

POST GRADUATE DIPLOMA IN CLINICAL
CARDIOLOGY (PGDCC) 00030

Term-End Examination

June, 2012

MCC-001 : FUNDAMENTALS OF CARDIOVASCULAR SYSTEM - 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 Sheets.
- (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 Sheets.
- (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. Which of the following is not a branch of the right coronary artery ?
 - (1) Acute Marginal
 - (2) Sinus - nodal artery
 - (3) Posterior descending artery
 - (4) Obtuse Marginal

2. Which of the following statements about coronary sinus is correct ?
 - (1) It is 6cm x 6cm in dimension
 - (2) It opens directly into the right ventricle
 - (3) It receives tributaries from the inferior vena cava.
 - (4) Middle cardiac vein drains into it.

3. All of the following statements regarding the pericardium are correct except :
 - (1) The pericardium has two layers the serous pericardium which is the outer layer and the fibrous pericardium which is the inner layer.
 - (2) The serous pericardium has two layers - the outer parietal and inner visceral layer.
 - (3) The visceral layer is also called the epicardium
 - (4) The pericardium is conical shaped.

4. Following are correct statements about cardiac cycle except :
 - (1) P wave corresponds to atrial systole
 - (2) Atrial systole corresponds to 'a' wave on JVP
 - (3) During isovolumetric relaxation both AV valves remain open.
 - (4) Rapid ventricular filing corresponds to 3rd heart sound.

5. Which of the following statements is true regarding Modified Bruce Protocol ?
 - (1) Is almost never used
 - (2) There are two 3 minute warm up stages at 1.7 mph and 0 percent grade and 1.7 mph and 5 percent grade
 - (3) There are two 3 minute warm up stages at 1.7 mph and 0 percent grade and 1.7 mph and 10 percent grade.
 - (4) There are two 3 minute warm up stages at 1.7 mph and 0 percent grade and 3.4 mph and 5 percent grade

6. Which is an incorrect statement about cardiac myocyte ?
 - (1) Glucose is the main energy substrate
 - (2) Adrenaline increases myocardial contractility
 - (3) Increase in heart rate increases myocardial oxygen demand
 - (4) Energy required for cross - bridge cycling is provided by ATP.

7. Following statement about heart - tube is not correct :
- (1) Primitive atria form the common atrium
 - (2) Primitive ventricle form the right ventricle
 - (3) A.V sulcus divides the atria ventricle
 - (4) Heart tube bulges into pericardial cavity.
8. The anterolateral infarct on ECG is best seen in leads :
- (1) V_1, V_2
 - (2) V_3, V_4
 - (3) V_5, V_6
 - (4) I, av_2
9. Which is the incorrect statement about chest x -ray PA view ?
- (1) CT ratio more than 60% in adults is abnormal
 - (2) Left atrium forms the left border
 - (3) Right ventricle forms the inferior border
 - (4) Right atrium forms the Right border.
10. Which of the following is not a radiographic feature of left atrium enlargement ?
- (1) Double density
 - (2) Straight left heart border
 - (3) Elevated right main bronchus
 - (4) Posterior displacement of left main bronchus
11. Which of the following statements about pulmonary vasculature is not correct :
- (1) 5 or more end on vessels in the lung fields characterize pulmonary plethora
 - (2) Pulmonary artery size > 25 mm is seen with pulmonary arterial hypertension
 - (3) Pulmonary oligems is characterized by the presence of Kerley B lines.
 - (4) Kerley A lines are seen radiating from the hilum.
12. Which is the correct statement about calcification ?
- (1) Calcium is most dense in the atrioventricular grooves
 - (2) Pericardial calcification is best seen on PA view
 - (3) Mitral calcification is seen overlying the spine
 - (4) Aortic calcification is identified near left lateral border.
13. Which of the following is incorrect about pulmonary embolism ?
- (1) Dilatation of pulmonary vessel proximal to embolus is wartenberg's sign
 - (2) Combination of enlarged artery alongwith oligoemia is Fleischner's sign
 - (3) Skiagram may be completely normal
 - (4) Hampton Hump is plethoric lung seen on skiagram
14. Following is not a sign of aortic dissection :
- (1) Mediastinal Widening
 - (2) Ring sign
 - (3) Flask shaped silhouette
 - (4) Left apical cap
15. All of the following are incorrect except :
- (1) 100 - 200 ml fluid must accumulate before being recognized on CXR
 - (2) Lamellar effusions are typically large
 - (3) Subpulmonic effusion cause mediastinal widening
 - (4) Vamching tumours result from cardiac tamponade.

16. Correct about conduction system of heart is :
- (1) SA node is located at the junction of IUC and RA
 - (2) SA node is referred to as the pacemaker of the heart
 - (3) AV node is located at the distal end of AV junction
 - (4) His bundle causes the maximum AV delay.
17. Which of the following is not a recognised depolarization / repolarization wave ?
- (1) P - wave
 - (2) QRS wave
 - (3) J wave
 - (4) U wave
18. Incorrect about atrial electrical activity :
- (1) Normal P axis is between +45 and +60
 - (2) RA depolarization forms the initial part
 - (3) Repolarization wave is not seen on surface ECG
 - (4) Normal P wave is > 3.5 mm.
19. Which statement about PR interval is incorrect ?
- (1) It represents AV delay
 - (2) It is measured from the end of P wave
 - (3) PR segment can be used as baseline
 - (4) It is normally less than 0.20 seconds
20. Which is incorrect statement about ventricular depolarization ?
- (1) It is represented as QRS complex
 - (2) Normally less than 120 msec
 - (3) R is first upward deflection after P
 - (4) First negative deflection after R is Q
21. Which is an incorrect statement about surface ECG ?
- (1) P - P interval provides atrial rate
 - (2) R - R interval provides ventricular rate
 - (3) QT interval marks ventricular depolarization
 - (4) U wave represents atrial repolarization
22. Which is not a cause of ST segment elevation ?
- (1) Early repolarization
 - (2) Hypokalemia
 - (3) Acute pericarditis
 - (4) LBBB
23. Which are the causes of ST segment depression except ?
- (1) NSTEMI
 - (2) Hypokalemia
 - (3) Digitalis effect
 - (4) Hypothermia
24. Following are the causes of T wave inversion except :
- (1) Myocardial Ischemia
 - (2) Apical HCM
 - (3) Digoxin effect
 - (4) Acute STEMI

25. Tall T waves can be seen in all the conditions except :
- | | |
|------------------|-----------------------------|
| (1) Hyponatremia | (2) Hyperacute stage of AMI |
| (3) Hyperkalemia | (4) Early repolarization |
26. ECG criteria for WPW (Wolf Parkinson White) Syndrome include all of the following except :
- (1) Short PR interval < 0.12 sec
 - (2) Delta waves
 - (3) Prolonged QRS > 0.10 sec
 - (4) Primary ST - T changes due to altered ventricular activation sequence
27. Correct statements about 'U' wave are all except :
- (1) Seen towards the end of T wave
 - (2) Seen prominently in hyperkalemia
 - (3) Represents repolarization of Purkinje network
 - (4) Normally deflects in the direction of T wave
28. Incorrect about QT segment is :
- (1) It is the duration of ventricular action potential
 - (2) Corrected QTC is less than 440 m secs
 - (3) Prolonged QTC protect against tachyarrhythmias
 - (4) QTC is calculated by dividing QT by square root of R - R interval
29. Following features favour the diagnosis of ventricular tachycardia except :
- | | |
|---------------------|--|
| (1) Fusion beats | (2) Capture beats |
| (3) AV dissociation | (4) Termination with carotid sinus massage |
30. Which of the following is an incorrect statement ?
- (1) Usual scalar ECG has 12 leads
 - (2) There are three unipolar leads
 - (3) Einthoven triangle uses limb leads
 - (4) Precordial leads correctly diagnose inferior wall MI
31. Which is a correct statement ?
- (1) Normal ECG paper speed is 30 mm/sec
 - (2) V₁ is placed on the left of the sternum
 - (3) V₄ is placed on the apex
 - (4) one small block represents 50 msecs
32. All statements are incorrect except :
- (1) Normal axis is 0 - to +90 degrees
 - (2) Left axis is -90 - to - 120 degrees
 - (3) -180 degrees is right axis
 - (4) Left axis deviation will have a large R wave in inferior leads

33. All are causes of left axis deviation except :
- | | |
|-------------------------|-----------------------|
| (1) LAHB | (2) RV apical pacing |
| (3) Ostium secundum ASD | (4) Tricuspid Atresia |
34. ECG findings in pulmonary embolism are all except :
- | | |
|--|--------------------------|
| (1) Normal or non-specific ECG | (2) RBBB pattern |
| (3) S ₁ Q ₃ T ₃ pattern | (4) Tall tented T waves. |
35. ST segment in pericarditis is characterised by all except :
- | |
|---|
| (1) Convex upward segment |
| (2) Widespread ST changes |
| (3) ST returns to baseline before T inversion |
| (4) Absence of Q waves |
36. Left atrial enlargement is characterized by all except :
- | | |
|--------------------------|-------------------------------|
| (1) Notched 'P' wave | (2) Small P terminal force |
| (3) Prolonged P duration | (4) Rightward shift of P axis |
37. Right atrial enlargement is seen in all except :
- | | |
|-----------------------------|--------------------------|
| (1) Tricuspid regurgitation | (2) Mitral regurgitation |
| (3) Ebstein's Anomaly | (4) Pulmonary embolism |
38. Diagnostic criteria for LUH are all, except :
- | | |
|-----------------------|---|
| (1) Costello criteria | (2) Estes criteria |
| (3) Cornell criteria | (4) Evidence of left atrial enlargement |
39. Incorrect statement about Acute myocardial infarction is :
- | |
|---|
| (1) Posterior infarction is seen in lead V ₃ |
| (2) RVTMI can be seen in lead V ₄ R |
| (3) Q waves reappear Acute MI |
| (4) ST elevation may persist in dyskinetic segments |
40. One of the classical arrhythmias seen with digitalis is :
- | | |
|-------------------------|----------------------|
| (1) Atrial fibrillation | (2) PAT with block |
| (3) Atrial flutter | (4) Sinus arrhythmia |
41. A VPC is characterised by all except :
- | | |
|------------------------|---------------------------------|
| (1) Narrow QRS complex | (2) RBBB morphology |
| (3) LBBB morphology | (4) Complete compensatory Pause |
42. Correct statements about atrial fibrillation are all except :
- | |
|-------------------------------------|
| (1) Atrial rate more than 350 / min |
| (2) Irregular R - R intervals |
| (3) Clearly visible regular P waves |
| (4) Variable heart rate |

43. All statements are correct except :
- (1) Mobitz type II is also called Wenckebach
 - (2) Prolonged PR interval is first degree block
 - (3) CHB causes AV dissociation
 - (4) LBBB is bifascicular block
44. Correct statements about stress testing are all except :
- (1) THR is 85% of MPHR
 - (2) IMets is 3.5 ml O₂/Kg/min
 - (3) Rate pressure product provides a good measure of oxygen requirement
 - (4) < 5 mets is considered good capacity
45. All of the following are ECG features of Early Repolarisation Syndrome except :
- (1) Tall T waves
 - (2) Upward Concave ST elevation
 - (3) Sinus tachycardi
 - (4) Sinus bradycardia
46. Into which part of the right atrium do all the large veins open ?
- (1) Rough artenior part
 - (2) atrium proper
 - (3) Sinus venarum
 - (4) auricle
47. The Tricuspid valve has 3 cusps. The cusp that is attached to the superolateral part of the margin and seperative inflow part of right ventricle from the infudibulum is the :
- (1) anterior cusp
 - (2) Posterior cusp
 - (3) inferior cusp
 - (4) septal cusp
48. Mark a point on lower border of left second costal cartilage 1.2 cm away from the sternal margin. Mark another point in the left fifth intercostal space 9 cm from the median plane. This line consists of the following parts of heart :
- (1) Right atrium forms right 1/3 and left atrium forms left 2/3 of the line
 - (2) This line consists of left atrium only
 - (3) This line consists of left ventricle only
 - (4) This line is formed by left ventricle except at its upper end which is formed by left atrium.
49. In a left atrial pressure wave form tracing the atrial filling during latter part of ventricular systole with the mitral valve closed is represented by :
- (1) 'a' wave
 - (2) 'c' wave
 - (3) 'V' wave
 - (4) 'x' descent
50. The 4th heart sound when heard corresponds to :
- (1) atrial systole
 - (2) atrial diastole
 - (3) ventricular systole
 - (4) ventricular diastole
51. In resting, fasting state 70 - 80% of myocardial oxygen consumption comes from oxidation of which of the following substrate ?
- (1) Glucose
 - (2) Lactate
 - (3) free fatty acids
 - (4) ketone bodies

52. What forms the inferior venacava ?
- (1) enlarged right sinus horn (2) right anterior cardinal vein
 (3) right vitelline vein (4) right umbilical vein
53. Developmental anomaly :
- The conus septum develops too far anteriorly giving rise to a large aortic and smaller stenotic pulmonary trunk. The septum is too far anterior to contribute to formation of complete septum and the aorta straddles the defect. This leads to the following congenital heart disease.
- (1) ASD (2) VSD
 (3) Transposition of great vessels (4) Tetralogy of fallot
54. With the current high KVp technique in chest radiography, the focus - film distance is :
- (1) 3 feet (2) 5 feet (3) 6 feet (4) 9 feet
55. The only chamber that does not contribute to cardiac silhouette on PA view of chest roentgenography is
- (1) RA (2) RV (3) LA (4) LV
56. The cardiac image appears enlarged in which of the following views ?
- (1) PA view (2) Lateral view
 (3) RAO view (4) LAO view
57. Extension of LV behind the barium filled esophagus and behind the IVC at a point 2 cm above the diaphragm is called :
- (1) Hoffman - Rigler sign (2) Westermark sign
 (3) Fleischner's sign (4) Hampton's sign
58. In grading of pulmonary venous hypertension - Interstitial pulmonary edema straightened right hilar angle, Kerley B lines is graded as :
- (1) Grade 1 (2) Grade 2
 (3) Grade 3 (4) Grade 4
59. The descending aorta begins at the level of :
- (1) 2nd thoracic vertebra (2) 3rd thoracic vertebra
 (3) 4th thoracic vertebra (4) 5th thoracic vertebra
60. One of the early manifestations of interstitial edema on chest X rays is :
- (1) Kerley A lines (2) Kerley B lines
 (3) Kerley C lines (4) Balz wing appearance

61. Fleischner's sign on chest X ray is a feature of :
- (1) TOF (Tetralogy Of Fallot) (2) Myocardial Infarction
(3) Aortic stenosis (4) Pulmonary embolism
62. Widened mediastinum is defined as a mediastinal width of more than _____ on the AP chest X ray :
- (1) 13.5 cm (2) 8 cm (3) 5.5 cm (4) 3 cm
63. The outermost layer of the pericardium is :
- (1) Visceral layer (2) Parietal layer
(3) Fibrous layer (4) epicardium
64. Surface markings - Markings at the sternal end of the left 3rd costal cartilage represents
- (1) Pulmonary valve (2) Aortic valve
(3) Mitral valve (4) Tricuspid valve
65. Which of the following arises from anterior aortic sinus ?
- (1) RCA (2) LCA (3) Marginal (4) Diagonal
66. The coronary sinus opens into :
- (1) Aorta (2) Right atrium
(3) Right ventricle (4) Left ventricle
67. Development of heart -
The partitioning of atrium begins about :
- (1) 5th day of gestation (2) 16th day of gestation
(3) 28th day of gestation (4) 35th day of gestation
68. SA nodal artery commonly arises from :
- (1) RCA (2) anterior descending artery
(3) Left circumflex artery (4) ramus intermedius artery
69. The SA node is located at :
- (1) junction of inferior venacava and right atrium
(2) junction of superior venacava and right atrium
(3) auricle
(4) near fossa ovalis

70. The inter atrial conduction is through :
- (1) Right bundle Branch (2) Left Bundle Branch
 (3) Bachmann's bundle (4) HIS pinkinjes fibres.
71. Which of the following is not visualised on ECG ?
- (1) atrial depolarisation (2) vetricular depolarisation
 (3) atrial repolarisation (4) ventricular repolarisation
72. Prominent 'J' waves or osborne waves an ECA indicate :
- (1) Hyperkalemia (2) Hypokalaemia
 (3) Hyperkalcemia (4) Hypothermia
73. Moderator band is seen in the :
- (1) Right atrium (2) Right ventricle
 (3) Left atrium (4) Left ventricle
74. Canon 'A' waves on jugular pulse indicate :
- (1) SVT (2) AF (3) AV dissociation (4) LBBB
75. ECG change of :
- ST. segment elevation which concave widespread and not corresponding to any specific arterial territory, followed by T inversion but no Q waves indicates
- (1) STEMI - extensive (2) Acute Myocarditis
 (3) Acute pericarditis (4) Mitral valve prolapse
76. IMET in exercise testing means :
- (1) 1 ml O₂ /min / Kg body wt (2) 2.5 ml O₂ /min / Kg body wt
 (3) 3.5 ml O₂ /min / Kg body wt (4) 5 ml O₂ /min / Kg body wt
77. Patient having VI and Hypotension, which is the first thing to do ?
- (1) IV CARDARONE (2) IV LIGNOCAINE
 (3) INN BATION (4) D.C VERSION
78. Contraindication of thrombolytic therapy except :
- (1) Acute bleeding (2) Recent Surgery
 (3) Haemorrhagic stroke (4) Diabetes mellitus

79. Dresslee's syndrome is due to :
- (1) VIRUS (2) FUNGUS
(3) .AUTO IMMUNE REACTION (4) BACTERIA
80. PR segment elevation in Acute Pericarditis is generally seen in :
- (1) aVR and V₁ (2) L₂ L₃ avF (3) V₂ V₃ V₄ (4) L₁ avL, V₆
81. The QRS complex begins to widen when patient serum potassium level reaches :
- (1) 4.5 - 5.5 m.EQ/L (2) 5.0 - 6.0 m.EQ/L
(3) 6.0 - 6.5 m.EQ/L (4) > 10 m.EQ /L
82. Detection of visible T waves alternans in patient with LQTS indicate :
- (1) Decreased rest of cardiac arrhythmia
(2) Increased risk of cardiac arrhythmia
(3) No change in risk of cardiac arrhythmia
(4) All of the above
83. Absolute Contraindication to stress testing :
- (1) Critical Acute stenosis (2) A typical chest pain
(3) post CABG risk stratification (4) old M.I
84. In Atrial flutter the heart rate is :
- (1) Atrial heart rate is 250 - 350 BPM
(2) Atrial Heart rate is 350 - 400 BPM
(3) Atrial heart rate is 400 - 500 BPM
(4) Atrial Heart rate is less than 100 BPM
85. The features of PAH on X ray are all except :
- (1) Central arterial Enlargement
(2) Sharp pruning of peripheral vasculature
(3) Enlarged descending pul Artery
(4) Features of LUH
86. E.G.G feature of Ventricular Aneurysm :
- (1) Persistent ST elevation (2) Persistent ST depression
(3) Persistent 'T' Wave (4) AF
87. The junction between end of QRS complex and ST segment is called :
- (1) J point (2) S point (3) ST point (4) PR junction

88. CORONELL VOLTAGE CRITERIA FOR LUH on men :

- (1) S in $V_3 + R$ in $avL > 24$ mm (2) S in $V_6 + R$ in $avL > 24$ mm
(3) S in $V_3 + R$ in $avL < 24$ mm (4) S in $V_6 + R$ in $avL < 24$ mm

89. Acute chest pain is caused by all except :

- (1) Myocardial Infarction (2) Pulmonary Embolism
(3) Aortic dissection (4) Exertional Angina

90. $S_1 Q_3 T_3$ finding on ECG is usually as all except :

- (1) Pulmonary Embolism (2) Acute Bronchospasm
(3) Phenmotherax (4) Acute Pericarditis
-