

**POST GRADUATE DIPLOMA IN CLINICAL
CARDIOLOGY (PGDCC)**

Term-End Examination

December, 2015

MCC-001 : FUNDAMENTALS OF CARDIOVASCULAR SYSTEMS - I

Time : 2 hours

Maximum Marks : 60

Note :

- (i) *There will be multiple choice type of questions in this examination which are to be answered in OMR Answer Sheet.*
- (ii) *All questions are compulsory.*
- (iii) *Each question will have four options and only one of them is correct. Answers have to be marked in figures in the appropriate rectangular boxes corresponding to what is the correct answer and then blacken the circle for the same number in that column by using **HB** or lead pencil and not by ball pen in OMR Answer Sheet.*
- (iv) *If any candidate marks more than one option it will be taken as the wrong answer and no marks will be awarded for this.*
- (v) *There will be **90** questions in this paper and each question carries **equal** marks.*
- (vi) *There will be no negative marking for wrong answers.*
- (vii) *No candidate shall leave the examination hall at least for **one** hour after the commencement of the examination.*

1. Lateral view of the chest X-ray is particularly useful in following situations except :
 - (1) to demonstrate retrosternal region
 - (2) to define interlobar effusion
 - (3) to assess cardiothoracic ratio
 - (4) to localize lung pathology to a lobe

2. Ventricular septal defect can be caused by all except :
 - (1) deficient development of proximal conus swelling
 - (2) failure of fusion of endocardial cushions
 - (3) none of the above
 - (4) both of the above

3. Tetralogy of Fallot includes all except :
 - (1) Pulmonary stenosis
 - (2) VSD
 - (3) Overriding of aorta
 - (4) None

4. In ASD the defect can occur due to deficient development of all except :
 - (1) septum primum
 - (2) septum secundum
 - (3) endocardial cushion
 - (4) none of the above

5. Transposition of great vessels is associated with all except :
 - (1) Failure of growth of truncocoanal swellings
 - (2) VSD
 - (3) ASD
 - (4) PDA

6. All the following structures fuse with endocardial cushions except :
 - (1) septum primum
 - (2) septum secundum
 - (3) none
 - (4) both of the above

- P.T.O.

14. All are true about the conduction of impulse in the heart except :
- (1) impulses from AV node first reaches the papillary muscles.
 - (2) impulses from the SA node reach the interatrial septum near the opening of the coronary sinus.
 - (3) impulse from right ventricular posterior papillary muscle reaches the anterior one via septo-marginal trabecula.
 - (4) none of the above
15. Moderator band is the muscle band joining right ventricular :
- (1) anterior papillary muscle to the IVS
 - (2) posterior papillary muscle to the IVS
 - (3) anterior to the posterior papillary muscle
 - (4) none
16. All of the following drains into the right atrium except :
- (1) inferior vena cava
 - (2) venae cordis minimae
 - (3) right pulmonary vein
 - (4) superior vena cava
17. A patient with myocardial infarction presented with syncope. ECG showed complete heart block. The coronary artery most likely to be involved is :
- (1) Left anterior descending
 - (2) Left circumflex
 - (3) Right coronary
 - (4) Obtuse marginal
18. A patient with inferior wall myocardial infarction had left circumflex occlusion in angiogram. Right coronary was normal. His posterior inter-ventricular branch arises from :
- (1) Right coronary
 - (2) Left circumflex
 - (3) Both
 - (4) None
19. A stab injury in the left lower sternal area is most likely to hit :
- (1) Right atrium
 - (2) Right ventricle
 - (3) Both
 - (4) None

20. A needle penetrating through the right atrium just above the septal cusp of the tricuspid valve will reach :
- | | |
|---------------------|---------------------|
| (1) Left atrium | (2) Pulmonary trunk |
| (3) Right ventricle | (4) Left ventricle |
21. The cusp experiencing forceful blood-flow on both its surfaces is :
- | | |
|------------------------------------|------------------------------------|
| (1) Anterior cusp of aortic valve | (2) Posterior cusp of aortic valve |
| (3) Septal cusp of tricuspid valve | (4) Anterior cusp of mitral valve |
22. In constrictive pericarditis the structure not constricted will be :
- | | |
|---------------------|--------------------------------|
| (1) Ascending aorta | (2) Inferior vena cava |
| (3) Pulmonary trunk | (4) Right upper pulmonary vein |
23. During inspiration all the events happen except :
- | |
|---|
| (1) Blood flow increases through Inferior vena cava |
| (2) Pulmonary valve takes more time to close |
| (3) Blood flow increases in Left Atrium |
| (4) Aortic valve closes early |
24. An agent preventing dissociation of calcium in the sarcomere will cause all except :
- | | |
|---------------------------|---------------------------------------|
| (1) Increased contraction | (2) Increased number of cross-bridges |
| (3) Increased relaxation | (4) None of the above |
25. Increase in preload can produce all except :
- | |
|--|
| (1) Increase in cardiac oxygen consumption |
| (2) Decrease in sub-endocardial ischemia |
| (3) Increase in resistance to ejection |
| (4) None of the above |
26. A patient with orthostatic hypotension can use all of the following maneuvers to increase venous return except :
- | | |
|--------------------------------|----------------------|
| (1) Calf muscle exercise | (2) Lying down flat |
| (3) Intake of plenty of fluids | (4) All of the above |

27. A patient with COPD with high $p\text{CO}_2$ and warm extremities will exhibit all the following except :
- (1) Stimulation of aortic and carotid chemoreceptors
 - (2) Stimulation of medullary centers
 - (3) Local vasoconstriction
 - (4) None of the above
28. In a patient with sepsis all can happen except :
- (1) Decreased venous return
 - (2) Arteriolar dilatation
 - (3) Increase in heart rate
 - (4) None of the above
29. In fetal life the blood is diverted from the pulmonary circulation to the systemic circulation by all except :
- (1) Septum primum
 - (2) Foramen ovale
 - (3) Ductus arteriosus
 - (4) None of the above
30. Abnormality of trunco-conal swelling is seen in :
- (1) Tetralogy of Fallot
 - (2) Transposition of great vessels
 - (3) Persistent Truncus Arteriosus
 - (4) All of the above
31. All are true about probe patency of foramen ovale except :
- (1) Foramen ovale is closed functionally
 - (2) There is trans-septal flow
 - (3) Seen in 25% of normal subjects
 - (4) None of the above
32. A patient with severe mitral regurgitation will demonstrate the following in chest X-ray except :
- (1) Gross cardiomegaly
 - (2) Extension of the cardiac shadow behind the barium filled esophagus
 - (3) Hoffman Rigler sign
 - (4) None of the above

33. An old lady who underwent recent hip replacement developed sudden severe dyspnea with RBBB in ECG.
Her chest X-ray will show all of the above except :
- (1) Enlargement of the pulmonary artery
 - (2) Distal pulmonary oligemia
 - (3) Triangular pleural-based infiltrate
 - (4) Significant pleural effusion
34. A patient presenting with sudden severe chest pain with absent left upper limb pulses and normal ECG can show :
- (1) Westermark sign
 - (2) Ring sign
 - (3) Hampton hump
 - (4) Fleischner's sign
35. A patient with past history of rheumatic fever and middiastolic murmur can show :
- (1) Upper lobar pulmonary vein > 3mm in first interspace
 - (2) Carinal angle > 90 degree
 - (3) Both
 - (4) None
36. A patient with history of valve surgery showing the prosthesis just left to the spine has undergone :
- (1) Aortic valve replacement
 - (2) Pulmonary valve replacement
 - (3) Mitral valve replacement
 - (4) Tricuspid valve replacement
37. Kerley B lines suggest pulmonary venous hypertension of grade :
- (1) I
 - (2) II
 - (3) III
 - (4) None
38. A patient with ascites, pedal edema, inspiratory distension of neck veins and loud S3 can show following features in X-ray except :
- (1) dense calcification in atrio-ventricular groove
 - (2) calcification best seen in A-P view
 - (3) calcification in arcs or oblique circles
 - (4) none of the above

39. A patient with a pulmonary artery systolic pressure of 100 mm of Hg will show in X-ray all except :
- (1) Right descending pulmonary artery > 16 mm
 - (2) Sharp pruning of peripheral vasculature
 - (3) Increased convexity of pulmonary conus
 - (4) None of the above
40. A patient with ASD will show the following features in X-ray except :
- (1) Visualization of pulmonary branches beyond inner 2/3rd of the lungs
 - (2) More dilatation of the upper lobar vessels
 - (3) 5 or more end on vessels in both lung fields
 - (4) 3 or more end on vessels in one lung field
41. All the following structures form the right border of heart in X-ray except :
- (1) right brachiocephalic vessels
 - (2) right atrial appendage
 - (3) superior vena cava
 - (4) inferior vena cava
42. A patient with cannon A wave in the JVP and palpitation may show all of the following in the ECG except :
- (1) extreme left axis
 - (2) double-peaked R in V1 with taller right peak
 - (3) dressler beat
 - (4) none of the above
43. A patient with significant ST-depression with normal coronary angiogram may have all of the following except :
- (1) ventricular hypertrophy
 - (2) hypokalemia
 - (3) mitral valve prolapse
 - (4) none of the above
44. Following are true about the ECG leads except :
- (1) leads I, II and III detect a change in electrical potential between two points
 - (2) leads aVR, aVL and aVF measure the electrical potential at one point with respect to null point
 - (3) precordial leads are bipolar
 - (4) none of the above

45. All of the following denotes normal axis in the ECG except :
- (1) both I and aVF +ve
 - (2) lead II +ve
 - (3) both of the above
 - (4) none of the above
46. As compared to PA view chest X-ray, an AP view X-ray will show all except :
- (1) Magnified heart
 - (2) Higher clavicle
 - (3) Magnified vertebrae
 - (4) Higher diaphragm
47. All the following are correct about CT ratio in chest X-ray except :
- (1) requires good centering
 - (2) requires deep inspiration
 - (3) requires a PA film
 - (4) normal is less than 0.5 for all ages
48. Echocardiograms of patients with obesity may show all except :
- (1) Chamber enlargement
 - (2) LA smoke
 - (3) Separation of myocardium and parietal pericardium by echolucent space
 - (4) PAH
49. The coronary sinus lies in the :
- (1) Posterior av groove
 - (2) Anterior interventricular groove
 - (3) Posterior interventricular groove
 - (4) Anterior atrioventricular groove
50. Orthopnoea is unlikely in :
- (1) Obesity
 - (2) Diaphragmatic palsy
 - (3) Restrictive cardiomyopathy
 - (4) Pulmonic Stenosis
51. Dresslers Syndrome may complicate all the following except :
- (1) Beating heart coronary bypass surgery
 - (2) Myocardial infarction
 - (3) Surgery for coarctation of aorta
 - (4) Blunt trauma to chest

52. A patient of severe mitral stenosis develops hoarseness of voice. Investigations will show :
- (1) Severe PAH
 - (2) Large LA clot
 - (3) Bilateral vocal cords palsy
 - (4) Elevated diaphragm on left side
53. Frank Starling law can be demonstrated in patients with ventricular ectopic beats in recordings made during :
- (1) PET scan
 - (2) Coronary angiography
 - (3) Sistamibi Scan
 - (4) Dobutamine echocardiography
54. Low mixed venous oxygen saturation will occur in all the following except :
- (1) Cardiogenic shock
 - (2) Anemia
 - (3) Pink TOF
 - (4) VSD with CHF
55. Echocardiographic features of hypertrophic obstructive cardiomyopathy include :
- (1) Increased E point-septal separation
 - (2) Paradoxical motion of the posterior mitral leaflet
 - (3) Notching in the m mode aortic valve motion
 - (4) AC interruption
56. Cannon waves are likely in all the following except :
- (1) 1st degree av block
 - (2) Mobitz type 1 second degree av block
 - (3) PSVT
 - (4) Ventricular tachycardia
57. A nonpulsatile JVP may be present post op after :
- (1) pericardiectomy
 - (2) Glenns shunt
 - (3) arterial switch
 - (4) cardiac transplant

58. A ruptured sinus of valsalva aneurysm will not produce a continuous murmur when it opens into :
- (1) Coronary sinus
 - (2) LA
 - (3) PA
 - (4) LV
59. When measuring blood pressure at the wrist with home monitoring apparatus, accuracy is improved if the patient :
- (1) lies in bed with his arm resting by his side
 - (2) keeps the arm up in the air and prevents it from touching anything
 - (3) wraps the cuff as low in the wrist as possible
 - (4) sits on chair with his arm vertically down
60. Down syndrome may have :
- (1) Left to right shunt
 - (2) Myocarditis
 - (3) PS
 - (4) Coarctation
61. The normal T wave axis is :
- (1) opposite to QRS axis
 - (2) similar to ST segment axis
 - (3) similar to QRS axis
 - (4) at right angles to depolarization front
62. Ventricular activation time is likely to prolong in all the following except :
- (1) Severe hyperkalemia
 - (2) RBBB
 - (3) VT
 - (4) WPW
63. Recording left atrial depolarization is improved by recording :
- (1) V3R, V4R
 - (2) Oesophageal leads
 - (3) Chest leads in intercostal space higher
 - (4) Increasing paper speed and doubling amplitude

64. ST elevation is seen in all the following except :

- (1) Early repolarization
- (2) LV aneurysm
- (3) Subendocardial ischemia
- (4) Successfully resuscitation after cardiac arrest

65. U waves are usually most prominent in :

- (1) II, III, aVF
- (2) aVR
- (3) V2, V3
- (4) aVL, V5, V6

66. In a patient with DVT and breathlessness, the following will be useful in excluding pulmonary embolism :

- (1) ECG
- (2) Echocardiogram
- (3) D-dimer
- (4) None of the above

67. In a tri-phasic pericardial rub, the third component is related to :

- (1) T wave
- (2) ST segment
- (3) P wave
- (4) TP segment

68. Metabolic abnormality most likely to need temporary pacing is :

- (1) Hypokalemia
- (2) Hyperkalemia
- (3) Hypocalcemia
- (4) Hypercalcemia

69. PAT with block occurs with digoxin because it :

- (1) Increases automaticity
- (2) Increases QT interval
- (3) Is a vagolytic
- (4) Blocks I f current

70. Radionuclide myocardial perfusion imaging studies currently use radioactive :

- (1) Thallium
- (2) Technetium
- (3) Iodine
- (4) FDG

71. The following are true regarding TMT placement of limb leads on the chest instead of limbs as is done in conventional 12 lead ECGs except :
- (1) Reduces movement artifacts
 - (2) Reduces sensitivity for inferior wall ischemia
 - (3) Reduces recorded voltages
 - (4) Increases the ST depression as measured in milli-volts
72. In pacemakers, threshold is measured in :
- (1) watts
 - (2) ohms
 - (3) milli-amperes
 - (4) volts
73. Long QT with malignant ventricular arrhythmias :
- (1) Can improve with overdrive pacing
 - (2) Are usually congenital
 - (3) Treated with QT shortening drugs like lignocaine and mexilitene
 - (4) Should be treated with ICD
74. The acoustic characteristics of musical murmurs can be described as :
- (1) Wide range of decibels
 - (2) Wide range of frequencies
 - (3) Start as low frequency with gradual increase in frequency
 - (4) None of the above
75. The right coronary artery :
- (1) Lies in the posterior av groove
 - (2) Divides into RV branches at the crux
 - (3) Gives the acute marginal branch to the LV
 - (4) Gives anterior branches to RV and posterior branches to RA

76. In a person with nondominant right coronary :
- (1) The PLV territory is supplied by the diagonals
 - (2) The last branch of the RCA is the PLV
 - (3) The last branch of the left circumflex coronary is the PDA
 - (4) All the septal branches come from the LAD
77. In a patient with multiple ASDs :
- (1) The pulmonary veins will be anomalous
 - (2) The defects are usually ASD primum with ASD secundum
 - (3) Chromosomal anomalies are uncommon
 - (4) PAH will develop earlier
78. In a patient with sinus venosus ASD :
- (1) Venous anomalies are always present
 - (2) RV volume overload is usually absent
 - (3) Cleft mitral valve is common
 - (4) Cyanosis occurs late
79. In a patient of PAH, the pulmonary regurgitation end diastolic velocity will be more than :
- (1) 0.6
 - (2) 1.6
 - (3) 2.6
 - (4) 3.6
80. In tamponade the JVP will show a prominent :
- (1) A wave
 - (2) V wave
 - (3) X descent
 - (4) Y descent
81. In a patient with PDA Eisenmenger, systolic and diastolic murmurs will not originate at :
- (1) Ductus
 - (2) RV outflow tract
 - (3) Pulmonary valve
 - (4) Aortic valve

82. Incorrect for Valsalva would be :

- (1) Phase 1 and 3 are longer than phase 2 and 4
- (2) Phase 1 has increase in stroke volume
- (3) Phase 2 will show tachycardia
- (4) Phase 3 will show the lowest blood pressure

83. Ejection click in severe Valvar PS is inconstant because of :

- (1) Ventricular interdependence
- (2) Fall in pulmonary artery pressures with inspiration
- (3) Loss of atrial kick
- (4) Premature opening of the pulmonary valve in inspiration

84. Investigation most useful for establishing constrictive pericarditis as the cause of anasarca and elevated jugular venous pressure is :

- (1) PET scan (2) Chest CT (3) Angiography (4) 3D echo

85. A pulmonary AV fistula will produce :

- (1) Continuous murmur
- (2) Abnormal ECG
- (3) Abnormal 2d and Doppler echocardiogram
- (4) Abnormal Chest X-ray

86. In Ebstein's anomaly, bypass tracts :

- (1) are usually present
- (2) usually concealed
- (3) usually multiple
- (4) show incomplete RBBB on resting ECG

87. Measurements of blood troponins :

- (1) Picks up evidence of myocardial injury
- (2) Is a test specific for myocardial infarction
- (3) Is usually positive in first 4 hours
- (4) All of the above

88. ECG criteria for diagnosing LVH are :

- (1) Highly sensitive
- (2) Highly specific
- (3) Most useful for epidemiological studies
- (4) More accurate than echocardiography

89. Myocardial perfusion imaging in a patient with acute ST elevation myocardial infarction will show :

- (1) Patchy uptake
- (2) Increased uptake
- (3) A cold area
- (4) Reversible defect

90. Long term prognosis in chronic heart diseases correlates best with :

- (1) LV ejection fraction
 - (2) Myocardial perfusion abnormalities
 - (3) Functional class and exercise capacity
 - (4) Heart rate variability
-