ROLL NUMBER

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (CARDIOLOGY) -A

DATE: 11/06/2025 **TIME: 10 To 11.30 am**

DURATION: 90 MINUTES **Total Marks: 100**

INSTRUCTIONS TO THE CANDIDATES

1. Write your Roll Number on the top of the Question Booklet and in the **OMR** sheet.
2. Each question carries **one (1)** mark.
3. There will be no Negative Marking.
4. Each question carries **4** options i.e., **A, B, C & D**. Darken completely, the bubble corresponding to the most appropriate answer using **blue or black ball point pen**.
5. Marking more than one option will invalidate the answer.
6. Candidate should sign in the **question paper** and **OMR** sheet.
7. No clarifications will be given.
8. Candidate should hand over the **OMR** sheet to the invigilator before leaving the examination hall.

Signature of the Candidate

1. In a normal ECG, the ventricular repolarisation is reflected by
   A. QRS complex
   B. ST-T wave
   C. T peak to T end
   D. PR + QT interval
2. PR segment in ECG includes
   A. Atrial repolarization
   B. Conduction within the AV node
   C. Conduction through His-Purkinje system
   D. All the above
3. During ECG acquisition, Lead II records the difference in potential between
   A. Right arm and left arm
   B. Right arm and right leg
   C. Right arm and left leg
   D. Left arm and left leg
4. What is the upper limit of QT interval set by American College of Cardiology
   A. 460 ms for women and 450 ms for men
   B. 450 ms for women and 460 ms for men
   C. 480 ms for women and 470 ms for men
   D. 470 ms for women and 480 ms for men
5. To record standard 12- lead electrocardiogram,..... electrodes are used
   A. 10
   B. 12
   C. 14
   D. 16
6. Usual ECG recording speed is
   A. 12.5 mm/s
   B. 25 mm/s
   C. 50 mm/s
   D. 100 mm/s
7. Ventricular end-diastolic pressure corresponds to ..... in ECG
   A. P wave peak
   B. R wave peak
   C. T wave peak
   D. ST 80
8. During the stage 2 of Bruce protocol for tread mill test, the speed and grade are
   A. Speed 2.5 MPH and grade 12%
   B. Speed 3.4 MPH and grade 14%
   C. Speed 2.5 MPH and grade 10%
   D. Speed 3.4 MPH and grade 12%
9. During treadmill test, blood pressure increase with each stage is said to be hypertensive response when blood pressure is more than
   A. 190 mm Hg in men and women
   B. 210 in men and women

C. 190 in men and 210 in women
D. 210 in men and 190 in women

10. The rate-pressure product, a reliable index of myocardial oxygen demand is the product of heart rate and
    A. Systolic BP
    B. Diastolic BP
    C. Pulse pressure
    D. Mean arterial pressure
11. Chiari network is seen in
    A. Left atria
    B. Right ventricle
    C. Left ventricle
    D. Right atria
12. Coronary sinus drains to
    A. Left atria
    B. Vein of Marshall
    C. Right ventricle
    D. Right atria
13. The cardiac mass seen in Carney's complex is
    A. Myxoma
    B. Rhabdomyoma
    C. Rhabdomyosarcoma
    D. Papillary fibroelastoma
14. Which channel abnormality often leads to Brugada syndrome?
    A. Potassium channel
    B. Sodium channel
    C. Calcium channel
    D. Both potassium and calcium channels
15. DeWinter sign in ECG is often diagnostic for
    A. Acute aortic dissection
    B. Acute pulmonary embolism
    C. Chronic pulmonary embolism
    D. Acute LAD occlusion
16. Within the heart, velocity of blood flow is dependent on the pressure gradient between two chambers. Which formula describes this relationship?
    A. Continuity equation
    B. Reynold's equation
    C. Poiseuille equation
    D. Bernoulli equation
17. McConnell's sign in echo is highly suggestive of which hemodynamic change
    A. Abrupt increase in LVEDP
    B. Abrupt increase in LV afterload
    C. Abrupt increase in PVR
    D. Abrupt increase in SVR

18. Sinus venosus ASD is commonly associated with PAPVC of which pulmonary vein
    A. Left upper pulmonary vein
    B. Left lower pulmonary vein
    C. Right upper pulmonary vein
    D. Right lower pulmonary vein
19. If the deceleration time of the mitral CW Doppler is 506ms, the mitral valve area is most likely
    A. 1.25 cm^2
    B. 1.5 cm^2
    C. 1 cm^2
    D. 1.75 cm^2
20. The Formula for method of discs in modified Simpson's Biplane method for calculation of LVEF divides ventricular length into ..... equal sections
    A. 50
    B. 100
    C. 20
    D. 3
21. Increase in pulmonary 'a' wave amplitude in M mode of pulmonary valve is seen in
    A. Severe pre-capillary pulmonary hypertension
    B. Severe post-capillary pulmonary hypertension
    C. Severe valvular pulmonary stenosis
    D. Severe non-hypertensive pulmonary hypertension
22. Deep X descent and flat Y descent in a RA tracing is more suggestive of
    A. Constrictive pericarditis
    B. Cardiac tamponade
    C. Severe tricuspid regurgitation
    D. ASD
23. Select the correct statement about pulmonary capillary wedge pressure
    A. PA catheter should be wedged in zone 2 of the lungs always
    B. PCWP is always equal to LV preload
    C. Large V wave is defined as a V wave that is larger than twice the mean PCWP
    D. Large V wave always suggests severe mitral regurgitation
24. Blood pressure of a patient is 140/80mm Hg and heart rate is 60bpm. The mean arterial pressure is most likely close to
    A. 90 mm Hg
    B. 100 mm Hg
    C. 120 mm HG
    D. 110 mm Hg
25. Braunwald Brockenbrough Morrow sign in catheterization tracing is diagnostic for
    A. HOCM
    B. Restrictive cardiomyopathy
    C. Constrictive pericarditis
    D. Severe valvular Aortic stenosis
26. Ventricular interdependence is seen in

A. Constrictive pericarditis
B. Cardiac tamponade
C. Both
D. None

27. Based on inverse square law, the cardiologist doing the case gets maximum radiation in which angiographic projection
    A. LAO cranial
    B. RAO cranial
    C. RAO caudal
    D. Equal in all views
28. Which of the following is not a deterministic effect of radiation
    A. Cataract
    B. Gonadal injury
    C. Cancer
    D. Bone marrow suppression
29. X ray exposure is defined by the equation
    A. Exposure = mA x kVp x Pulse width
    B. Exposure = (mA x kVp) / Pulse width
    C. Exposure = (mA + kVp) / Pulse width
    D. Exposure = (mA – kVp) / Pulse width
30. The commonest childhood malignancy that can occur after radiation to fetus is
    A. Leukemia
    B. Testicular tumor
    C. Neuroblastoma
    D. Brain tumor
31. During a PCI, if rotational atherectomy is planned by the operator, a 7 F guide is compatible with maximum burr size of
    A. 1.25 mm only
    B. 1.5 only
    C. 1.75 only
    D. Up to 2.15
32. For inducing hyperemia during FFR measurement, intracoronary dose of adenosine is
    A. 30-50 micro gm for RCA and 50-100 micro gm for LCA
    B. 30-50 micro gm/Kg for RCA and 50-100 microgram /Kg for LCA
    C. 100-150 micro gm for RCA and 200-250 micro gm for LCA
    D. 100-150 micro gm /Kg for RCA and 200-250 micro gm/Kg for LCA
33. Which of the following is a purely suture-based vascular closure device with an intra-arterial component
    A. StarClose
    B. Perclose
    C. Angio-Seal
    D. Mynx
34. Blue toe syndrome with renal insufficiency, lung hemorrhage etc. may be a feature of
    A. Amniotic fluid embolism

B. Cholesterol embolism
C. Air embolism
D. Fat embolism

35. Multipurpose catheter has
    A. Only end hole
    B. End hole and 5 side holes
    C. End hole and 3 side holes
    D. End hole and two side holes
36. PDA (posterior descending artery) is best visualized in which angiographic projection?
    A. LAO cranial
    B. LAO caudal
    C. RAO cranial
    D. RAO caudal
37. Which of the following contrast medium is iso-osmolar nonionic dimer?
    A. Iohexol
    B. Ioxaglate
    C. Lopamidol
    D. Iodixanol
38. A patient's aortic saturation is 70% and pulmonary artery saturation is 82%. This patient is most likely having
    A. TOF physiology
    B. Admixture physiology
    C. TGA physiology
    D. Simple shunt physiology
39. The catheter used to map tricuspid annulus during electrophysiologic study
    A. Decapolar
    B. Quadripolar
    C. Duo-deca-polar
    D. Pentapolar
40. Normal HV interval in intracardiac electrocardiogram
    A. 20-35 ms
    B. 55-125 ms
    C. 35-55 ms
    D. 120-150 ms
41. During electrophysiological study, the induction of VT with extra stimulus ventricular pacing highly suggests the following as the underlying mechanism
    A. Increased automaticity
    B. Triggered activity
    C. Late depolarization
    D. Re-entry
42. Which of the following would most closely represent the usual radiofrequency ablation setting for slow pathway modification by a non-irrigation catheter in a case of AVNRT?
    A. Power 50W, temperature 55^0C

B. Power 20W, temperature 30^0 C
C. Power 35W, temperature 40^0 C
D. Power 70W, temperature 75^0 C

43. Which of the following flow rates are often recommended for irrigated catheters while used in cardiac electrophysiology lab?
    A. 6-16mL/min
    B. 17 -30 mL/min
    C. 31-42mL/min
    D. 43-68mL/min
44. Entrainment as a protocol is maximally useful in the localization of circuit in cases of
    A. RVOT VT
    B. Posterior fascicular VT
    C. Atrial flutter
    D. Atrial fibrillation
45. Diaphragmatic palsy is a potential complication while ablating atrial tachycardia originating around
    A. Coronary sinus ostium
    B. Anterolateral mitral annulus
    C. Left superior pulmonary vein antrum
    D. Upper cristae terminalis
46. Which of the following statements is correct regarding pacing leads?
    A. Temporary pacemakers always use bipolar leads
    B. Longevity of epicardial pacing leads is higher compared to endocardial leads
    C. DF4 leads represent left ventricular leads in CRT-D
    D. Left bundle pacing leads are always lumen-less.
47. Placement of left ventricular leads in which of the following coronary sinus tributaries is widely considered a suboptimal?
    A. Posterolateral venous tributary
    B. Lateral venous tributary
    C. Posterior venous tributary
    D. Anterior cardiac vein
48. The narrow complex tachycardia induced in the lab had atrial cycle length of 300ms and ventricular cycle length of 600ms. This observation categorically excludes a diagnosis of
    A. Orthodromic AVRT
    B. Typical AVNRT
    C. Atrial tachycardia
    D. Atrial flutter
49. Intracardiac tracing of a narrow complex tachycardia showed VA interval of 40ms. The diagnosis in this case is most likely
    A. Orthodromic AVRT
    B. Antidromic AVRT
    C. Typical AVNRT
    D. Atypical AVNRT

50. The current of injury, as measured during an intracardiac lead implant, represents
    A. The local threshold
    B. The local current
    C. The local lead contact
    D. The local impedance
51. The patient complained of severe pain and ECG showed ST elevation during ablation of a posteroseptal coronary sinus diverticulum accessory pathway near coronary sinus ostium in an otherwise normal heart. The most likely cause is
    A. Air embolism
    B. Coronary spasm
    C. Cardiac perforation and pericarditis
    D. RF burns near indifferent chest patch
52. Disadvantage of subcutaneous Implantable Cardioverter Defibrillator
    A. No shocking capacity
    B. High risk of infection at implant site
    C. Generator longevity is low
    D. No overdrive pacing facility
53. Cardiac resynchronisation therapy is most beneficial in heart failure with reduced LV ejection fraction and
    A. LBBB
    B. RBBB
    C. Mitral regurgitation
    D. Pulmonary hypertension
54. During electrical cardioversion, synchronous shock should not be used in
    A. Ventricular fibrillation
    B. Atrial flutter
    C. Monomorphic VT
    D. Narrow complex VT
55. The minimum step up in O2 saturation at the PA by more than ..... above RA saturation is indicative of a left to right shunt at atrial level.
    A. 7%
    B. 5%
    C. 9%
    D. 11%
56. Phase 0 of action potential is due to
    A. Rapid influx of Na + ions
    B. Rapid efflux of Na + ions
    C. Rapid influx of K ions
    D. Rapid efflux of K ions
57. AngioJet is a
    A. Thrombus aspiration catheter
    B. Calcium debulking device
    C. Type of cutting balloon
    D. High pressure balloon

58. During OCT imaging of coronary if we see a well-delineated, low-signal region with sharp borders it most probably suggests
    A. Lipid-rich plaque
    B. Calcified plaque
    C. Fibrous plaque
    D. Fibrofatty plaque
59. "Lotus root sign" in Optical Coherence Tomography typically suggests which diagnosis?
    A. Intramural hematoma
    B. Intrastent tissue prolapse
    C. Spontaneous coronary artery dissection
    D. Fresh thrombus
60. Cardiac Index is calculated as
    A. Cardiac output / BSA
    B. Cardiac output x BSA
    C. Cardiac output x (BSA/2)
    D. (Cardiac output + BSA)/2
61. Killip Classification is used in
    A. Acute heart failure(HF) in post ACS setting
    B. Functional status in chronic decompensated HF
    C. Functional classification of congenital heart diseases
    D. Functional classification of any cardiac patient
62. Treatment of acute Type A aortic dissection is
    A. Emergency surgery
    B. Emergency EVAR
    C. Conservative management
    D. Emergency TAVR + EVAR of ascending aorta
63. Color code for 8F catheter is
    A. Blue
    B. Green
    C. Grey
    D. Orange
64. The principle behind rotablation is
    A. Grinding
    B. Photochemical ablation
    C. Sliding
    D. Differential cutting
65. Usual length of a standard coronary guide wire
    A. 150 cm
    B. 190 cm
    C. 170 cm
    D. 210 cm
66. Length of a standard coronary guide is
    A. 100 cm
    B. 125 cm

C. 150 cm
D. 200 cm

67. Medicine used to reverse the effect of heparin
    A. Fresh frozen plasma
    B. Whole blood
    C. Protamine
    D. Prothrombin concentrates
68. Acute marginal branch arises from
    A. Left circumflex artery
    B. Left anterior descending artery
    C. Right coronary artery
    D. Diagonal
69. Which is a fibrinolytic drug?
    A. Streptokinase
    B. Abciximab
    C. Warfarin
    D. Heparin.
70. IVC filters are implanted in the inferior vena cava
    A. Above the renal veins
    B. Across the renal veins
    C. Below renal veins
    D. At the aortic bifurcation
71. Need for permanent pacemaker implantation following Trans- catheter Aortic Valve Replacement is
    A. More in balloon expandable valves
    B. More in self- expanding valves
    C. Equal in self- expanding and balloon expandable
    D. Not reported with self- expanding valves
72. Score used to determine coronary artery severity
    A. Syntax
    B. Dukes
    C. Wilkins
    D. Ross
73. Usual diameter of a commonly used coronary guide wire is
    A. 0.009 inch
    B. 0.035 inch
    C. 0.014 inch
    D. 0.025 inch
74. The balloon of the Intra -aortic balloon pump is inflated during
    A. Systole
    B. Diastole
    C. End diastole
    D. End systole
75. The main use of Over-The -Wire (OTW) balloon dilation catheter now is

A. Alcohol septal ablation
B. Septal surfing in retrograde CTO intervention
C. Proximal optimization during bifurcation angioplasty
D. Deliver coils

76. Usual inflation time for drug eluting balloon is
A. 60 seconds
B. 90 seconds
C. 120 seconds
D. 20 seconds

77. Shockwave intravascular lithotripsy modifies calcified lesions via
A. Calcium ablation
B. Calcium pulverization
C. Calcium-plasty
D. Calcium fracture

78. Stenting can be deferred when fractional flow reserve (FFR) is
A. <0.8
B. >0.4
C. >0.8
D. < 0.4

79. The action of heparin is monitored using?
A. Prothrombin Time (PT)
B. Thrombin Time (TT)
C. Platelet aggregation test
D. Activated Partial Thromboplastin Time (APTT)

80. The most important blood test in diagnosis and prognostication of heart failure
A. Trop T
B. NT Pro BNP
C. Trop I
D. hs-CRP

81. Biphasic response in Stress echocardiography indicates
A. Left ventricular aneurysm
B. Scarred myocardium
C. Viable myocardium with coronary artery lesion
D. Viable myocardium with patent coronary artery

82. Trans-esophageal echo probe is sterilized by
A. Benzaldehyde
B. Steam
C. Ethanol
D. Glutaraldehyde

83. The drug usually used for stress echocardiography is
A. Dobutamine
B. Adrenaline
C. Ajmaline
D. Nitric oxide

84. Alcohol septal ablation is done for
    A. Fascicular VT
    B. Hypertrophic obstructive cardiomyopathy
    C. Pulmonary atresia
    D. Para-Hisian bypass tracts
85. In standard ECG recording limb leads are
    A. Unipolar
    B. Bipolar
    C. Multipolar
    D. None of the above
86. While recording lead V6 in ECG, the electrode is kept at the level of
    A. Anterior axillary line
    B. Mid-axillary line
    C. Posterior axillary line
    D. Midclavicular line
87. Permanent pacemakers use ..... batteries
    A. Cobalt chromium
    B. Liquid cell
    C. Lithium iodide
    D. Hydrogen ion
88. Pulmonary hypertension reversibility testing can be done using
    A. Adrenaline
    B. Tolvaptan
    C. Nitric oxide
    D. Sodium nitroprusside
89. ST elevation in leads V3R and V4R are usually produced by occlusion of
    A. Right coronary artery
    B. Left main stem coronary artery
    C. Left circumflex coronary artery
    D. Left anterior descending coronary artery
90. For paediatric and neonatal echocardiographic imaging, transducer frequency preferred is
    A. 1-4 MHz
    B. 20-40 MHz
    C. 5 - 12 MHz
    D. 100-120 MHz
91. The vein punctured during intrathoracic puncture and implantation of permanent pacemaker lead is
    A. Axillary
    B. Cephalic
    C. Brachial
    D. Subclavian
92. Inoue balloon size is determined based on ..... of the patient
    A. Weight

B. Mitral valve area
C. Height
D. Wilkins score

93. Eustachian valve is seen in
A. Right atria
B. Left atria
C. Right ventricle
D. Ostium of coronary sinus

94. While preparing the Inoue balloon, the contrast- saline mix should be in ratio of
A. 1:2
B. 1:4
C. 1:8
D. 1:1

95. Watchmann device is used for
A. Left atrial appendage closure
B. Right atrial appendage closure
C. LV aneurysm closure
D. Cardiac suturing

96. In aortic regurgitation jet PHT < 200 milli seconds, indicates ..... regurgitation
A. Trivial
B. Mild
C. Moderate
D. Severe

97. Aortic valve area calculation from echo Doppler study is based on.....equation
A. Bernoulli
B. Continuity
C. Euler
D. Buoyancy

98. Modified Simpson's method is used during echocardiography for determining
A. Left ventricular non compaction
B. Left ventricular ejection fraction
C. Left ventricular viability
D. Aortic valve area

99. Coarctation of aorta is best visualized by transthoracic echocardiogram in which view
A. Parasternal long axis modified
B. Suprasternal
C. Subcostal
D. Apical three chamber

100. CHA_2DS_2-VASc score is used to assess risk for thrombo-embolism in
A. Atrial fibrillation
B. Mitral stenosis
C. Deep vein thrombosis
D. After AF ablation

Answer Key

TA Cardiology

1	B	26	C	51	B	76	A
2	D	27	A	52	D	77	D
3	C	28	C	53	A	78	C
4	A	29	A	54	A	79	D
5	A	30	A	55	A	80	B
6	B	31	C	56	A	81	C
7	B	32	A	57	A	82	D
8	A	33	B	58	B	83	A
9	D	34	B	59	C	84	B
10	A	35	D	60	B	85	B
11	D	36	A	61	A	86	B
12	D	37	D	62	A	87	C
13	A	38	C	63	A	88	C
14	B	39	C	64	D	89	A
15	D	40	C	65	B	90	C
16	D	41	D	66	A	91	D
17	C	42	A	67	C	92	C
18	C	43	B	68	C	93	A
19	B	44	C	69	A	94	D
20	C	45	D	70	C	95	A
21	C	46	A	71	B	96	D
22	B	47	D	72	A	97	B
23	C	48	A	73	C	98	B
24	B	49	C	74	B	99	B
25	A	50	C	75	A	100	A