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MCC-002

POST GRADUATE DIPLOMA IN CLINICAL CARDIOLOGY (PGDCC)

01304

Term-End Examination

December, 2014

MCC-002 : FUNDAMENTALS OF CARDIOVASCULAR SYSTEMS – 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 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. The thin chest wall of neonates necessitates the use of probes of the following frequency

   (1) 7 – 10 MHz

   (2) 2 – 5 MHz

   (3) 1 – 10 MHz

   (4) No specific choice

2. Which is ***not*** an advantage of M-mode echo ?

   (1) High sampling rate

   (2) Good temporal resolution

   (3) Accurate measurements

   (4) Ice-pick view

3. Which structure ***cannot*** he identified on parasternal long axis view ?

   (1) LA appendage

   (2) Aortic valve

   (3) Left ventricle

   (4) Right ventricle

4. Coarctation of aorta is best identified in

   (1) subcostal view

   (2) PLAX

   (3) apical 4C

   (4) suprasternal view

5. Incorrect statement about PW Doppler is

   (1) Limited by PRF

   (2) Not limited by Nyquist phenomenon

   (3) Sample size is localized

   (4) At higher frequency aliasing occurs

6. Following is ***not*** used for assessment of diastolic function :

(1) Edt

(2) IVRT

(3) Tissue Doppler at apex

(4) E/A ratio

7. Following is a criteria for restrictive filling

(1) DT 160 – 200 msec

(2) IVRT < 70 msec

(3) E/A < 1·0

(4) IVRT > 90 msec

8. LV systolic function can be assessed by all *except*

(1) Eye balling

(2) Modified Simpson's method

(3) M-Mode echo

(4) Doppler

9. Correct about ventricular pseudoaneurysm

(1) lined by pericardium

(2) caused by thin myocardium

(3) myocardial continuity is preserved

(4) clots are commonly seen inside it

10. Swinging motion of the heart is seen in

(1) Constructive pericarditis

(2) Cardiac tamponade

(3) Massive pericardial effusion

(4) RCMP

11. The most specific sign of cardiac tamponade is

(1) Early diastolic collapse of RV

(2) Late diastolic RA collapse

(3) Dilated IVC

(4) Dilated RV

12. Constructive pericarditis is recognized by all *except*

(1) Calcified pericardium

(2) Dilated IVC

(3) Tricuspid velocity variation > 60%

(4) Mitral velocity variation 725%

13. Incorrect statement about mitral stenosis

(1) Normal valve area is 4 – 6 cm^2

(2) Stenosis is labelled below 2 cm^2

(3) RHD is responsible for < 50% cases

(4) Hockey-stick appearance is seen

14. Mitral valve area cannot be assessed by

(1) M-mode

(2) Planimetry

(3) PHT

(4) PISA

15. The correct measure of calculating MVA by PHT is

(1) PHT/220

(2) 220/PHT

(3) 220 × PHT

(4) $(PHT)^2/220$

16. MR is considered severe by all the following criteria, except

(1) ERO > 4 cm^2

(2) MR Jet > 8 cm^2

(3) Vena contracta < 6 mm of MR Jet

(4) Dilated LA

17. In a normally functioning LV an aortic valve area < 0·5 cm^2 is likely to have a velocity of

(1) 5 m/sec

(2) 1 m/sec

(3) 2 m/sec

(4) 2·5 m/sec

18. In patients with poor LV with aortic stenosis, incorrect statement is

(1) Valve area can be measured by continuity equation

(2) DSE can be used

(3) Area is overassessed

(4) Gradients may be low

19. A pressure half time of 750 msec indicates

(1) Moderate AR

(2) Severe AR

(3) Mod-SWAR

(4) Mild AR

20. Severe AR is indicated by all *except*

(1) LV < 5·0 cm

(2) Regurgitant volume > 60 ml

(3) Regurgitant fraction > 55%

(4) PHT < 250 msec

21. Correct statement about Tricuspid stenosis

(1) Rarely caused by Rheumatic fever

(2) PHT > 190 msec indicates mild TS

(3) A gradient > 7 mm Hg indicates severe TS

(4) Severe TR cannot increase gradient

22. Incorrect statement about the morphology of mitral valve

(1) Two leaflets

(2) Two papillary muscles

(3) Elliptical orifice

(4) Low septal leaflet

23. Morphological RV is recognized by all *except*

(1) Moderator band

(2) Fine trabeculations

(3) Infundibulum

(4) TV – PV discontinuity

24. Visceral sites is determined in

(1) Subxiphoid short-axis

(2) Supxiphoid long axis

(3) Apical view

(4) Parasternal view

25. Which is ***not*** a form of ASD ?

(1) Perimembranous

(2) Primum

(3) Secundum

(4) AV Canal

26. Restrictive VSD is recognized by all *except*

(1) Small size

(2) Gradient > 60 mm Hg

(3) Turbulent jet

(4) Shunt size > 2 : 1

27. The catheter most frequently used for ventriculography is

(1) NIH

(2) Sones

(3) Pigtail

(4) Lehman

28. Complications of ventriculography are all *except*

(1) Heart block

(2) Air embolism

(3) V-Tach

(4) Atrial fibrillation

29. True about Right atrium is

(1) High pressure chamber

(2) Difficult to access

(3) Mean pressure is 3 mm Hg

(4) A wave is 10 mm Hg

30. False statement about left ventricle is

(1) LVEDP is > 20 mm Hg

(2) LV Systolic pressure is 130 mm Hg

(3) Mean LV pressure is 90 mm Hg

(4) Pressure is high in aortic stenosis

31. Normal Systemic vascular resistance is

(1) 100 – 300

(2) 20 – 130

(3) 700 – 1600

(4) > 3000

32. PCWP is high in all *except*

(1) Mitral stenosis

(2) Aortic stenosis

(3) HOLM

(4) Pulmonary embolism

33. A significant shunt is recognized when the step-up in saturation is

(1) > 15%

(2) > 7%

(3) > 2%

(4) > 20%

34. The Tiger catheter is used exclusively for coronary angiography via

(1) Radial route

(2) Femoral route

(3) Axillary route

(4) Brachial route

35. Which is ***not*** a branch of Right coronary artery ?

(1) Sinus nodal

(2) Obtuse marginal

(3) Acute marginal

(4) AV nodal

36. Which statement is ***incorrect*** ?

(1) 8% people have left dominant circulation

(2) 7% people have balanced circulation

(3) 85% have AV nodal artery from LCx

(4) SA nodal comes from RCA in 60%

37. Which is ***not*** used for angioplasty ?

(1) Indeflator

(2) Guide Catheter

(3) Balloon

(4) Pressure injector

38. The current stents used for coronaries are all *except*

(1) Pre-crimped

(2) Balloon expandable

(3) Drug-eluting

(4) Self-expanding

39. Which is ***not*** used for Wilkin's scoring ?

(1) Valve regurgitation

(2) Subvalvular thickening

(3) Valve mobility

(4) Valve calcification

40. The advantages of 99 MTC over Thallium 201 are all except

(1) Optimal energy

(2) Easily available

(3) Longer half life

(4) Does not require cyclotron

41. Viability test can be done by *except*

(1) 99 MTC

(2) Thallium 201

(3) PET FDG

(4) MUGA

42. V/Q scans are utilized for the diagnosis of

(1) CAD

(2) DVT

(3) PTE

(4) RHD

43. The pharmacological agents used for stress scan are all *except*

(1) Adenosine

(2) Dipyridamole

(3) Dobutamine

(4) Verapamil

44. Aortic valvuloplasty is used in all *except*

(1) Infant with CCF

(2) Severe calcific AS

(3) Bicuspid AV

(4) Congenital AS with gradient > 70 mm Hg

45. Balloon pulmonary valvuloplasty is indicated in a valve gradient

(1) > 50 mm Hg

(2) > 60 mm Hg

(3) > 100 mm Hg

(4) PS with ASD

46. Ideal frequency of echocardiographic probe in an adult with thick chest wall is

(1) 2 – 5 Mz

(2) 5 – 7 Mi

(3) 7.5 – 10 Mz

(4) 1 – 2 Mz

47. Structures imaged in the standard parasternal long axis (PSLX) view are the following *except*

(1) Left ventricle

(2) Pulmonary artery

(3) Aorta

(4) Right ventricle

48. The structures visualized in the standard apical 4 chamber view (A4CV) are the following *except*

(1) Left atrium

(2) Right atrium

(3) Right ventricle

(4) Pulmonary artery

49. Valve stenosis by Doppler technique is detected by

(1) Increased flow velocity

(2) Decreased flow velocity

(3) Reverse flow

(4) Normal flow velocity

50. Continous wave Doppler transducer has the following number of crystals

(1) One

(2) Two

(3) Three

(4) Four

51. Mitral valve area by Doppler technique can be obtained from the formula

(1) 220/T 1/2 (ms)

(2) 220/T 1/2 (sec)

(3) 180 /T 1/2 (ms)

(4) 200/T 1/2 (sec)

52. Left ventricular diastolic function can be assessed by all the following *except*

(1) E/A ratio

(2) Mitral E wave deceleration time

(3) Pulmonary vein atrial systolic reversal

(4) Aortic velocity

53. Of the following parameters, diastolic dysfunction is indicated by

(1) E/A of 1 – 2

(2) Mitral 'a' duration < PV 'a' duration

(3) IVRT 70 – 90 msec

(4) Deceleration time 160 – 240 msec

54. During systole the LV wall thickness increases by _____ times of diastolic dimension during diastole.

(1) No change

(2) 1.5 times

(3) 2.0 times

(4) 2 – 2.9 times

55. Large pericardial effusion will have a dimension more than

(1) 15 mm

(2) 25 mm

(3) 10 mm

(4) 5 mm

56. The normal inspiratory increase in tricuspid flow is

(1) 20%

(2) 25%

(3) 15%

(4) 10%

57. The most specific sign of cardiac tamponade is

(1) Late diastolic RA collapse

(2) Distended IVC

(3) Early diastolic RV collapse

(4) Respiratory variation in ventricular chamber size

58. Mean resting gradient across mitral valve in moderate mitral stenosis is (mm of Hg)

(1) 5 – 10

(2) 10 – 15

(3) 8 – 12

(4) 2 – 5

59. Vena contracta is

(1) Venous drainage of left ventricle

(2) Narrowest portion of MR jet downstream from the orifice

(3) Systolic flow in pulmonary vein

(4) Distended IVC

60. Aortic stenosis is considered severe if the peak aortic flow velocity is

(1) 4 m/sec

(2) 5 m/sec

(3) 6 m/sec

(4) 3 m/sec

61. Severe aortic regurgitation can be diagnosed if Jet Height / LVOT is

(1) $\geq 50\%$

(2) $\geq 60\%$

(3) $\geq 40\%$

(4) $\geq 80\%$

62. A mean pressure gradient of 8 mm of Hg across tricuspid valve indicates

(1) Moderate tricuspid stenosis

(2) Mild TS

(3) Severe TS

(4) Trivial TS

63. Tricuspid valve is identified by all the following criteria except

(1) High septal leaflet

(2) Low annular attachment

(3) Triangular orifice

(4) Septal chordal attachment

64. Large perimembranous VSD can be restricted by

(1) Anterior mitral leaflet

(2) Tricuspid valve septal leaflet

(3) Pulmonary valve

(4) Papillary muscle

65. In the absence of pulmonary stenosis the systolic pressure in the pulmonary artery can be calculated from

(1) Pulmonary regurgitation velocity

(2) Tricuspid regurgitation velocity

(3) Tricuspid flow velocity

(4) Pulmonary flow velocity

66. The VSDs which are amenable to device closure are

(1) Inlet and muscular VSDs

(2) Inlet and doubly committed VSDs

(3) Inlet and perimembranous VSDs

(4) Muscular and perimembranous VSDs.

67. Device closure is possible in

(1) Coronary sinus ASD

(2) Primum ASD

(3) Sinus venosus ASD

(4) Fossa ovalis ASD

68. Average height of 'a' wave of the RA is (in mm of Hg)

(1) 8

(2) 10

(3) 6

(4) 4

69. The normal range of left ventricular end diastolic pressure is (mm of Hg)

(1) 5 – 12

(2) 3 – 8

(3) 10 – 14

(4) 8 – 14

70. What is the Qp : Qs ratio in a patient with the following O_2 saturation details

PA = 90% PAW = 100% AO = 100% Mixed venous O_2 = 70%

(1) 3:1

(2) 4:1

(3) 1:3

(4) 1:2

71. Posterior descending coronary artery is a branch of _____ in 90% of patients.

(1) LAD

(2) Left main

(3) RCA

(4) LCX

72. The size of left circumflex artery (dominant) is (mm)

(1) 4.5 ± 0.5

(2) 3.7 ± 0.4

(3) 4.2 ± 0.6

(4) 3.4 ± 0.5

73. The stent most useful to reduce restenosis is

(1) Drug coated stent

(2) Covered stent

(3) Bare metal stent

(4) Degradable stent

74. Transvalvular gradient for the diagnosis of moderate pulmonary stenosis is (mm of Hg)

(1) 50 – 100

(2) 80 – 120

(3) 70 – 120

(4) 40 – 60

75. In nuclear myocardial scan, fixed defects indicate

(1) Ischaemic myocardium

(2) Normal myocardium

(3) Hibernating myocardium

(4) Infarcted myocardium

76. The Pulmonary Artery mean pressure in a patient without pulmonary stenosis can be calculated from

(1) Pulmonary regurgitation velocity

(2) Tricuspid regurgitation velocity

(3) Pulmonary ejection velocity

(4) Size of the Right Ventricle

77. Normal Deceleration Time of mitral flow is

(1) 160 – 240 m sec

(2) 120 – 160 m sec

(3) > 240 m sec

(4) < 100 m sec

78. Myocardial perfusion imaging is useful for evaluation of Coronary Artery Disease *except*

(1) Risk stratification

(2) Viability assessment

(3) Prognostication

(4) Localisation of Coronary lesions

79. Positron emitter tracer is

(1) Thallium

(2) Rubidium 82

(3) Tetrofosmin

(4) 99m Tc-Sestamibi

80. In Nuclear Myocardial Scan, the reversible defects indicate

(1) Inducible ischaemia

(2) Myocardial infarction

(3) Scar

(4) Normal myocardium

81. Normal Sestamibi study has an excellent prognosis and annulised cardiac event rate in such a patient would be

(1) < 3 – 4% per year

(2) < 5 – 6% per year

(3) < 0.5 – 2% per year

(4) < 0.3 – 0.5% per year

82. The normal rate of injection of the contrast medium for ventriculogram is

(1) 10 – 16 ml/sec

(2) 20 – 40 ml/sec

(3) 25 – 50 ml/sec

(4) 2 – 5 ml/sec

83. Pulmonary angiography is useful in the following situations *except*

(1) Pulmonary Artery Stenosis

(2) Pulmonary Arteriovenous fistula

(3) Acute Pulmonary embolism

(4) Primary Pulmonary Arterial Hypertension

84. The right ventricular end diastolic pressure is (mm of Hg)

(1) 5 – 12

(2) 2 – 6

(3) 12 – 15

(4) 1 – 7

85. The average pulmonary vascular resistance is (dynes – sec. cm^{-5})

(1) 100

(2) 90

(3) 70

(4) 50

86. Mixed venous oxygen content is calculated from the formula

(1) $\frac{3\,SVC\,O_2 + 1\,IVC\,O_2}{4}$

(2) $\frac{2\,SVC\,O_2 + 1\,IVC\,O_2}{3}$

(3) $\frac{SVC\,O_2 + IVC\,O_2}{2}$

(4) $\frac{3\,SVC\,O_2 + 2\,IVC\,O_2}{5}$

87. The hardwares for coronary angioplasty are all the following *except*

(1) Guiding catheter

(2) Guidewire

(3) Indeflator

(4) Pigtail catheter

88. Patients who are suitable for balloon mitral valvoplasty are the following *except*

(1) Patients with severe mitral stenosis

(2) Patients with pulmonary hypertension

(3) Left atrial thrombus

(4) Pliable mitral valve

89. Gorlin formula is used

(1) To calculate regurgitation fraction

(2) To calculate quantity of left to right shunt

(3) To calculate valve orifice area

(4) To assess aortic flow

90. If there is significant oxygen step up in the right atrium, then the diagnosis is

(1) ASD with L $\rightarrow$ R shunt

(2) ASD with R $\rightarrow$ L shunt

(3) VSD with R $\rightarrow$ L shunt

(4) VSD with L $\rightarrow$ R shunt