

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

**Term-End Examination**

**December, 2013**

**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. Sinus Venarum is smooth part of :
 

(1) Right Atrium	(2) Left Atrium
(3) Right Ventricle	(4) Left Ventricle
  
2. Venae Cordis Minimae are :
 

(1) Small pulmonary vein	(2) Small tributaries to SVC/IVC
(3) Small opening of veins of heart	(4) Small Anomalous Pulmonary vein
  
3. "Musculi Pectinati" are found in :
 

(1) Right Atrium + Left Atrium	(2) Left Atrium
(3) Right Ventricle	(4) Left Ventricle
  
4. Wall of fossa ovalis is formed by :
 

(1) Septum primun	(2) Septum secundum
(3) AV septum	(4) Conus
  
5. Which of the following is wrong ?
  - (1) Left Atrioventricular orifice is bigger than right Atrioventricular orifice
  - (2) Chordae tendinous are tendinous strands attached to cusps
  - (3) Chordae tendinous are attached to papillary muscle
  - (4) Tricuspid valve has three cusps
  
6. In flow part of Right Ventricle separates from the infundibulum by :
 

(1) Posterior cusps	(2) Septal cusps
(3) Anterior cusps	(4) Crista terminalis
  
7. Moderator band is between :
  - (1) Anterior and posterior papillary muscle
  - (2) Anterior papillary muscle and Intraventricular septum
  - (3) Posterior papillary muscle and Intraventricular septum
  - (4) Right free wall and IVS

8. Crescentic parts near the free edges of semilunar Aortic valve is called :
- (1) Nodules (2) Lunules  
(3) Crista terminalis (4) Raphe
9. Atrioventricular septum - What is not true ?
- (1) Separated Left ventricle and Rt. Atrium  
(2) It is membranous  
(3) Situated posterior to septal cusp  
(4) Is seen only in utero
10. Which part of the ventricle is not stimulated in normal cardiac conduction ?
- (1) Papillary muscles (2) Basal portion of ventricle  
(3) Anterior portion of ventricles (4) Apex
11. About Right Coronary Artery all are true except :
- (1) Supplies Right Atrium (2) Supplies Right ventricle  
(3) Supplies Conduction system (4) Sole supplies of AV node
12. Left Coronary Artery supplies :
- (1) LAs LV (2) Anterior 2/3 of IVS  
(3) Adjacent RV (4) All of the above
13. Venous drainage of LA is by :
- (1) Great cardiac vein (2) Posterior vein  
(3) Oblique vein (4) Anterior vein
14. Which part of heart is not visible on Anterior surface of heart ?
- (1) RA (2) RV (3) LA (4) LV

15. Mitral Auscultatory Area is :
- (1) Above cardiac apex
  - (2) Lower end of body of sternum
  - (3) It's separate from valve closure sound
  - (4) Right intercostal space
16. R wave in ECG corresponds to :
- (1) Isovolumetric contraction
  - (2) Isovolumetric relaxation
  - (3) Passive filling of ventricles
  - (4) Atrial repolarisation
17. Rapid inflow in passive ventricular filling corresponds to :
- (1) Third heart sound
  - (2) Fourth heart sound
  - (3) First heart sound
  - (4) Second heart sound
18.  $S_4$  corresponds to :
- (1) Late closure of pulmonary valve
  - (2) Atrial Teich in ventricular filling phase
  - (3) Early opening of AV valve
  - (4) Premature closure of aortic valve
19. 'a' Wave followed by z trough of SVP due to :
- (1) Closure and opening of semilunar valves
  - (2) Upward then downward movement of TV-Annulus
  - (3) Right atrial contraction followed by Right Atrial Relaxation
  - (4) Ventricular relaxation
20. Split of  $S_2$  ( $A_2$  and  $P_2$ ) widens during inspiration due to :
- (1) Low pressure RA/RV hemodynamics
  - (2) Early closure of Aortic and Pulmonic valve
  - (3) Late closure of pulmonary valve due to RA/RV filling
  - (4) Arterial hypertension

21. Systolic Blood Pressure is determined by :
- (1) Cardiac output
  - (2) Peripheral resistance
  - (3) Both cardiac output and peripheral resistance
  - (4) Blood coagulability
22. Diastolic BP is determined by :
- (1) Cardiac output
  - (2) Peripheral resistance
  - (3) Hemoglobin level
  - (4) ESR
23. Significant Venodilatation is responsible for deterioration in :
- (1) RV infarct
  - (2) LV infarct
  - (3) Severe HyH
  - (4) Pulmonary congestion
24. Significant Venodilatation worsens the condition in all except :
- (1) Pericardeal tamponade
  - (2) Endomyocardial fibrosis
  - (3) RV infarct
  - (4) Pulmonary fibrosis
25. Venous return in cardiac circulation is determined by all except :
- (1) Inspiratory phase of respiration
  - (2) Skeletal muscle contraction
  - (3) Dehydration and loss of blood volume
  - (4) Impedance to IV filling
26. After load is the resistance imposed by all except :
- (1) Aortic valve
  - (2) Aorta
  - (3) Peripheral blood vessel
  - (4) Pulmonary artery
27. During systole the cross bridge between actin and myosin is activated by intracellular :
- (1) Calcium
  - (2) Sodium ions
  - (3) Potassium ions
  - (4) Magnesium ions

28. Which is the main substrate for energy generation in myocardial cells ?  
(1) FFA                      (2) Glucose                      (3) Lactate                      (4) Ketone bodies
29. Which is the substrate used by myocardial cells during ischemia as main substrate ?  
(1) FFA                      (2) Glucose                      (3) Lactate                      (4) Ketone bodies
30. Which of the following is regulatory protein for binding between Actin and Myosin ?  
(1) Tropomyosin                      (2) Trop-I  
(3) Sarcomere                      (4) None of the above
31. Bulbus cordis gives rise to :  
(1) Atria                      (2) Ventricles  
(3) Aorta and pulmonary artery                      (4) SA node
32. Heart is derived from :  
(1) Ectoderm                      (2) Mesoderm                      (3) Endoderm                      (4) Ecto-Mesoderm
33. Right Anterior Cardinal vein becomes :  
(1) SVC                      (2) IVC                      (3) Gets obliterated                      (4) LAA
34. Right Vitelline vein becomes :  
(1) SVC                      (2) IVC                      (3) Gets obliterated                      (4) Hepatic vein
35. The Umbilical vein :  
(1) Becomes SVC                      (2) Becomes IVC  
(3) Gets obliterated                      (4) Becomes Umbilicus
36. Pulmonary veins develop from :  
(1) Sprout of LA                      (2) Bulbus Cordis  
(3) Right Vitelline vein                      (4) Anterior Cardinal vein

37. Ostium primum ASD is due to defective growth of :
- (1) Endocardial cushion                      (2) Septum primum  
(3) Septum secundum                          (4) Conus
38. Ostium secundum ASD is due to defective growth of :
- (1) Endocardial cushion                      (2) Septum primum  
(3) Septum secundum                          (4) Septum primum and secundum
39. Tetralogy of Fallot develops due to :
- (1) Anterior deviation of canal septum  
(2) Failure of growth of IVS  
(3) Septal growth with Truncus Arteriosus malformation  
(4) Pulmonic stenosis
40. Which chamber of heart is normally not profiled in PA view of xy - chest ?
- (1) LV                      (2) RV                      (3) LA                      (4) RA
41. Hoffman Riigler sign is to assess :
- (1) LV enlargement                      (2) LA enlargement  
(3) RA enlargement                      (4) RV enlargement
42. Sternal contract sign in lateral view is seen in which chamber enlargement :
- (1) LV enlargement                      (2) RV enlargement  
(3) RA enlargement                      (4) LA enlargement
43. Straightening of left heart - border is due to enlargement of :
- (1) RA enlargement  
(2) Left Atrial appendage enlargement  
(3) LV enlargement  
(4) RV enlargement

44. Features of Pulmonary Venous hypertension in X-ray chest PA view are all except :

- (1) Kerley B sign
- (2) Upward moustache sign
- (3) "Air space" appearance pulmonary C<sup>++</sup> opacity
- (4) Cardiomegaly

45. Pulmonary embolism causes following change in X-ray chest PA view :

- (1) Dilatation of LV
- (2) Distal plethora of vessel
- (3) Patchy basal lung fields
- (4) Hampton's Hump

46. Bachmann's Bundle are conduction tracts which are :

- (1) Inter Atrial
- (2) Internodal
- (3) Interventricular
- (4) Interatrial and Interventricular

47. Electrical conduction in ventricle runs in septum :

- (1) Left to Right
- (2) Right to Left
- (3) Along the septum
- (4) None of the above

48. J point in ECG is Junction between which segment :

- (1) P - QRS
- (2) QRS and S1
- (3) End of T wave
- (4) None of the above

49. ST segment change is assessed :

- (1) 20 msec after J point
- (2) 40 msec after J point
- (3) 60 msec after J point
- (4) 100 msec after J point

50. Causes of ST segment elevation are :

- (1) Ischemia
- (2) DCM
- (3) LAFB
- (4) RCM



51. Prominent J wave or Osborne waves are seen in :
- (1) Hypothyroidism
  - (2) Hypokalemia
  - (3) Hypothermia
  - (4) Hypocalcemia
52. Non ischemic causes of ST ↓ are :
- (1) Ventricular dilatation
  - (2) Therapeutic doses of digoxin
  - (3) Hypokalemia
  - (4) Glucose infusion
53. Common causes (non ischemic) of T wave inversion is :
- (1) Pericardial Effusion
  - (2) Subarachnoid hemorrhage
  - (3) LV apical clot
  - (4) All of the above.
54. Tall T wave is due to :
- (1) Initial phase of MI
  - (2) Hypokalemia
  - (3) Late repolarisation
  - (4) Hypernatremia
55. What is not true of V wave ?
- (1) Seen best in  $V_{2-3}$
  - (2) Ascending limb moves faster
  - (3) Hypokalemia induces it
  - (4) Never a sign of ischemia
56. Which of the following is "Sign quo non" to diagnose Ventricular tachycardia ?
- (1) QRS > 140 msec
  - (2) Complete AV dissociation
  - (3) Variable heart sounds and pulse volume
  - (4) Hypotension
57. ECG findings suggesting AV Dissociation are :
- (1) Dissociated T waves
  - (2) Fusion beats
  - (3) Intermittent APC's
  - (4) Bradycardia

58. QRS morphology suggesting ventricular tachycardia is :
- (1) Chapman sign
  - (2) Cabrera sign
  - (3) Triphasic contour in lead  $V_1$
  - (4) Right axis deviation
59. Which of the following is the most specific sign of ventricular tachycardia among the following:
- (1) RS interval  $> 100$  msec
  - (2) VA dissociation
  - (3) Heart rate  $> 130$ /min
  - (4) Left posterior hemiblock
60. In indeterminate axis of QRS is :
- (1) Positive in lead-I and  $av_F$
  - (2) Positive in lead-I and negative in lead  $av_F$
  - (3) Negative in lead-I and positive in lead  $av_F$
  - (4) Negative in lead  $av_F$  and lead-I
61. Causes of Northwest-Axis or Indeterminate Axis is :
- (1) Emphysema
  - (2) Hypokalemia
  - (3) Supra ventricular tachycardia
  - (4) Hypocalcemia
62.  $S_1Q_3T_3$  specific for :
- (1) Acute bronchospasm
  - (2) Premortorax
  - (3) Pulmonary embolism
  - (4) Inferior wall MI
63. Most specific sign of Acute pericarditis in ECG is :
- (1) PR depression in all leads except  $av_R, V_1$
  - (2) ST elevation
  - (3) Loss of R wave
  - (4) Diffuse ST changes

64. Differentiating pericardites from myocardial infarction in ECG is by following features in pericardites :
- (1) ST elevation
  - (2) No arrhythmia as heart block
  - (3) T inversion before
  - (4) Pathological Q waves in  $V_1$ - $V_6$
65. P mitrale in ECG :
- (1) Peaking of P wave
  - (2) Biphasic P wave in  $V_6$
  - (3) P wave axis  $30^\circ$
  - (4) Best seen in lead II and  $V_1$
66. P pulmonale has following features in ECG :
- (1) Height of P  $> 2.5$  mm in inf leads
  - (2) P wave axis  $> 30^\circ$
  - (3) P to R ratio  $> 25\%$
  - (4) Biphasic P in  $V_1$
67. Most specific sign of LVH in ECG is :
- (1) S in  $V_3$  + R in  $av_2$   $> 24$  mm in male  
S in  $V_3$  + R in  $av_2$   $> 20$  mm in female
  - (2) S in  $V_1$  + R in  $V_5$  or  $V_6$   $> 35$  mm
  - (3) R in lead I + S in lead III  $\geq 25$  mm
  - (4) R in  $av_2$   $> 11$  mm
68. Posterior wall MI will show reciprocal ECG changes in which of the following leads ?
- (1)  $V_{1-2}$
  - (2) I,  $av_L$
  - (3) II, III,  $av_F$
  - (4) I,  $av_L$ ,  $V_{5-6}$
69. We suspect Acute MI with ECG showing LBBB by following features :
- (1) Dome and dart appearance of S wave
  - (2) Pathological Q wave in lateral precordial leads
  - (3) Shallow T wave inversion
  - (4) Elevated PR segment in  $av_L$

70. Which of the following is not a ECG features of hyperkalemia ?
- (1) Sinoventricular Conduction      (2) Prolonged QT interval  
(3) Tall T wave      (4) Wide QRS complex
71. Which of the following is not a feature of Digoxin toxicity in ECG ?
- (1) Ventricular parasystole      (2) Ventricular tachycardia  
(3) Atrial fibrillation      (4) Paroxysmal atrial tachycardia
72. Following are the effect of phenothiazines on ECG excepts :
- (1) Supraventricular tachycardia      (2) Ventricular tachycardia  
(3) Flattening of U wave      (4) Prolongation of QT<sub>c</sub>
73. Which of the following drugs may cause complete heart block and sinus bradycardia ?
- (1) Antidepressants  
(2) H2 blocker like Ranitidine and Cimetidine  
(3) Phenothiazine  
(4) None of the above
74. Torsade de pointes is caused by :
- (1) Hypothermia      (2) Hypoxymesia  
(3) Hypokalemia      (4) Hypocalcemia
75. Commonest cause of accelerated junctional rhythm is :
- (1) Hypoxia      (2) Digoxin toxicity  
(3) Cardiomyopathy      (4) Acute MI
76. Multifocal Atrial tachycardia is diagnosed when :
- (1) Heart rate is 100-250/bpm  
(2) At least 3 different morphologies seen in a lead for P wave  
(3) Irregular Ventricular response  
(4) Underlying COPD is diagnosed

77. Accelerated Ventricular rhythm is :
- (1) Visually benign
  - (2) Needs urgent treatment with DC shock
  - (3) Sign of failed thrombolysis
  - (4) Long lasting
78. Which of the following condition does not need oral anticoagulation as prophylaxis against cardiac embolism ?
- (1) Atrial premature complex
  - (2) Atrial flutter
  - (3) Atrial fibrillation
  - (4) Intermittent atrial fibrillation
79. Which of the following is **true** of atrial fibrillation ?
- (1) Its due to multiple micro entrants cycles
  - (2) Effective contraction is not preserved
  - (3) Needs no anticoagulant prophylaxis
  - (4) Small P wave
80. Probability of atrial fibrillation reverting to sinus rhythm is poor if :
- (1) LA is > 4.5 cms in size
  - (2) Its hypertension related
  - (3) If person is > 60 years old
  - (4) Thyrotoxicosis even if treated
81. PSVT with RP interval less than 70 msec. seen in :
- (1) AVNRT
  - (2) AVRT
  - (3) Atrial tachycardia
  - (4) None of the above
82. Irregular RP interval is not a feature of :
- (1) Atrial fibrillation
  - (2) Multifocal Atrial tachycardia
  - (3) Atrial flutter with varying conduction
  - (4) Wenkebach periodicity

83. Coarse VF (ventricular fibrillation) - which is not true ?
- (1) Ineffective ventricular contraction
  - (2) Waves are more than 3 mm height
  - (3) Chronic - irreversible
  - (4) Needs early cardioversion
84. Torsades de pointes - Which of the following feature is not preserved :
- (1) QRS revolves around isoelectric line
  - (2) QT is shortened
  - (3) Prominent U wave
  - (4) T wave alternans
85. Causes of long QT syndrome are following except :
- (1) Congenital
  - (2) Type IA and III anti-arrhythmias
  - (3) Hypokalemia
  - (4) Hypermagnesium
86. Which of the following is not treated with pacemaker ?
- (1) Mobitz type I block
  - (2) Asymptomatic sick sinus syndrome
  - (3) Mobitz type II block
  - (4) CHB
87. Which of the following is not contraindication to stress test ?
- |                         |                     |
|-------------------------|---------------------|
| (1) Monomorphic VPCs    | (2) Unstable Angina |
| (3) Physical disability | (4) LVF-class-IV    |

88. MET has following features in stress testing except :

- (1) 1 met = 3.5 mlO<sub>2</sub>/vt/ly
- (2) Adequate exercise means at least 6 mets is achieved
- (3) Its metabolic unit of exercise
- (4) It is an unit of O<sub>2</sub> uptake while resting in standing position

89. Contraindication for stress testing are except :

- (1) Acute coronary syndrome
- (2) Atrial fibrillation
- (3) LVOT obstruction (severe)
- (4) LVF

90. Stress test is used for all except :

- (1) Detection of ischemic heart disease
  - (2) To assess exercise capacity
  - (3) To diagnose SSS (chronotropic competence)
  - (4) Asymptomatic T wave inversion
-