Q.1 A 50 year old diabetic and hypertensive man with exertional angina was investigated and found to have triple vessel disease (LAD 90%, RCA 95%, OM total). He was referred for coronary artery bypass grafting as a result of severity of his disease. He was found to have bilateral varicose veins with leg ulcers in lower limbs.

a) What are the alternate conduits available?
b) What are the advantages of using alternate available conduits?
c) How will you plan the arrangement of arterial grafts in this case?

Q.2 A 42 years old female underwent mitral valve replacement using prosthetic mechanical valve. Post-operatively, patient made uneventful recovery and was discharged from hospital on 6th post-operative day on Tab Coumadin 5mg and Tab Digoxin 0.25mg, both once daily.

A month later, she reports in emergency department with severe breathlessness and palpitation. Patient is taking medication regularly. On examination, she is tachypnoeic with a respiratory rate of 28/min. Her BP is 80/50 mmHg, Pulse is 130/min. Chest examination shows bilateral air entry with fine crepts at the bases. Prosthetic sound is audible, however it is slightly diminished.

a) What clinical conditions you will consider in the differential diagnosis for this patient? Give reasons.
b) Enlist three investigations that will help to reach the final diagnosis with justification.
c) How will you manage the case?

Q.3 a) Classify Thoracoabdominal aneurysms.
b) What are the different methods used to avoid paraplegia during Thoracoabdominal aneurysm surgery?
c) Indications for deep hypothermic circulatory arrest and what are safe periods of circulatory arrest at different temperatures?

Q.4 Write shot notes on:

a) Components of cardiopulmonary bypass circuit.
b) Mixed venous oxygen saturation measurement.
Q.5 An 18-year-old man is brought to the trauma centre by ambulance after he sustained a gunshot wound to the chest. Physical examination shows narrow pulse pressure, jugular venous distention, muffled heart sound, and pulsus paradoxus.

a) What is the most likely diagnosis?
b) Give the pathophysiology of this condition.
c) How will you establish the diagnosis in this case?

Q.6 A 26 years old male underwent operation for ASD secundum with deficient inferior rim using pericardial patch. After coming off from CPB, his SaO₂ was around 92%. ABGs showed 75% oxygen saturation. TOE was not done per operatively and anesthesiologist thought problem in ventilator. The patient was shifted to intensive care unit. In spite of appropriate ventilatory settings, the SaO₂ remained low. Hemodynamics remained stable with bilateral air entry on both side of chest.

a) Name 3 investigations and justify how these will help you to reach the most appropriate diagnosis.
b) How will you manage the case?

Q.7 a) What is TAVI? What are the access routes for TAVI?
b) Mention its setup, steps and complications.

Q.8 A 66-year-old man is recovering in the hospital three hours after undergoing three-vessel coronary artery bypass grafting. Initial output from the mediastinal chest tube was 300 mL of bloody drainage per hour. One hour ago, no further evidence of bleeding from the tube was noted. Despite repeated intravenous bolus administration of fluid, mean arterial pressure has decreased from 80 to 40 mmHg. Central venous pressure is increased to 20 mmHg (N=2-6 mmHg), and administration of dopamine has been required for maintenance of blood pressure.

a) What is the most appropriate next step in management of this patient’s condition?
b) What are the methods of minimizing operative blood loss?
Q. 9 A 22 years old male reports in outdoor department with history of increasing breathlessness and palpitations for the last 06 months. On examination, his blood pressure is 130/60 mmHg, pulse is 115/mm regular, respiratory rate is 18/mm with bilateral air entry. Examination of precordium reveals well-palpable thrill in the left parasternal region with harsh pansystolic murmur best heard in the left parasternal region. Rest of the examination is unremarkable.

a) What is the most likely diagnosis with justification?
b) How will you investigate the case to reach the final diagnosis?
c) What special precautions are required during surgery?

Q.10 A 78-year-old man with hypertension and chronic obstructive pulmonary disease is transferred to the intensive care unit after undergoing two-vessel coronary artery bypass grafting. Four hours later, atrial fibrillation develops at a rate of 140/mm. Amiodarone therapy is initiated.

a) What is the most serious adverse effect of this therapy?
b) Classify antiarrhythmic medications
Q.11 An 80 year old man comes to the OPD with severe 3 vessel coronary artery disease for myocardial revascularization. What additional investigations will you advise him before planning for CABG? Give reasons to justify these investigations.

Q.12 a) What are the salient features in a cardiac surgical database development?
   b) What information can you get / derive out of this cardiac surgical database?
   c) How can you use this information from database to plan / develop and improve your cardiac surgical practices?

Q.13 A 3 week old newborn presents with mild cyanosis, poor feeding and recurrent RTI. Echo shows Truncus Arteriosus anomaly.
   a) What are the anatomic components of Truncus Arteriosus?
   b) Classify Truncus Arteriosus
   c) What are the options for surgical management?

Q.14 A young 21 years old lady is referred to tertiary care center with history of fever associated with chills off and on for the last 3 months, with increasing breathlessness, palpitation and gangrene of left foot for the last 1 week. On examination, patient is conscious, afebrile & haemodynamically stable. There is generalized rash on her body. Examination of respiratory system reveals no abnormality. Cardiovascular examination shows systolic murmur at the mitral area. A tender palpable mass in the left hypochondrium is also observed.
   a) What is the provisional diagnosis?
   b) How will you investigate the case to reach the final diagnosis?
   c) Enlist the salient points in management of this patient.

Q.15 A 17 years old boy is suffering from severe Aortic stenosis. His preoperative investigation suggests an Aortic Root diameter of 15mm
   a) Enumerate the available surgical options in this case?
   b) Enlist the specific complications of AVR?
Q. 16  a) Enlist different modalities for treatment of patent ductus arteriosus?
       b) What are the complications of surgical PDA ligation?

Q. 17  What short notes on:
       a) Novel (New) oral anticoagulants:
           1) What are the types?
           2) How will you monitor them?
           3) What are their advantages over Warfarin?
       b) What is TEE:
           1) Can it be used during open heart surgery?
           2) What added information will you get and used intraoperatively?

Q. 18  a) What are the perioperative risk factors which favour mediastinitis and sternal dehiscence?
       b) How will you treat a case with sternal dehiscence?

Q. 19  A 62 year old female reports in emergency department with history of severe breathlessness and palpitations for the last 01 day. She had history of chest pain and sweating a week ago for which she was admitted in peripheral hospital but the record in not available. On examination, she is tachypnoeic with respiratory rate of 30/mm, B.P is 90/60 mmHg; heart rate is 105/mm with basal crepts. Examination of precordium revealed palpable thrill with pan systolic murmur best heard on left parasternal border. Her ECG done in emergency department shows Q-waves in chest leads.

       a) What is the provisional diagnosis?
       b) What is the differential diagnosis and justify them?
       c) How will you manage the case?

Q. 20  A 35 year old female on oral contraceptives returns from a transatlantic flight and collapses at home. She is rushed to the ER in a state of shock.

       a) What is your diagnosis and how will you confirm it?
       b) What are the contraindications to fibrinolytic therapy?
       c) What are the indications and contraindications of surgical intervention?

THE END