

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

Term-End Examination

June, 2011

01150

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) *Erase completely any error or unintended marks.*
- (vi) *There will be **90** questions in this paper and each question carries equal marks.*
- (vii) *There will be no negative marking for wrong answers.*
- (viii) *No candidate shall leave the examination hall at least for **one** hour after the commencement of the examination.*

1. Diaphragmatic surface is formed by :
 - (1) Lt. ventricle and Rt. ventricle
 - (2) Rt atrium and Rt. ventricle
 - (3) Both atria
 - (4) Rt. Ventricle only

2. Find out the wrong statement :
 - (1) The inter atrial septum shows an oval shaped depression called fossa ovalis.
 - (2) The wall of fossa ovalis is thin and represents the embryonic septum secundum.
 - (3) The limbus fossa ovalis represents lower curved edge of septum secundum.
 - (4) Sinus venarum and the atrium proper meet at a muscular ridge called crista terminalis.

3. Find out the correct statement :
 - (1) Aortic orifice is slightly larger than pulmonary orifice
 - (2) Pulmonary orifice is Rt. and anterior to aortic orifice
 - (3) Pulmonary orifice is placed above and to the left of tricuspid orifice and aortic orifice is placed intervening between them
 - (4) Largest orifice is mitral orifice

4. Which is true ?
 - (1) Electrical impulses can travel from atria to ventricles through fibrous skeleton.
 - (2) Normally electrical impulses travel to ventricles from atria by muscles.
 - (3) The only electrical connection between atria and ventricles is A.V. node.
 - (4) Impulse travels from atria to ventricle by A.V. node and fibrous skeleton.

5. Artery to the A.V. node is a branch of :
 - (1) LAD
 - (2) In majority of people left circumflex artery
 - (3) Always from RCA
 - (4) In majority from RCA and is far from LL. circumflex artery

6. In a cardiac cycle length of 0.8 sec, atrial systole consists a length of :
 - (1) 0.1 sec
 - (2) 0.5 sec
 - (3) 0.3 sec
 - (4) 0.4 sec

7. Find out the wrong statement :
- (1) Rapid filling phase corresponds to S_3 .
 - (2) S_3 corresponds to atrial systole.
 - (3) Opening snap corresponds to opening of A.V. valves.
 - (4) Ejection click corresponds to closure of A.V. valves.
8. Find out the correct statement :
- (1) QRS duration in ECG indicates systolic period of ventricles.
 - (2) Action potential duration is the duration of QRS in ECG.
 - (3) QRS in ECG determines the depolarization of ventricles.
 - (4) Mechanical activity (ventricular constriction) proceeds electrical activity.
9. Partitioning of the atrium begins (gestational age) :
- (1) about 28th day and completes by end of 7th week.
 - (2) about 4th week and completes by end of 1st trimester.
 - (3) about 7th week and completes by 12th week.
 - (4) about 5th week and completes by 28th week.
10. Transposition of great vessels means :
- (1) Ventriculo-arterial discordance.
 - (2) Atrio ventricular discordance.
 - (3) Aorta lying anterior to Pulmonary artery.
 - (4) Side by side position of Aorta and Pulmonary artery.
11. Chances of having complex congenital heart disease is least in :
- (1) Situs Inversus Dextrocardia.
 - (2) Situs Solitus Dextrocardia.
 - (3) Situs Ambiguous Dextrocardia.
 - (4) Situs Inversus Levocardia.
12. In P.A. view of chest x-ray Rt. border is formed by :
- (1) SVC or Ascending Aorta, RA and IVC.
 - (2) RA and SVC and RV.
 - (3) RA and I.A.
 - (4) RV and SVC

13. Widening of carinal angle is the result of (in PA view CXR) :
- | | |
|---------------------|--------------------------------|
| (1) RV enlargement. | (2) Biventricular enlargement. |
| (3) LA enlargement. | (4) RA enlargement. |
14. Enlarged Lt. atrial appandage on PA view of chest *x-ray* strongly suggest :
- | | |
|---------------------------|------------------------------|
| (1) Mitral stenosis. | (2) Lt. ventricular failure. |
| (3) Mitral Regurgitation. | (4) Cor-triatriatum. |
15. Obliteration of retrosternal space on lateral view chest *x-ray* indicates :
- | | |
|---------------------|---------------------------|
| (1) RV enlargement. | (2) RA enlargement. |
| (3) LA enlargement. | (4) Biatrial enlargement. |
16. A small aortic knuckle on PA. view chest *x-ray* may be a feature of the following diseases except :
- | | |
|-----------------------|---------------------------|
| (1) ASD. | (2) Severe MS. |
| (3) Supravalvular AS. | (4) Aortic Regurgitation. |
17. Choose the correct answer :
- (1) 'P' wave represents atrial depolarization and repolarization.
 - (2) 'T' wave represents atrial and ventricular repolarization.
 - (3) Atrial repolarization waves falls during ventricular depolarization and therefore it is not separately visualized.
 - (4) Q wave represents atrial repolarization.
18. Find out the wrong answer :
- (1) QRS complex on ECG indicates ventricular depolarization.
 - (2) The duration of normal QRS complex is 0.06–0.12 sec.
 - (3) Normal VAT on Rt. sided chest leads is 0.02 sec and on left 0.04 sec.
 - (4) QRST waves indicates ventricular depolarization.
19. In which of the following condition ST segment elevation does not occur :
- | | |
|-------------------------|----------------------------|
| (1) Acute pericarditis. | (2) Hypothermia. |
| (3) Hypokalemia. | (4) Advanced Hyperkalemia. |

20. Which is not the cause of non-ischaemic 'ST' segment depression :
- (1) MVP. (2) Digoxin effect.
(3) Early repolarization. (4) CNS disease.
21. Tall T wave is found in :
- (1) Early repolarization abnormality in young individuals.
(2) Myocarditis.
(3) LVH \bar{c} strain.
(4) NSTEMI.
22. Find out the correct statement in relation to digitalis therapy :
- (1) ST-T wave changes indicate digitalis effect and treatment with digoxin may be continued.
(2) ST-T changes indicate digitalis toxicity and drug must be stopped
(3) ST-T changes indicate overdoes of digoxin and dose to be reduced
(4) ST elevation with digoxin therapy indicates digitalis toxicity
23. Choose the correct statement :
- (1) QTc is normally less than 0.44 sec and it is variable with change in heart rate.
(2) QT interval represents ventricular action potential duration and period of ventricular repolarization only.
(3) QT interval is the time for ventricular repolarization and depolarization.
(4) With tachycardia QT interval increases and with bradycardia it decreases.
24. Which is not the cause of wide QRS tachycardia :
- (1) Ventricular tachycardia. (2) Orthodromic AVRT.
(3) Antidromic AVRT. (4) AVNRT with aberrancy.
25. In wide QRS tachycardia, capture beat and fusion beat suggest :
- (1) VT (2) SVT with aberrancy
(3) AVRT (4) Sinus tachycardia with aberrancy

26. In wide QRS tachycardia, which is less likely to be VT :
- (1) If RS complex cannot be identified in any precordial leads.
 - (2) RS complex is identified in any precordial lead and RS interval is > 100 ms.
 - (3) Evidence of A.V. dissociation is present.
 - (4) V_1 is positive \bar{e} triphasic complex of rSR pattern and in V_6 qRS patterns.
27. QRS axis of 105° in a 8 years old boy usually indicates :
- (1) Normal finding.
 - (2) RVH.
 - (3) RBBB.
 - (4) RBBB + LAHB.
28. Which part of the conduction tissue has fastest conduction rate :
- (1) S.A. node.
 - (2) Interatrial conduction tract.
 - (3) A.V. node.
 - (4) Purkinje fibres.
29. ECG finding of $S_1Q_3T_3$ is :
- (1) specific finding only for PE.
 - (2) can be found in any cause of acute cor-pulmonale.
 - (3) a feature of true posterior wall myocardial infarction.
 - (4) found in Lt. anterior hemiblock.
30. Which is correct statement in Pericarditis ?
- (1) T inversion start only when ST segment returns to baseline.
 - (2) Occasionally Q wave may be found in chronic pericarditis.
 - (3) T inversion present only in precordial leads.
 - (4) Reciprocal changes may be seen in Pericarditis.
31. Find the correct statement in relation to Normal 'P' wave :
- (1) Always positive in all limb leads except in aVR.
 - (2) Always positive in I_{r} , I_{II} and in I_{rIII} .
 - (3) May be positive or negative in I_{rIII} .
 - (4) Rarely it may be negative in aVF.

32. Which is not the criteria for Rt. atrial enlargement ?
- (1) 'P' wave height > 2.5 in I_{II} , I_{III} and aVF.
 - (2) P wave axis $+75^\circ$ or greater.
 - (3) Broad and notch 'P' in I_{II} .
 - (4) Positive aspect of 'P' in V_1 or V_2 is > 1.5 m in height.
33. Left atrial enlargement on ECG is not found in :
- (1) Aortic stenosis.
 - (2) TOF.
 - (3) Mitral Regurgitation.
 - (4) Hypertension.
34. Find out the correct statement in relation to RVH or LVH on ECG :
- (1) Highly specific but less sensitive for both RVH and LVH.
 - (2) Both high specific and high sensitive for LVH, but not for RVH.
 - (3) Specific for LVH but highly sensitive for RVH.
 - (4) Highly sensitive for both RVH and LVH but less specific for both.
35. Which is not the feature of RVH in ECG findings ?
- (1) Rt. axis deviation.
 - (2) Tall R wave in V_1 and V_3R .
 - (3) Rt. atrial enlargement.
 - (4) Incomplete LBBB.
36. In relation Hypokalemia which is the correct statement on ECG ?
- (1) QRS complex begins to widen when serum K^+ level drops to 4.5 mEq/L.
 - (2) T and U waves become taller.
 - (3) T wave begins to flatten and U becomes prominent.
 - (4) T-waves become taller with serum K^+ level < 1 mEq/L.
37. Which is the correct answer ?
- (1) ECG changes of ST-T segment may be present in patients with digoxin in therapeutic dosage and not necessarily indicate toxicity.
 - (2) ST segment depression on ECG with digoxin therapy always indicate digitalis toxicity and need to stop digoxin immediately.
 - (3) Unless dose is increased, same therapeutic dose to same patient never leads to toxicity of digoxin.
 - (4) Simultaneous heart block and atrial tachycardia donot happen in digitalis toxicity, it is usually tachycardia or heart block that comes separately.

38. The most common cause of an unexplained pause on ECG is _____.
- (1) S.A. block (2) Sinus arrest
(3) A.V. block – mobility type II (4) Non-conducted atrial premature beat
39. Find the correct statement :
- (1) Supraventricular ectopic often leads to complete compensatory pause.
(2) Ventricular ectopics always lead to complete compensatory pause.
(3) Incomplete or even absent compensatory pause may be there with ventricular ectopic.
(4) Absent compensatory pause is a feature rarely with supraventricular ectopic.
40. Most common cause of multifocal atrial tachycardia is :
- (1) COPD. (2) AMI.
(3) Cardiomyopathy. (4) Digitalis toxicity.
41. Which of the following drug with toxicity can lead to atrial fibrillation ?
- (1) Digitalis. (2) Verapamil.
(3) Beta blockers. (4) Phenothiazine.
42. Which of the following drug is likely to cause prolong QT interval ?
- (1) Metoprolol. (2) Digoxin.
(3) Ranitidine. (4) ACE Inhibitors.
43. MET indicates amount of O₂ uptake while sitting at rest value of 1 MET is equivalent to O₂ uptake of :
- (1) 5.5 ml O₂/min/kg body wt. (2) 3.5 ml O₂/min/kg body wt.
(3) 10 ml O₂/min/kg body wt. (4) 2.5 ml O₂/min/kg body wt.
44. Treadmill test (TMT) still may be useful to assess myocardial ischaemia in pt. with ECG findings of :
- (1) LBBB
(2) WPW syndrome with δ wave (delta wave)
(3) Bifascicular block - RBBB and LAHB
(4) Having digitalis effect on ECG

45. Find out the wrong statement in relation to TMT :
- (1) R wave amplitude in V_5 and V_6 decrease with exercise in normal subject and in severe CAD 'R' wave amplitude may increase.
 - (2) A reduction in 'R' wave amplitude helps to predict normal coronaries and normal LV function in LBBB.
 - (3) Duration of QRS may be increased at peak exercise in normal healthy persons.
 - (4) QRS axis rotates towards right, but when significant left axis duration with exercise, it indicates proximal LAD disease.
46. Right atrial enlargement is characterized by :
- (1) Prolonged P duration (> 120 ms) in lead II.
 - (2) Prominent notch in P wave in lead II.
 - (3) Left ward shift of P wave axis.
 - (4) Peaked P wave in lead II with amplitude > 0.25 mV.
47. Right ventricular hypertrophy is characterized by :
- (1) $SV1 + (RV5 \text{ or } RV6) > 3.5$ mV.
 - (2) $R \text{ in } aVL > 1.1$ mV.
 - (3) $SV3 + S aVL \geq 2.8$ mV.
 - (4) Right axis deviation of QRS $\geq +90$ degrees.
48. Right ventricular hypertrophy can be caused by all except :
- (1) Tricuspid stenosis.
 - (2) Severe mitral stenosis.
 - (3) Chronic obstructive pulmonary disease.
 - (4) Pulmonary stenosis.
49. Left posterior fascicular block results in :
- (1) QRS duration > 120 ms.
 - (2) frontal plane mean QRS axis > 120 degree.
 - (3) rS pattern in lead II, III aVF.
 - (4) qR pattern in I, aVL.

50. What is the most common side effect of ACEI ?
- (1) Dry cough. (2) Vomiting.
 (3) Dysgeusia. (4) Fall in renal Functions.
51. Absolute contraindication to exercise testing is all except :
- (1) Acute myocardial infarction (2 days).
 (2) Decompensated heart failure.
 (3) Advanced AV block.
 (4) Moderate Aortic stenosis.
52. Tricuspid stenosis results in :
- (1) Slow x descent. (2) Rapid x descent.
 (3) Slow y descent (4) Rapid y descent.
53. Prehypertension refers to :
- (1) Systolic BP 120 to 139 mmHg and diastolic BP 80 to 89 mmHg.
 (2) Systolic BP 120 to 125 mmHg and diastolic BP 80 to 85 mmHg.
 (3) Systolic BP 125 to 130 mmHg and diastolic BP 85 to 89 mmHg.
 (4) Systolic BP 130 to 139 mmHg and diastolic BP 90 to 99 mmHg.
54. Anterior mitral leaflet has :
- (1) 2 scallop (2) 3 scallop (3) 4 scallop (4) 5 scallop
55. Acute Marginal artery is a branch of :
- (1) RCA (2) LCx (3) LAD (4) PDA
56. All the followings may be radiological signs of mitral stenosis except :
- (1) straightening of left border of heart.
 (2) Widening of carinal angle.
 (3) Prominent upper lobal pulmonary veins.
 (4) Prominent ascending aorta and arch.

57. The most common congenital cardiac anomaly is :
- (1) ASD. (2) VSD.
(3) PDA. (4) Bicuspid Aortic Valve.
58. All of the followings are components of TOF except :
- (1) Infundibular stenosis. (2) Overriding of aorta.
(3) Left ventricular hypertrophy. (4) Malaligned VSD.
59. Following cardiac defects can be closed by percutaneous closure device except :
- (1) Secundum ASD. (2) Muscular VSD.
(3) PDA. (4) Sinus venosus ASD.
60. High grade AV block can be seen in which of the following congenital heart disease :
- (1) Corrected TGA. (2) Secundum ASD.
(3) Perimembranous VSD. (4) TOF.
61. Most common side effect of digitalis toxicity is :
- (1) Nausea and vomiting. (2) AV block.
(3) Diarrhoea. (4) Bidirectional VT.
62. Suprasystemic pulmonary artery pressure can be seen in all except :
- (1) ASD with Eisenmenger syndrome.
(2) VSD with Eisenmenger syndrome.
(3) Pulmonary thromboembolism.
(4) Primary PAH.
63. Right ventricle arises from :
- (1) Proximal bulbus cordis. (2) Primitive ventricle.
(3) Sinus Venosus. (4) Conus cordis.

64. Which of the following is not a type of the following congenital heart disease :
- 1) Tetralogy of Fallot
 - 2) Transposition of large vessels
 - 3) TBM
 - 4) ASD
65. The collateral pulmonary blood flow is commonly seen in all except :
- 1) Coarctation
 - 2) Atrial septal defect
 - 3) Patent ductus arteriosus
 - 4) Mitral stenosis
66. Wide fixed splitting of second sound is seen in :
- 1) ASD
 - 2) PDA
 - 3) VSD
 - 4) Bicuspid aortic valve.
67. Reversal splitting of 2nd sound is seen in all except :
- 1) Aortic stenosis
 - 2) TBM
 - 3) Patent ductus arteriosus
 - 4) Atrial septal defect
68. Atrial septal defect is associated with all except :
- 1) Secundum type VSD
 - 2) Mitral valve prolapse
 - 3) Patent ductus arteriosus
 - 4) Anaemia.
69. The QRS complex is seen in all of the following except :
- 1) The middle of the ST segment
 - 2) The beginning of the ST segment
 - 3) The beginning of the T wave
 - 4) The beginning of the repolarisation of the Purkinje fibres.
 - 5) The beginning of the repolarisation of the myocardial precordial leads.

70. Which is the correct statement ?
- (1) Digitalis toxicity leads to excitatory effect like AVN block and does not have any inhibitory on heart
 - (2) Digitalis toxicity leads to inhibitory effect like sinus bradycardia and heart block and does not have excitatory effect.
 - (3) Paroxysmal atrial tachycardia with AVN block is common feature of digitalis toxicity.
 - (4) Digitalis toxicity leads to ST-T changes only, but does not produce tachy or bradyarrhythmias.
71. With ventricular ectopic on ECG-compensatory pause is
- (1) Always complete compensatory pause.
 - (2) In majority incompletes, but sometimes complete pause.
 - (3) It may be complete or incomplete, but pause is must.
 - (4) Sometimes there may not be pause with ventricular ectopy.
72. Accelerated junctional rhythm is not found in :
- (1) Digitalis toxicity.
 - (2) Aortic mycocardial infarction.
 - (3) Hypoxia.
 - (4) Diltiazem toxicity.
73. Multifocal atrial tachycardia leads to :
- (1) Irregularly irregular heart rate.
 - (2) Regular heart rate.
 - (3) Regularly irregular heart rate.
 - (4) Periodic increase and decrease of heart rate at an interval of 1-2 seconds.
74. Find out the wrong statement with Accelerated Idioventricular Rhythm.
- (1) Accelerated Idioventricular rhythm is often seen in a patient undergoing thrombolytic therapy.
 - (2) Commonly leads to haemodynamic disturbances and treatment of choice is IV lidocaine.
 - (3) It is usually benign, short lasting and needs no therapy.
 - (4) It is equivalent to ventricular tachycardia.

75. If RR Intervals are irregular which one of the following arrhythmia is excluded :
- (1) Atrial fibrillation.
 - (2) SVT with aberrancy.
 - (3) Multifocal atrial tachycardia.
 - (4) PAT or atrial flutter with varying AV block.
76. Which of the following QRS morphology may suggest wide QRS SVT with aberrancy rather than VT :
- (1) QRS axis between $+150^\circ$ to -90° .
 - (2) QRS complexes from V_1 to V_6 are in the same direction.
 - (3) QRS width > 160 ms.
 - (4) Small r in V_1 and small q in V_6
77. With ST segment elevation during exercise _____ which statement is likely to be wrong.
- (1) Suggestive of proximal LAD high grade lesion.
 - (2) Prinzmetal angina.
 - (3) AC LV dysfunction.
 - (4) Identifying hibernating myocardium.
78. Which statement is correct in relation to TMT ?
- (1) Systolic BP increases and diastolic BP usually decreases with exercise.
 - (2) Systolic and diastolic BP may remain static in some normal healthy individuals. eg. in athletes.
 - (3) Fall of systolic BP during exercise indicates LV dysfunction.
 - (4) No rise of systolic BP during exercise indicates ventricular aneurism.
79. Rt. atrial enlargement in ECG is usually not a common finding in children with :
- (1) Severe Pulmonary Stenosis.
 - (2) Tricuspid Atresia.
 - (3) T.O.F.
 - (4) Ebstein's anomaly.
80. Which is not a ECG feature of LVH ?
- (1) Delayed intrinsicoid deflection in $V_6 \geq 0.05$ sec.
 - (2) Left Atrial enlargement.
 - (3) LBBB
 - (4) Left ward shift in Frontal QRS axis.

81. Tall 'R' wave in V_1 may indicate :
- (1) Posterior wall infarction. (2) RV infarction.
(3) RA infarction. (4) Anteroseptal infarction.
82. Find the wrong statement in relation to ECGs features of hyperkalemia :
- (1) Tall peaked T wave, short QT intervals and ST Depression
(2) Both ventricular asystole and fibrillation can occur
(3) 'P' wave eventually disappears and QRS widens.
(4) QTC interval prolongs developed Torsade de pointes.
83. Hepatic presystolic pulsations are seen in :
- (1) TR (2) TS (3) AK (4) AS
84. Cannon waves are seen in :
- (1) AV Dissociation. (2) AF.
(3) Atrial Flutter. (4) VF.
85. Loud S_1 is seen in all except :
- (1) Short PR interval. (2) MS.
(3) Long cycle length in AF. (4) Rapid heart rates.
86. Blood supply of IVS is from :
- (1) RCA (2) LAD
(3) Lt. circumflex artery. (4) both from RCA and LAD.
87. Which is not the cause of T wave inversion ?
- (1) Pericarditis. (2) MI
(3) Hyperkalemia. (4) Myocarditis.
88. ST elevation in V_1 to V_3 indicates :
- (1) Anteroseptal M1 (2) Inferior wall M1
(3) Lateral wall M1 (4) Posterior wall M1

89. Coronary sinus drains to :

- (1) LA (2) RA (3) LV (4) RV

90. What criteria needs to be met before advising for CRF ?

- (1) LV EF < 30%, QRS > 120 ms and class III symptoms on medicines.
(2) LV EF < 40%, QRS > 160 ms and class IV symptoms on medicines.
(3) LVEF < 55%, QRS > 160 ms and class IV symptoms.
(4) LVEF < 30%, N QRS and Asymptomatic.
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