influence the clinical presentation and management of the disease? (5)

OR

Explain the role of cardiac MRI in the assessment of valvular heart disease. What additional information can it provide beyond echocardiography, especially in complex cases of combined valve disease? (5)

****