No. of Printed Pages : 12

MCC-002

POST GRADUATE DIPLOMA IN CLINICAL CARDIOLOGY (PGDCC)

Term-End Examination

00330

June, 2012

MCC- 002 : FUNDAMENTALS OF CARDIOVASCULAR SYSTEM - II

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. In severe aortic stenosis all the following ECHO findings are seen except one

(1) Peak gradient 40 - 60 mm Hg
(2) Effective orfice area <0.6
(3) Aortic V max > 4 m/sec
(4) Mean gradient > 50 mm Hg

2. Which is the best method to evaluate the severity of aortic stenosis with severe LV dysfunction by ECHO ?

(1) Planimetry
(2) Continuity equation
(3) Pressure half time
(4) All of the above

3. In rheumatic aortic stenosis all the following echo findings are seen except one

(1) Systolic doming of aortic valve
(2) Closure line of aortic leaflets at centre
(3) Mitral valve is usually involved
(4) Ascending aorta dilatation

4. In severe regurgitation all the following echo findings are seen except

(1) Pressure half time > 250 msec
(2) LV diastolic dimension > 7.5 cm
(3) Effective regurgitant volume >0.30 cm^2
(4) Regurgitant fraction > 55 %

5. All the following conditions are contraindications for mitral valvuloplasty except one

(1) Left atrial thrombus
(2) Moderate mitral regurgitation
(3) Wilkins score - 6
(4) Concomitant severe coronary artery disease

6. Wilkins score is calculated by all the following findings except

(1) Valvular calcification
(2) Left atrial thrombus
(3) Leaflet mobility
(4) Subvalvular thickening

7. 36 years female has frequent history of breathlessness at night times and persistent cough since 2 weeks, her Echo showed marked thickening of mitral leaf let margin, with calcification extending into the mid portion of the leaf lets, valve leaflets move forwarding diastole mainly at the base, subvalvular thickening extending up to the distal third of chordae. Which of the following mode of treatment is recommended for her ?

(1) Balloon mitral valvuloplasty
(2) Mitral valve replacement
(3) Digoxin
(4) Verapamil

8. All the following features are indications for balloon aortic valvuloplasty except
   (1) peak systolic pressure gradient at rest 40 - 60 mm Hg
   (2) peak systolic pressure gradient at rest 50 - 60 mmHg with dyspnea
   (3) low cardiac output regardless of the gradient
   (4) peak systolic pressure gradient > 64 mm Hg

9. Balloon pulmonary valvuloplasty is indicated in which of the following condition ?
   (1) Resting peak gradient > 20 mmHg
   (2) Resting peak gradient > 40 mmHg
   (3) Severe infundibular stenosis
   (4) All pulmonary dyplastic valve patients

10. Mullins sheath is used for which of the following procedure ?
   (1) Balloon aortic valvuloplasty
   (2) Balloon mitral valvuloplasty
   (3) Balloon pulmonary valvuloplasty
   (4) For all the above procedure

11. All the following findings are seen by ECHO in constrictive pericarditis except
   (1) Flattening of LV endocardial motion in mid and late diastole
   (2) A respiratory variation of > 25% in mitral inflow E velocity
   (3) Premature opening of aortic valve
   (4) Dialatation of inferior vena cava

12. PA systolic pressure is measured by which one of the following formula from echo Doppler?
   (1) RV systolic pressure + RA systolic pressure
   (2) RA systolic pressue + RV diastolic pressure
   (3) TR max peak gradient + RA mean pressure
   (4) RA diastolic pressure + RV diastolic pressure

13. Ostium Secundum ASD is best seen by which one of the Echoview ?
   (1) parasternal long axis view
   (2) supra stenal view
   (3) subcostal short axis view
   (4) apical 5 chamber view

14. Which one of the following anatomical type of ASD is suitable for device closure ?
   (1) PAPVC
   (2) SVC type of ASD
   (3) Ostium primimum ASD
   (4) Fossa ovalis ASD

15. Obligatory ASD is seen in all the following conditions except

(1) Tricuspid atresia (2) Mitral atresia

(3) Transposition of great artereis (4) Truncus artreriosis

16. Pulmonary angiography is indicated in all the following conditions except

(1) Pulmonary embolism (2) Primary pulmonary hypertension

(3) Pulmonary vascular malformation (4) Pulmonary artery stenosis

17. For digital substraction pulmonary angiogram how much contrast is recommended ?

(1) 60 ml (2) 50 ml. (3) 25 ml (4) 10 ml

18. Abdominal aorta starts at which level of vertebra ?

(1) T 10 (2) T 12 (3) T 11 (4) L 1

19. Abdominal aortogram is indicated in all the following conditions except

(1) Abdominal aortic aneurysms (2) Aortic dissection

(3) Renal artery stenosis (4) Atherosclerotic occlusive disease

20. One French is equal to how many millimeters ?

(1) 0.33 mm (2) 0.44 mm (3) 0.22 mm (4) 0.11 mm

21. Which of the following contrast is routinely used in coronary angiogram ?

(1) high osmolar contrast (2) low osmolar contrast

(3) CO_2 (4) Gadolinium

22. X descent wave of RA pressure tracing is due to ?

(1) right atrial systole

(2) pulling of the tricuspid annulus by RV contraction

(3) protrusion of tricuspid valve in to RA

(4) due to ventricular systole

23. In pulmonary capillary wedge pressure tracing all the waveforms are seen except

(1) a wave (2) c wave (3) v wave (4) x wave

24. Under normal conditions the oxygen carrying capacity of hemoglobin is ?

(1) 2.36 ml O_2/g hemoglobin (2) 1.56 ml O_2/g hemoglobin

(3) 1.36 ml O_2/g hemoglobin (4) 3.36 ml O_2/g hemoglobin

25. One wood unit is equal to how many dyne - sec.cm^2 ?

(1) 60 dyne - sec.cm^5 (2) 80 dyne - sec.cm^5

(3) 90 dyne - sec.cm^2 (4) 110 dyne - sec.cm^2

26. Normal pulmonary vascular resistance is ?

(1) 20 - 130 dyne - sec.cm^5 (2) 130 - 160 dyne - sec.cm^5

(3) 160 - 180 dyne - sec.cm^5 (4) 180 - 200 dyne - sec.cm^5

27. All the following statements regarding LA pressure are correct except

(1) a - wave is higher than v - wave

(2) Mean LA pressure ranges from 2 - 12 mm Hg

(3) LA pressure is higher than RA pressure

(4) LA pressure tracing does not have c - wave

28. What percent of patients have left dominant circulation in coronary angiogram ?

(1) 15% (2) 20% (3) 8% (4) 25%

29. All the following statements are correct regarding coronary arteries except

(1) SA nodal artery arises from RCA in 60% of patients

(2) In 85% of patients AV nodal artery arises from right coronary artery

(3) In 15% of patients balanced co-dominant coronary circulation is seen

(4) In 8% of patients PDA is formed from both RCA and left circumflex coronary arteries

30. Gorlin formula is used to calculate which of the following ?

(1) Shunt across the Atrial septal defect

(2) Shunt across the Ventricular septal defect

(3) Shunt across Patent ductus arteriosus

(4) Trans mitral valve gradient

31. What is the mean step up of O_2% saturation at right atriam for significant left to right shunt ?

(1) > 3 (2) > 7 (3) > 5 (4) > 11

32. What is the mean step up of O_2% saturation at great vessel for significant left to right shunt ?

(1) > 5 (2) > 3 (3) > 7 (4) > 11

33. Significant step up of O_2 saturation at atrial level is seen in all the following conditions except

(1) Partial anomalous pulmonary venous drainage

(2) VSD with tricuspid regurgitation

(3) Ruptured sinus of valsalva

(4) Primum atrial septal defect

34. All the following statements are correct except

(1) Thalium 201 has half life of 6 hours

(2) Thalium is cyclotron generated

(3) Thalium emits low energy photons

(4) Sensitivity of thalium in detection of coronary artery disease is 90%

35. In pharmacological stress test to identify coronary artery disease all the following are used except

(1) Dobutamine (2) Adenosine (3) Dipyridamole (4) Nitroglycerine

36. Which of the tracer is used in Positron emission tomography scan to identify the metabolism of myocytes ?

(1) 99m Sestamibi (2) 99m Tetrofosmin

(3) 18 Fluro Deoxy Glucose (4) Thalium

37. Which freqency probe is used in paediatric patients ?

(1) 2 - 5 MHz (2) 7.5 - 10 MHz (3) 1 - 2.5 MHz (4) 10 - 12 MHz

38. In which echo view coronary sinus is best seen ?

(1) Suprasternal view (2) Apical four chamber view

(3) Parasternal long axis view (4) Parasternal short axis view

39. In Pseudonormal pattern of diastolic dysfunction all the following echo findings are seen except

(1) E/A = 1 - 1.5

(2) Deceleration time > 240 msec

(3) Isovolumetric relaxation time < 90 msec

(4) PVa velocity > 35 cm/sec

40. Which is the best view to visualize patent ductus arteriosus by Echo ?

(1) Subcostal view (2) Suprasternal view

(3) high parasternal view (4) Apical 5 chamber view

41. Calculate the PA systolic pressure in 4 year old child with VSD whose arm BP is 100 mm Hg and VSD gradient is 30mm Hg. The child has no associated congenital heart disease.

(1) 100 mm Hg (2) 30 mm Hg (3) 130 mm Hg (4) 70 mm Hg

42. In assessing RWMA (Regional wall motion abnormality) hypokinesia means

(1) Systolic wall thickness < 0.5 times diastolic thickness

(2) Systolic wall thickness 0.5 - 1.1 times diastolic thickness

(3) Systolic wall thickness 1.2 - 1.5 times diastolic thickness

(4) Systolic wall thickness > 1.5 times diastolic thickness

43. Morphological feature of a normal right ventricle by echo includes all following except

(1) Moderator band (2) Infundibulum

(3) Coarse septal surface (4) Fine apical trabeculations

44. In coronary angiography if the lumen diameter reduces by 50%, by how much does the cross sectional area reduces ?

(1) 50 % (2) 75 % (3) 80 % (4) 90 %

45. What is the estimated RA pressure if the IVC collapses > 50% on inspiration

(1) 0 - 5 mmHg (2) 5 - 10 mmHg (3) 10 - 15 mmHg (4) 15 - 20 mmHg

46. Swan - Ganz catheter is used for

(1) Coronary angiography (2) Ventriculography

(3) Right heart pressure study (4) Temporary pacing

47. Pig tail catheter has :

(1) End hole (2) Side holes

(3) Both end hole and side holes (4) Neither end hole nor side holes

48. Right ventriculogram helps in the diagnosis of

(1) Atrial septal defect (2) Pulmonary stenosis

(3) Pulmonary regurgitation (4) Patent ductus arteriosus

49. The preferred view for single plane left ventriculography is

(1) 30° RAO (2) AP view (3) Lateral View (4) 30° LAO

50. Complications of ventriculogram are all the following except :

(1) Arrhythmias (2) Endocardial staining

(3) Embolism (4) Mitral regurgitation

51. Alternate investigations for contrast ventriculography are the following except

(1) Echocardiography (2) Electrocardiogram

(3) Electromechanical mapping (4) Magnetic resonance imaging

52. Descending thoracic aortogram helps in the diagnosis of all the following except

(1) Coarctation of aorta (2) Patent ductus arteriosus

(3) Thoracic aortic aneurysm (4) Aortic stenosis

53. Pulmonary angiography is used in the diagnosis of :

(1) Pulmonary embolism (2) Patent ductus arteriosus

(3) Pulmonary stenosis (4) Ventricular septal defect

54. In the right atrial pressure wave form 'a' wave is due to

(1) Right ventricular systole (2) Right atrial contraction

(3) Tricuspid valve closure (4) Ventricular filling

55. Mean left atrial pressure is :

(1) 10 - 15 mm of Hg (2) 8 - 14 mm of Hg

(3) 2 - 12 mm of Hg (4) 2 - 6 mm of Hg

56. To diagnose atrial septal defect the oxygen step up at atrial level in a single sample run must be :

(1) $\geq$ 11 % (2) $\geq$ 15 % (3) $\geq$ 5 % (4) $\geq$ 8 %

57. For mixed venous oxygen content the formula is the mean of

(1) 2 SVC O_2 + 1 IVC O_2 (2) 3 SVC O_2 + 1 IVC O_2

(3) 1 SVC O_2 + 1 IVC O_2 (4) 2 SVC O_2 + 3 IVC O_2

58. Following catheters are used for coronary angiogram except

(1) Sones catheter (2) Judkins catheter

(3) Tiger Radial catheter (4) Pig tail catheter

59. In coronary lesion assessment 50% diameter loss can be equated to

(1) 75% area loss (2) 80% area loss (3) 90% area loss (4) 70% area loss

60. The average size of left main coronary artery is

(1) 5.5 $\pm$ 0.5 cm (2) 6.0 $\pm$ 0.5 cm

(3) 4.5 $\pm$ 0.5 cm (4) 4.0 $\pm$ 0.5 cm

61. For coronary angioplasty following stents are used except :

(1) Drug eluting stents (2) Balloon mounted stents

(3) Bare metal stents (4) Self expendable stents

62. Critical aortic stenosis has a valve area of

(1) $\leq$ 0.7 cm^2 (2) $\leq$ 1.0 cm^2 (3) $\leq$ 0.5 cm^2 (4) $\leq$ 0.9 cm^2

63. Patients suitable for percutaneous balloon mitral valvuloplasty are the following except

(1) Symptomatic patients with valve area of < 1.5 cm^2

(2) Younger patients with significant mitral stenosis

(3) Pregnant women with mitral stenosis

(4) Patients with left atrial thrombus

64. Inoue technique is used for

(1) Mitral valvuloplasty (2) Pulmonary valvuloplasty

(3) Aortic valvuloplasty (4) Coronary Angioplasty

65. Severe pulmonary valvular stenosis has a transvalvular gradient of

(1) > 80 mm of Hg (2) > 100 mm of Hg (3) > 120 mm of Hg (4) > 110 mm of Hg

66. The 'Radiopharmaceuticals' used as tracers in cardiology are the following except

(1) Thallium (2) Technetium (3) Platinum (4) Sestamibi

67. In nuclear myocardial scan, fixed defects indicate :

(1) Ischaemia (2) Normal myocardium

(3) Infarcted myocardium (4) Hypertrophied myocardium

68. All the following statements are correct in relation to hibernating myocardium except

(1) It is viable (2) It is recoverable (3) It is dysfunctional (4) It is scarred

69. Pharmacological stress agents used for radionuclide myocardial perfusion imaging are the following except

(1) Dobutamine (2) Dipyridamol (3) Adenosine (4) Adrenalin

70. Of the given probes, the best resolution in echocardiography is obtained in the probe with the frequency of

(1) 2.5 m z (2) 3.5 m z (3) 5.0 m z (4) 6.0 m z

71. In echocardiography, parasternal long axis view does not visualise

(1) Mitral valve (2) Aortic valve (3) Left atrium (4) Tricuspid valve

72. In apical 5 chamber view, the following structure is not visualized :

(1) Left atrium (2) Ascending aorta (3) Pulmonary artery (4) Right ventricle

73. The number of crystals in a transducer for pulse wave Doppler is

(1) Two (2) Three (3) Four (4) None

74. In calculating the mitral valve area by pressure half time, the mitral valve area of $1cm^2$ will have a pressure half time equal to :

(1) 250 ms (2) 220 ms (3) 200 ms (4) 240 ms

75. Velocity of flow of $4m^2$ across aortic valve indicates :

(1) Severe aortic stenosis
(2) Severe aortic regurgitation
(3) Moderate aortic stenosis
(4) Mild aortic stenosis

76. Doppler Echocardiographic parameters of left ventricular diastolic function assessment are all the following except

(1) Mitral in flow E/A ratio
(2) Mitral E deceleration time
(3) Tissue Doppler at mitral annulus
(4) Isovolumetric contraction time

77. Normal mitral E decelaration time is

(1) 200-280 ms (2) 160-240 ms (3) 80-120 ms (4) 120-160 ms

78. In the evaluation of ischaemic heart disease, 2D echocardiography can assess the following except :

(1) Degree of coronary artery stenosis
(2) Regional wall motion abnormality
(3) Detection of complications
(4) Global LV systolic and diastolic function

79. In the echocardiographic analysis of regional wall motion, the left ventricle is divided into the following segments

(1) 20 (2) 12 (3) 16 (4) 10

80. The location of acquired ventricular defect in acute myocardial infarction is

(1) In the centre of infarction
(2) In the normal myocardium
(3) Junction of infarcted with normal myocardium
(4) Opposite of infarction

81. The most specific echocardiographic feature of cardiac tamponade is :

(1) Early diastolic collapse of RV
(2) Abnormal ventricular septal motion
(3) Dilated inferior vena cava
(4) Late diastolic RA collapse

82. In constrictive pericarditis the respiratory variation of mitral inflow E velocity will be

(1) > 40% (2) ≥25% (3) ≥ 15% (4) ≥ 10%

83. In a normal adult the cross sectional area of mitral valve orifice is

(1) 4 - 6cm^2 (2) > 6 cm^2 (3) 2 - 4 cm^2 (4) 1 - 3 cm^2

84. The echocardiographic features of mitral stenosis are the following except :

(1) Dilated left atrium

(2) Dilated left ventricle

(3) "Hockey stick" appearance of anterior mitral leaflet

(4) Fish mouth orifice

85. All the following echocardiographic features indicate severe mitral regurgitation (MR) except

(1) Pulmonary vein systolic flow reversal

(2) MR jet area $\geq$ 8cm^2

(3) Colour flow area > 20% of LA size

(4) Vena contracta > 6mm

86. In a patient with severe aortic regurgitation the ratio of jet area to LVOT area will be

(1) $\geq$ 60% (2) $\geq$ 80% (3) $\geq$ 70% (4) $\geq$ 40%

87. In the absence of tricuspid regurgitation mean pressure gradient across tricuspid valve is significant if it is more than

(1) 1 mm of Hg (2) 1.5 mm of Hg (3) 2.0 mm of Hg (4) 2.5 mm of Hg

88. Sinus venosus atrial septal defect is best visualized in

(1) Parasternal short axis view (2) Subcostal short axis view

(3) Sub costal long axis view (4) Apical four chamber view

89. Perimembranous ventricular septal defect can be assessed in all the views except

(1) Parasternal short axis view (2) Apical five chamber view

(3) Suprasternal view (4) Subcostal short axis view

90. Right ventricular systolic pressure can be calculated from

(1) Tricuspid regurgitation jet (2) Tricuspid diastolic flow

(3) Pulmonary flow velocity (4) Pulmonary regurgitation