

057/20

Question Booklet Alpha Code

A

	Question Booklet Sl. No.
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A

Total Number of Questions : 100

Time : 75 Minutes

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C & D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.
6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

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1. Who published first human Electrocardiogram ?

A) William Einthoven	B) Augustus D Waller
C) William Harvey	D) Luigi Galvani

2. Exercise ECG is a valuable procedure for the assessment of

A) Ventricular Function	B) Valvular Function
C) Cardiomyopathy	D) Ischemic Heart Disease

3. In an ECG paper each large square equals _____ in height.

A) 0.04 mv	B) 0.1 mv
C) 0.5 mv	D) 0.20 mv

4. What is the normal value of ST segment in an ECG ?

A) 0.12 – 0.2 second	B) 0.09 – 0.11 second
C) 0.05 – 0.15 second	D) 0.35 – 0.44 second

5. How to calculate the target heart rate of a female patient, to stop the Tread mill test ?

A) 210-age	B) 220-age
C) 300-age	D) 320-age

6. Which one of the following test is used to detect arrhythmias, ischemia or coronary artery spasm ?

A) Echocardiography	B) Holter Monitoring
C) Exercise Test	D) Electrocardiography

7. Lead V_6 is placed over _____ intercostals space in the left mid axillary line.

A) 5	B) 4	C) 2	D) 6
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8. In which year first human Electrocardiogram is published ?

A) 1901	B) 1872
C) 1895	D) 1887

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9. Which one of the following measures blood flowing through the arteries and shows the pattern of flow through the heart ?
- A) Transthoracic Echocardiogram
 - B) Transoesophageal Echocardiogram
 - C) Stress Echocardiogram
 - D) Doppler Echocardiogram
10. For hypertrophy condition which of the following is selected for standardization ?
- A) 10 mm
 - B) 5 mm
 - C) 2.5 mm
 - D) 20 mm
11. _____ is used for scanning and imaging purpose of the body.
- A) Complex tone
 - B) Pure tone
 - C) Ultrasound
 - D) Infrasonic sound
12. The process of recording electrical activity of the heart over a period of time using electrode is called
- A) Holter Monitoring
 - B) Echocardiography
 - C) Electrocardiography
 - D) TMT Test
13. In a normal ECG waveform the amplitude of R wave is
- A) 0.1 mv
 - B) 1.60 mv
 - C) 0.25 mv
 - D) 0.5 mv
14. In echocardiography position of the transducer over the apex in the 5th intercostal space is called
- A) Apical location
 - B) Subcostal location
 - C) Suprasternal location
 - D) Parasternal location
15. The loss of rhythmical activity of the heart is called
- A) Angina
 - B) Heart block
 - C) Arrhythmias
 - D) Coronary Artery Disease

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16. Which of the following is known as ambulatory ECG Recording ?
- A) Stress Test
 - B) Angiography
 - C) Holter Monitoring
 - D) Angioplasty
17. Lead aVF records the actual potential in
- A) Right Arm
 - B) Left Arm
 - C) Right Foot
 - D) Left Foot
18. Which type of transducer is used in Echocardiography ?
- A) Inductive Transducer
 - B) Piezoelectric Transducer
 - C) Thermoelectric Transducer
 - D) Photoelectric Transducer
19. T wave in normal ECG is due to
- A) Depolarisation of atria
 - B) Repolarisation of ventricles
 - C) Depolarisation of ventricles
 - D) None of the above
20. The range of ultrasound frequency used for echocardiography is
- A) 20 to 20000 Hz
 - B) Above 20 KHz
 - C) Below 20 Hz
 - D) 1 to 7 MHz
21. In an electrocardiograph flow of current perpendicular to lead shows _____ deflection.
- A) Positive
 - B) Biphasic
 - C) Negative
 - D) No change
22. In echocardiography which type of signals are used in paediatric cases ?
- A) Low frequency ultrasonic signals
 - B) Medium frequency ultrasonic signals
 - C) High frequency ultrasonic signals
 - D) None of the above

31. It is said that yearly 3 to 4 patients are rejected for cardiac catheterisation due to overweight in USA. What is the limit for maximum patient weight for the X-ray table on which patient is positioned in cath lab ?
A) 180 kg B) 250 kg C) 325 kg D) 450 kg
32. What is the loading dose of Ticagrelor before coronary Angioplasty in a patient with acute coronary syndrome ?
A) 600 mg B) 60 mg C) 90 mg D) 180 mg
33. Which among the following drug is not a coronary artery Dilator ?
A) Adenosine B) Ergonovine
C) Nitroprusside D) Verapamil
34. Which test is performed before radial artery catheterisation, to assess patency of radial and ulnar arteries ?
A) Allen Test B) Barbeau Test
C) Both D) None
35. Balloon Assisted Tracking (BAT) is used during
A) Trans radial catheterisation for negotiating loops, tortuosities and spasm
B) Coronary angioplasty in heavily calcified vessels
C) Angioplasty of totally occluded SFA
D) To pass endograft through heavily calcified aorta during EVAR
36. Approximately how long manual compression be applied after sheath removal for attaining hemostasis
A) 2 minutes per sheath size in F B) 8 minutes per sheath size in F
C) 10 minutes per sheath size in F D) 5 minutes per sheath size in F
37. Which size of JL catheter will you select for coronary angiogram in a patient with aortic regurgitation and dilated aorta of 50 mm ?
A) 3 cm JL B) 3.5 cm JL C) 5 cm JL D) None of these
38. The number of holes in a Multipurpose Catheter
A) An end hole only B) An end hole and 2 side holes
C) An end hole and 4 side holes D) An end hole and 5 side holes

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39. Which among the following catheter you prefer to engage a high left coronary take off from ascending aorta ?
- A) Judkins Left 3.5 B) Amplatz Left 2
C) Multipurpose catheter D) Both B) and C) are suitable
40. Normal TIMI Frame Count for LAD artery is
- A) 36 B) 21 C) 22 D) 18
41. In approximately what percentage of population you see left coronary dominance ?
- A) 7% B) 45% C) 85% D) 25%
42. Which LV wall is not seen in a 30 degree RAO view during standard left ventriculography ?
- A) High lateral B) Anterior C) Septal D) Inferior
43. Which angiographic projection is used to demonstrate shunt through ASD after injecting dye into pulmonary artery ?
- A) LAO cranial B) AP cranial C) RAO cranial D) RAO caudal
44. What percentage of electrical energy provided to the tube is eventually converted to X-ray ?
- A) 0.2 to 0.6% B) 2 to 6% C) 20 to 60% D) 10 – 20%
45. During angiographic studies, what percentage of the X-ray energy entering the body is absorbed ?
- A) 15% B) 35% C) 70% D) 90%
46. Which of the following contrast is iso-osmolar non-ionic dimer ?
- A) Iopamidol B) Iodixanol C) Ioxaglate D) Iohexol
47. Total pulmonary resistance is calculated as
- A) $(\text{Mean PA pressure} - \text{Mean LA pressure})/\text{CO}$
B) $(\text{PA systolic pressure} - \text{Mean LA pressure})/\text{CO}$
C) $\text{Mean PA pressure}/\text{CO}$
D) $\text{PVR}/\text{Body surface area}$

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48. In a patient with Aortic stenosis and resting cardiac output of 5L/minute with a LV-Aortic peak to peak pressure difference of 65mm Hg, quick aortic valve area by Hakke formula in cm^2 is
- A) 0.63 B) 0.83 C) 0.93 D) 1.12
49. How a low flow state affect the estimation of severity of valve stenosis by Gorlin's equation ?
- A) Underestimate severity B) Overestimate severity
C) Both A) and B) D) Unaffected
50. If SVC saturation is 70% and IVC saturation is 82% the MVO_2 will be
- A) 73% B) 76% C) 80% D) 70%
51. What change in hemodynamic tracing is produced if there is an air bubble in LV pressure line ?
- A) Exaggerated systolic and diastolic over shoot
B) Overdamping of tracing
C) Systolic overshoot only, diastole unaffected
D) No change
52. In which condition you see LV pressure lower than aortic pressure ?
- A) Loose tubing connection B) Heterotopic transplant
C) Extra cardiac hemodynamic support D) All the above
53. For every waveform, the LA pressure rise precedes that of PCWP by approximately
- A) 75 to 100 msec B) 100 to 150 msec
C) 30 to 75 msec D) 150 to 170 msec
54. The W or M pattern in RA pressure tracing is seen in
- A) Tricuspid stenosis B) VSD with severe TR
C) Constrictive pericarditis D) Restrictive cardiomyopathy
55. Brockenbrough-Braunwald-Morrow phenomenon is seen during catheterisation of a case of
- A) Constrictive pericarditis B) Restrictive cardiomyopathy
C) HOCM D) Both B) and C)

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56. Which of the following right heart catheterisation data is consistent with diagnosis of Primary Pulmonary Hypertension ?
- A) mPAP > 25 mm Hg, PCWP > 15, PVR > 3 Wood units
 - B) mPAP > 25 mm Hg, PCWP < 15 mm Hg, PVR > 3 Wood units
 - C) mPAP > 25 mm Hg, PCWP > 15, PVR < 3 Wood units
 - D) mPAP > 25 mm Hg, PCWP < 25 mm Hg, PVR < 3 Wood units
57. Which leads represent the electrical activity of the inferior wall of the heart ?
- A) II, III, aVF
 - B) I, aVL, V5, V6
 - C) V1 to V4
 - D) V7 to V9
58. Pacemaker Syndrome occur in patients with
- A) VVI pacemaker only
 - B) DDD pacemaker only
 - C) Both VVI and DDD pacemakers
 - D) VVI pacemaker with atrial fibrillation
59. Pacemaker Mediated Tachycardia (PMT) can be terminated with
- A) Application of a magnet over PG
 - B) Retrograde V-A conduction block
 - C) Programming longer PVARP
 - D) All the above
60. Normal H-V interval is
- A) 30 – 55 msec
 - B) 50 – 150 msec
 - C) 10 – 25 msec
 - D) 170 – 290 msec
61. A regular narrow QRS tachycardia with a rate of 150 in a patient with rheumatic heart disease is most likely
- A) Atrial fibrillation
 - B) Atrial flutter
 - C) Antidromic AVRT
 - D) Fascicular VT
62. The initial current used for defibrillation using biphasic defibrillator for treating VF is
- A) Unsynchronised 200 J
 - B) Synchronised 200 J
 - C) Unsynchronised 360 J
 - D) Synchronised 360 J
63. During IABP, balloon inflation should occur at
- A) R wave of ECG
 - B) Tidal wave of aortic tracing
 - C) ST segment of ECG
 - D) Dicrotic notch of aortic tracing

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64. Considering its effect on augmenting circulation, which among the following give “complete support” ?
A) IABP B) ECMO C) TandemHeart D) Impella
65. Optical Coherence Tomography (OCT) is a catheter based imaging system that uses _____ for imaging.
A) Ultrasound B) X-ray
C) Gamma radiation D) NIR light
66. “Differential Cutting” is the mechanism of plaque modification technique by
A) Cutting Balloon B) Laser angioplasty
C) Rotational Atherectomy D) Force Focussed Angioplasty
67. WATCHMAN device is used for
A) Paravalvular leak closure B) Post MI VSR closure
C) LA appendage closure D) PDA closure
68. Which of the following wire is hydrophilic polymer coated wire ?
A) Choice PT B) Asahi Prowater C) Runthrough D) All
69. Which is the correct statement regarding Left Main intervention ?
A) Provisional stenting is adequate in most cases rather than routine 2 stent strategy
B) Culotte Technique is preferred over provisional stenting
C) T and small Protrusion is preferred over provisional stenting
D) Double Kiss Crush Technique is preferred over provisional stenting
70. If the distal LM-LCX angle is T shaped with significant disease of ostium of both LAD and LCX, the best stenting strategy among the following is
A) DK crush B) Culotte
C) Mini-crush D) Crush technique
71. Chronic Total Occlusion (CTO) is defined as known duration of coronary occlusion more than
A) One month B) Three months C) Six months D) One year

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72. An operator is doing LAD-CTO angioplasty with an Amplatz guide in power position. Patient suddenly become restless with tachycardia, severe hypotension and tachypnoea but no chest pain. ECG monitor doesn't show much ischemic changes. Echo doesn't show pericardial effusion. The anxious operator after taking a check angio find it difficult to arrive at a conclusion. You have to warn the operator for possible
- A) Acute Mitral regurgitation B) Acute Aortic dissection
C) Acute Aortic regurgitation D) Left main dissection
73. The tip stiffness in g of Cross-It 400 wire is
- A) 4 g B) 6 g C) 9 g D) 12 g
74. Which of the following wire is not a tapered tip wire ?
- A) Pilot 50 B) Cross-It 200
C) Confianza D) None of the above
75. Which among the following is the least traumatic hydrophilic wire ?
- A) Pilot 50 B) Shinobi plus C) Whisper D) PT Graphix
76. Correct statement regarding Tornus Catheter is
- A) Used during CTO angioplasty
B) Six stainless steel wires are stranded in the coil
C) Advanced by clockwise rotation along the wire
D) All are correct
77. Which of the following catheter is used for re-entry after subintimal passage while doing CTO angioplasty ?
- A) Crusade catheter B) Stingray system
C) Venture catheter D) Both B) and C)
78. Corsair Catheter is used during
- A) CTO angioplasty using retrograde approach
B) Bifurcation angioplasty
C) Angioplasty of tortuous lesions
D) All the above

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79. While doing a bifurcation angioplasty, the size of main vessel stent must be preferably the size of
- A) Diameter of main vessel proximal to bifurcation
 - B) Diameter of main vessel distal to the bifurcation
 - C) $(A + B)/2$
 - D) Diameter of Distal main vessel + 1.63 mm
80. For a Medina 1.1.1 bifurcation lesion, if the size of distal branches are 3 mm each, the minimum size of the proximal vessel needed for doing Simultaneous Kissing Stenting (SKS) is
- A) 3 mm
 - B) 3.6 mm
 - C) 4.2 mm
 - D) 4.8 mm
81. Correct statement regarding perfect kissing balloon inflation is
- A) Non-compliant balloons are ideal
 - B) Inflation pressure not to be < 16 mm Hg
 - C) Deflation of balloons done simultaneously
 - D) All are correct statements
82. What is the size of balloon preferred for doing pulmonary valvuloplasty ?
- A) Same size as that of Pulmonary annulus
 - B) Less than that of pulmonary annulus
 - C) 1.2 to 1.5 times the size of pulmonary annulus
 - D) 2 times the size of pulmonary annulus
83. A minute of cine is essentially equivalent to _____ minutes of fluoroscopy.
- A) 5 minutes
 - B) 10 minutes
 - C) 2 minutes
 - D) 6 minutes
84. Correct statement regarding radiogenic neoplasm is
- A) It is related to age at exposure
 - B) Females are more susceptible than males
 - C) Both A) and B) are correct
 - D) Both are wrong statement
85. Regarding retroperitoneal hematoma, which of the following is/are correct statements ?
- A) Occur when femoral artery is punctured below inguinal ligament
 - B) Mortality rate is 25%
 - C) Deformed urinary bladder in fluoroscopy
 - D) All are correct

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86. Hepatoclavicular view is
A) 70 degree LAO, 30 degree cranial B) 45 degree LAO, 45 degree cranial
C) 15 degree LAO, 30 degree cranial D) 15 degree LAO, 15 degree cranial
87. The ideal projection for imaging Main pulmonary artery Branch origins is
A) AP caudal B) 45° LAO, 45° cranial
C) 15° LAO, 30° cranial D) 70° LAO, 30° cranial
88. Significant step up from RV to PA is diagnosed when O₂ % saturation rise is more than _____.
A) ≥ 7 B) ≥ 5 C) ≥ 10 D) ≥ 12
89. Normal arterio-venous oxygen difference in ml/L is
A) 10 to 20 B) 20 to 30 C) 30 to 50 D) 50 to 65
90. Equalisation of diastolic pressures across all four cardiac chambers during hemodynamic study suggest
A) RSOV to RA B) VSD with TR
C) Restrictive cardiomyopathy D) Constrictive pericarditis
91. During RF ablation of AVNRT, dual AV nodal physiology is suggested by
A) AH jump more than 50 msec for a decrease of 10 msec S1-S2 interval
B) AH jump more than 10 msec for a decrease of 10 msec S1-S2 interval
C) AH jump more than 25 msec for a decrease of 10 msec S1-S2 interval
D) AH jump more than 15 msec for a decrease of 10 msec S1-S2 interval
92. Which of the following patient benefit from IABP ?
A) Acute aortic regurgitation with pulmonary oedema and hypotension
B) Acute aortic dissection with coronary occlusion
C) Acute MI with cardiogenic shock and VSR
D) All the above
93. Select the correct statement from the following regarding use of rotablator.
A) Rotablation is contraindicated for instent restenosis
B) Speed drop upto 30,000 rpm during advancement is permissible
C) Never advance the burr in dynaglide mode
D) All are correct

A

94. Late stent thrombosis is defined as thrombosis of stent
- A) After 24 hours to within 30 days B) From 30 days to one year
C) After one year D) After six months
95. Cut off value for normal ankle brachial index is
- A) > 0.9 B) > 0.7 C) > 0.6 D) > 0.4
96. The radiation exposure to cath lab technician is much less than that of the operator in a given case. The basis for the statement is
- A) Wein's law B) Planck radiation law
C) Inverse square law D) Stefan-Boltzmann law
97. When blindly puncturing femoral artery under X-ray guidance, the land mark for needle entry into CFA is
- A) Inferior medial quadrant of femoral head
B) Superior medial quadrant of femoral head
C) Inferior border of middle of femoral head
D) Middle of lateral one third of femoral head
98. What is the maximum occupational radiation limit for an invasive cardiologist ?
- A) 10 rem per year B) 5 rem per year
C) 15 rem per year D) 20 rem per year
99. Which angiographic view leads to greatest amount of radiation exposure to the operator ?
- A) RAO caudal B) RAO cranial C) LAO cranial D) LAO caudal
100. Resting coronary flow diminishes when the stenosis severity is
- A) $\geq 50\%$ B) $\geq 60\%$ C) $\geq 70\%$ D) $\geq 90\%$
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Space for Rough Work



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