

FINAL ANSWER KEY

Question 106/2024/OL

Paper Code:

Category 525/2023

Code:

Exam: Cath Lab Technician

Date of Test 04-09-2024

Department Medical Education

Question1:-Wilson Central terminal

A:- $WCT = (LA + LL + RA) / 2$

B:- $WCT = (LL + LA) / 2$

C:- $WCT = (RA + LA) / 2$

D:- $WCT = (LL + LA)^2$

Correct Answer:- Option-A

Question2:-Standard Amplification for routine ECG is

A:-100

B:-300

C:-350

D:-1000

Correct Answer:- Option-D

Question3:-Left Atrial Activation happening through

A:-Atrial Muscles

B:-Bachmann's bundle

C:-Bundle of His

D:-AV node

Correct Answer:- Option-B

Question4:-Analysis of beat-to-beat changes in heart rate and related dynamic change is known as

A:-QT Prolongation

B:-Late Potentials

C:-Heart Rate variability

D:-PR prolongation

Correct Answer:- Option-C

Question5:-Bazzet equation for corrected QTc is

A:- $QTc = QT / \sqrt{RR}$

B:- $QTc = QT / RR$

C:-QTc = $\frac{RR^2}{RR^2}$

D:-QTc = $\frac{QT}{RR^2}$

Correct Answer:- Option-A

Question6:-Romhilt - Estes point scoring system is for

A:-Acute Myocardial Infarction

B:-Left Ventricular hypertrophy

C:-Atrial enlargement

D:-Arrhythmias

Correct Answer:- Option-B

Question7:-Pardis Sign is seen in

A:-AF (Atrial Fibrillation)

B:-VF (Ventricular Fibrillation)

C:-Acute Myocardial Infarction

D:-Atrial Tachycardia

Correct Answer:- Option-C

Question8:-ECG moving around an axis is known as

A:-Torsades des Point

B:-Atrial Fibrillation

C:-Pacing ECG

D:-EP study

Correct Answer:- Option-A

Question9:-Osborn wave is seen in

A:-Hypercalcemia

B:-Hypovolemia

C:-Hyperthyroidism

D:-Hypothermia

Correct Answer:- Option-D

Question10:-Saw tooth pattern is seen in

A:-Atrial Fibrillation (AF)

B:-Ventricular Flutter (VF)

C:-Atrial Flutter

D:-Unstable Angina

Correct Answer:- Option-C

Question11:-Rate calculation in ECG

A:-1500/Number of small divisions

B:-1500/Number of big divisions

C:-1500/4

D:-1000/4

Correct Answer:- Option-A

Question12:-Delta wave and short PR interval in ECG is seen in

A:-Acute Myocardial Infarction

B:-Unstable angina

C:-Pacing ECG

D:-Pre excitation

Correct Answer:- Option-D

Question13:-Which of the following is not a contraindication for exercise stress testing?

A:-Decompensated heart failure

B:-Uncontrolled cardiac arrhythmia

C:-Asymptomatic severe aortic stenosis

D:-Acute myocarditis

Correct Answer:- Option-C

Question14:-Which of the following statements are true regarding exercise physiology?

(i) Dynamic arm exercise elicits higher heart rate and BP response than dynamic leg

exercise

(ii) Systolic and diastolic BP increases during isotonic exercise

(iii) Rise in cardiac output is more in resistance exercise compared to endurance exercise

(iv) Rate pressure product is a reliable index of myocardial oxygen demand during exercise

A:-(i) and (iv) only

B:-(ii) and (iv) only

C:-(iii) and (iv) only

D:-(iv) only

Correct Answer:- Option-A

Question15:-Which of the following does not interfere with interpretation in an exercise ECG testing?

A:-Left bundle branch block

B:-Right bundle branch block

C:-Digoxin therapy

D:-Ventricular paced rhythm

Correct Answer:- Option-B

Question16:-A period of active cool-down may be included in the recovery period following high levels of exercise

- A:-To reduce incidence of arrhythmias
- B:-To augment ST changes during recovery
- C:-To minimize post-exercise hypotension
- D:-To increase heart rate recovery

Correct Answer:- Option-C

Question17:-Which of the following is true regarding treadmill exercise protocols?

- A:-Ramp protocols not useful in persons with high exercise capacity
- B:-Modified Bruce protocol stage 2 is equivalent to stage 1 of Bruce protocol
- C:-Modified Naughton protocol is useful for patients with congestive heart failure
- D:-ACIP protocol uses 3-minute stages

Correct Answer:- Option-C

Question18:-Handrail gripping during treadmill exercise results in

- A:-Alter the BP response to exercise
- B:-Increase the oxygen requirement for given workload
- C:-Underestimation of exercise capacity
- D:-All of the above

Correct Answer:- Option-A

Question19:-All of the following are indications for terminating exercise ECG test except

- A:-Severe angina
- B:-Drop in systolic BP >10 mmHg
- C:-Patient's request to stop
- D:-ST segment depression

Correct Answer:- Option-D

Question20:-Sensitivity and specificity of a standard exercise ECG test with 1 mm horizontal or downsloping ST depression as cut off point are respectively

- A:-68% and 77%
- B:-78% and 90%
- C:-76% and 68%
- D:-34% and 78%

Correct Answer:- Option-A

Question21:-The following are true regarding Duke treadmill score

- A:-Less valid in women than in men
- B:-Prognostic value depends on clinical variables
- C:-High risk score less than or equal to -11
- D:-All of the above

Correct Answer:- Option-C

Question22:-Which of the following is/are true regarding ST deviation during exercise?

- (i) ST depression does not localize ischemia to a precise region
- (ii) ST elevation in leads with Q waves indicates high risk
- (iii) Rapidly upsloping ST depression is usually not pathologic
- (iv) ST depression in aVR indicates left main CAD

A:-(i) and (ii) only

B:-(i) and (iii) only

C:-(ii) and (iii) only

D:-(iii) and (iv) only

Correct Answer:- Option-B

Question23:-Mason-Liker modification of ECG lead placement results in

A:-Right axis shift

B:-Increased voltage in inferior leads

C:-Reduces motion artefacts

D:-All of the above

Correct Answer:- Option-D

Question24:-Which of the following is true regarding exercise ECG test

A:-Exercise capacity less than 9 METS indicates high risk

B:-Exercise test is most useful if there is low pretest probability of CAD

C:-Diagnostic sensitivity of exercise testing is not affected by beta blockers

D:-Submaximal exercise test is used after MI before discharge

Correct Answer:- Option-D

Question25:-In the human body propagation velocity of sound waves is maximum in which tissue

A:-Bone

B:-Muscle

C:-Blood

D:-Liver

Correct Answer:- Option-A

Question26:-Doppler Shift is directly proportional to all except

A:-Velocity of Blood particles

B:-Transducer Frequency

C:-Cosine of angle of Incidence

D:-Velocity of sound in tissues

Correct Answer:- Option-D

Question27:-Which of the following does not meet criteria for severe Aortic

Stenosis?

A:-Indexed Aortic Valve area of less than 0.6

B:-Aortic Jet Velocity of 4 or more M/sec

C:-Aortic Valve area of Less than 1 square centimetre

D:-Velocity ratio of less than 0.5

Correct Answer:- Option-D

Question28:-Which of the following is not a component of Wilkins Score of Mitral valve anatomy?

A:-Mobility of Leaflets

B:-Thickening of leaflets

C:-Commissural fusion

D:-Sub valvular Thickening

Correct Answer:- Option-C

Question29:-Which of the following Echocardiographic studies specifically helps to identify Low flow low gradient Aortic Stenosis with low ejection fraction?

A:-Trans Oesophageal Echocardiography

B:-Intra Cardiac Echocardiography (ICE)

C:-Dobutamine Stress Echo cardiography

D:-3D echocardiography

Correct Answer:- Option-C

Question30:-Early appearance of Agitated saline contrast in Left atrium can be indicative of all of the following except

A:-Un Roofed Coronary Sinus

B:-Ebsteins Anomaly with a patent foramen ovale

C:-Persistent left Superior Venacava

D:-Pulmonary ArterioVenous Fistula

Correct Answer:- Option-D

Question31:-Persistant sub aortic conus with Loss of Aorto Mitral continuity favours a diagnosis of

A:-Double outlet right ventricle

B:-Double outlet left ventricle

C:-Double inlet right ventricle

D:-Double inlet left ventricle

Correct Answer:- Option-A

Question32:-Cleft Anterior mitral leaflet points to a diagnosis of

A:-Rheumatic Mitral regurgitation

B:-Endocardial cushion defect

C:-Ebsteins Anomaly

D:-Barlow's syndrome

Correct Answer:- Option-B

Question33:-Which qualifies the VSD in a Tetralogy of Fallot?

A:-Perimembranous outlet VSD

B:-Mal Aligned VSD

C:-Both of the above

D:-Neither of the above

Correct Answer:- Option-C

Question34:-Supra systemic pulmonary arterial hypertension can be associated with which of the following conditions?

A:-Atrial Septal defect with Eisenmenger syndrome

B:-Ventricular septal defect with Eisenmenger syndrome

C:-Patent ductus arteriosus with Eisenmenger syndrome

D:-Double outlet Right Ventricle with Eisenmenger syndrome

Correct Answer:- Option-A

Question35:-Doppler principle is used in the myocardial imaging in which of the following?

A:-Blood flow through the heart

B:-Myocardial motion

C:-Valve gradients

D:-All of the above

Correct Answer:- Option-D

Question36:-Sample volume on 2D ultrasound image is used to assess the velocity at a particular point using

A:-M mode echocardiography

B:-B mode echocardiography

C:-Pulsed wave Doppler echocardiography

D:-Continuous wave Doppler echocardiography

Correct Answer:- Option-C

Question37:-Which of the following echocardiographic modalities is used to assess higher velocities ($\geq 1.5\text{m/s}$)?

A:-Pulsed wave Doppler echocardiography

B:-Continuous wave Doppler echocardiography

C:-Tissue Doppler echocardiography

D:-M mode echocardiography

Correct Answer:- Option-B

Question38:-Colour flow Doppler is based on which of the following echocardiographic modality

A:-M mode echocardiography

B:-B mode echocardiography

C:-Pulsed wave Doppler echocardiography

D:-Continuous wave Doppler echocardiography

Correct Answer:- Option-C

Question39:-In colour flow Doppler flow moving away from the transducer is encoded in which colour?

A:-Red

B:-Blue

C:-Green

D:-Yellow

Correct Answer:- Option-B

Question40:-The formula for estimation of pressure gradient (ΔP) between two chambers by echocardiography is

A:- $\Delta P = 4V^2$

B:- $\Delta P = 2V^2$

C:- $\Delta P = 4V$

D:- $\Delta P = 2V$

Correct Answer:- Option-A

Question41:-Application of continuity equation in Doppler echocardiography is useful for

A:-Assessment of myocardial viability

B:-Assessment of regional wall abnormality

C:-Assessment of valve area

D:-Assessment of myocardial strain

Correct Answer:- Option-D

Question42:-About the Nyquist limit, the following statements are true except

A:-Directly proportional to the pulse repetition frequency

B:-Refers to the maximum velocity quantified within a given sample volume

C:-The machine cannot assess velocities higher than the Nyquist limit

D:-The numeric value equals 2 times the pulse repetition frequency

Correct Answer:- Option-D

Question43:-Stroke Volume (SV) can be estimated by using Pulsed wave Doppler echocardiography as per the formula :

A:- $SV = VTI_{LVOT} \times Area_{LVOT}$

$$B:-SV = VTI_{LVOT} \times Area_{LVOT}$$

$$C:-SV = VTI_{Mitral} \times Area_{LVOT}$$

D:-None of these

Correct Answer:- Option-A

Question44:-All the following statements about the Doppler Tissue Imaging are true EXCEPT

A:-S' wave denotes systolic contraction wave

B:-e' wave denotes late relaxation in diastole

C:-e' and a' waves movement is in the opposite direction to the mitral blood flow

D:-e' velocity can be > 20 cm / sec in children and young adults

Correct Answer:- Option-B

Question45:-All the following statements regarding pulmonary venous Doppler flow pattern are correct EXCEPT

A:-S wave consists of forward flow from the pulmonary veins to the left atrium during ventricular systole

B:-D wave consists of passive flow from during ventricular diastole

C:-AR wave corresponds to augmented forward flow from the pulmonary veins into the atrium during atrial systole

D:-Blunting of S wave relative to D wave occurs with impaired LV relaxation

Correct Answer:- Option-C

Question46:-All the following statements about left ventricular diastolic function are true EXCEPT

A:-LA pressure can be normal in Grade I LV diastolic dysfunction

B:-Mitral E/A ratio will be > 2 in Grade III LV diastolic dysfunction

C:-Mitral E/A ratio can be normal in Grade II LV diastolic dysfunction

D:-Average E/e' ratio will be < 10 in Grade III LV diastolic dysfunction

Correct Answer:- Option-D

Question47:-Holter monitoring is most useful for monitoring patients having symptoms

A:-Daily

B:-Weekly

C:-Once or twice a month

D:-Once a year

Correct Answer:- Option-A

Question48:-All the following findings on Holter recording can be normal EXCEPT

A:-Sinus arrhythmia with pauses > 3 seconds

B:-Sinus bradycardia with heart rates 35-40 beats per minute

C:-Type I second degree Atrio-Ventricular block

D:-Type II second degree Atrio-Ventricular block

Correct Answer:- Option-D

Question49:-All of the following are the uses of Holter recording EXCEPT

A:-Pacemaker malfunction

B:-Provide information regarding heart rate variability

C:-Information regarding VT morphology prior to ablation

D:-3 lead Holter provides the same information as a 12 lead Holter in patients with VT

Correct Answer:- Option-D

Question50:-All the following are true regarding Holter recording EXCEPT

A:-Artifacts on Holter can mimic bradycardias or tachycardias

B:-Artifacts may lead to erroneous therapy

C:-Younger patients have a higher prevalence of arrhythmias

D:-Arrhythmias may be responsible for some neurological symptoms

Correct Answer:- Option-C

Question51:-All of the following are techniques for determination of cardiac output EXCEPT

A:-Thermodilution method

B:-Manometric method

C:-Indicator dilution method

D:-Fick oxygen method

Correct Answer:- Option-B

Question52:-Mixed venous oxygen content $MV\text{O}_2$ is derived using the following :

A:-Dexter's criteria

B:-Hung's formula

C:-Fick's equation

D:-Flamm's formula

Correct Answer:- Option-D

Question53:-In oximetry run all of the following are causes of significant step up at atrial level EXCEPT

A:-Coronary fistula to RV

B:-RSOV to RA

C:-PAPVC

D:-VSD with TR

Correct Answer:- Option-A

Question54:-The Gorlin formula for valve area estimation is based on which

hemodynamic principle :

A:-Poiseuille's law

B:-Wood's principle

C:-Torricelli's law

D:-Laplace's law

Correct Answer:- Option-C

Question55:-Which of the following is an angiographic measure of myocardial perfusion at capillary level :

A:-TIMI flow grade

B:-TIMI frame count

C:-Coronary venous efflux

D:-Myocardial blush score

Correct Answer:- Option-D

Question56:-All are methods of invasive intracoronary physiological assessment EXCEPT

A:-QFR

B:-iFR

C:-CFR

D:-FFR

Correct Answer:- Option-A

Question57:-All are intravascular imaging modalities EXCEPT

A:-IVUS

B:-IVL

C:-OCT

D:-NIRS

Correct Answer:- Option-B

Question58:-Following are the current indications of Endomyocardial biopsy except

A:-Cardiac allograft rejection

B:-Restrictive heart disease

C:-Takotsubo cardiomyopathy

D:-Anthracyclin cardiotoxicity

Correct Answer:- Option-C

Question59:-All are contraindications of IABP EXCEPT :

A:-Aortic dissection

B:-Severe AR

C:-Previous Ischemic CVA

D:-Abdominal aortic aneurysm

Correct Answer:- Option-C

Question60:-All are novel techniques of coronary calcium modification in PCI EXCEPT

A:-Rotablation

B:-Intravascular lithotripsy

C:-Orbital atherectomy

D:-Penumbra system

Correct Answer:- Option-D

Question61:-PCWP tracing differs from direct LA pressure tracing by all of the following EXCEPT

A:-Waves occur earlier in time than LA waveforms

B:-'c' waves maybe absent

C:-Damped nature than LA trace

D:-Slightly lower pressures than LA pressure

Correct Answer:- Option-A

Question62:-Following are hemodynamic hallmarks of Constrictive pericarditis EXCEPT :

A:-Square root sign

B:-Reduced ventricular interdependance

C:-Equalisation of diastolic pressures

D:-Friedrich's sign

Correct Answer:- Option-B

Question63:-All are methods to reduce radiation exposure to operator in cathlab EXCEPT

A:-Using more steeper cranial or caudal imaging views

B:-Increasing distance from radiation source

C:-Collimation

D:-Minimising cine frame rates

Correct Answer:- Option-A

Question64:-Autoclaving and microwaving are done for which of the following types of medical wastes

A:-Microbiological waste

B:-Expired drugs

C:-Recyclable contaminated waste

D:-Human anatomical waste

Correct Answer:- Option-C

Question65:-FALSE statement about YELLOW coloured bags in biomedical waste management is?

A:-Made of non-chlorinated plastic material

B:-Soiled gloves are disposed in it

C:-Soiled gowns and masks are discarded in it

D:-Chemical waste is discarded in it

Correct Answer:- Option-B

Question66:-What is the percentage of shepherd crook RCA?

A:-5%

B:-10%

C:-15%

D:-20%

Correct Answer:- Option-A

Question67:-Anterolateral papillary muscle derives blood supply from

A:-Septal branches of LAD

B:-Obtuse marginal branches of left circumflex

C:-Left posterior descending artery

D:-Diagonal branches of LAD

Correct Answer:- Option-D

Question68:-Anterior muscular defects in ventricular septum are best demonstrated by

A:-LAO cranial view

B:-RAO view

C:-Lateral view

D:-LAO caudal view

Correct Answer:- Option-B

Question69:-Normal right atrial pressure is

A:-2-6 mm Hg

B:-8-10 mm Hg

C:-12-16 mm Hg

D:-0-2 mm Hg

Correct Answer:- Option-A

Question70:-Tipload of progress 120 wire is

A:-4.8 g

B:-9.7 g

C:-12.5 g

D:-13.9 g

Correct Answer:- Option-D

Question71:-Inverse square law states that intensity of radiation is

A:-Directly proportional to the distance

B:-Directly proportional to the square of the distance

C:-Inversely proportional to the distance

D:-Inversely proportional to the square of the distance

Correct Answer:- Option-D

Question72:-Time weighted average radiational exposure is usually given as

A:-8 hrs

B:-12 hrs

C:-24 hrs

D:-48 hrs

Correct Answer:- Option-A

Question73:-During IABP balloon deflation should occur at

A:-Mid of systole

B:-End of systole

C:-Before the onset of systole

D:-Balloon should not be deflated

Correct Answer:- Option-C

Question74:-What is the sensitivity of Allen's test?

A:-25%

B:-55%

C:-75%

D:-90%

Correct Answer:- Option-B

Question75:-How many endholes does an NIH catheter have?

A:-1

B:-2

C:-3

D:-0

Correct Answer:- Option-D

Question76:-Intravascular lithotripsy uses

A:-Ultrasound

B:-Sonic waves

C:-X ray

D:-Gamma radiation

Correct Answer:- Option-B

Question77:-Which among the following is a low osmoler contrast media?

A:-Iothalamate

B:-Iopromide

C:-Iodixanol

D:-Diatrizoate

Correct Answer:- Option-B

Question78:-Distal landmark used for TIMI frame count in Right coronary artery

A:-Last branch of posterolateral artery

B:-First branch of posterior descending artery

C:-Last branch of posterior descending artery

D:-First branch of posterolateral artery

Correct Answer:- Option-D

Question79:-In sarcoidosis diagnostic yield of endomyocardial biopsy is

A:-10-20%

B:-20-30%

C:-30-40%

D:-40-50%

Correct Answer:- Option-B

Question80:-An a wave equal to V wave in left atrial pressure waveform may be due to

A:-Cardiac tamponade

B:-Constrictive pericarditis

C:-Both (1) and (2)

D:-None of the above

Correct Answer:- Option-C

Question81:-Saw-toothed atrial activity in the electrocardiogram (ECG), is seen in

A:-Paroxysmal atrial tachycardia

B:-Atrial fibrillation

C:-AV Nodal re-entrant tachycardia

D:-Atrial flutter

Correct Answer:- Option-D

Question82:-In AV nodal re-entrant tachycardia, electrophysiological ablation is done in the area of

A:-Slow pathway

B:-Cavo-tricuspid isthmus

C:-Crista terminalis

D:-Fast pathway

Correct Answer:- Option-A

Question83:-Implantable cardioverter defibrillators distinguish between ventricular tachycardia and ventricular fibrillation by

A:-AV dissociation

B:-QRS rate

C:-QRS amplitude

D:-P amplitude

Correct Answer:- Option-B

Question84:-Coronary sinus electrograms are studied using

A:-Quadripolar catheter

B:-Duo-decapolar catheter

C:-Decapolar catheter

D:-Ablation catheter

Correct Answer:- Option-C

Question85:-Delta waves in the electrocardiogram is indicative of

A:-Hypokalemia

B:-Dual AV node

C:-Accessory AV pathway

D:-Rheumatic fever

Correct Answer:- Option-C

Question86:-During electrophysiological study, during atrial extra stimulus, an AH jump indicates

A:-Accessory AV pathway

B:-AV nodal dual pathway

C:-Absent AV nodal conduction

D:-Clockwise atrial flutter

Correct Answer:- Option-B

Question87:-Capture beats are characteristic of

A:-AV nodal re-entrant tachycardia

B:-Ventricular fibrillation

C:-Atrial fibrillation

D:-Ventricular tachycardia

Correct Answer:- Option-D

Question88:-Which is true about complete heart block?

A:-There is a constant relation between QRS and P waves

B:-Drugs like beta blockers are useful

C:-There is AV dissociation

D:-QRS rate is faster than p rate

Correct Answer:- Option-C

Question89:-AAI permanent pacemaker was used for

A:-Atrial fibrillation

B:-Sick sinus syndrome

C:-Complete heart block

D:-Implantable cardioverter defibrillator

Correct Answer:- Option-B

Question90:-During ventricular pacing in electrophysiological study, an eccentric retrograde activation noted in the coronary sinus catheter indicates

A:-Left lateral AV pathway

B:-Septal pathway

C:-Right lateral AV pathway

D:-Normal retrograde activation pattern

Correct Answer:- Option-A

Question91:-Synchronized DC shock should not be given in

A:-Ventricular tachycardia

B:-Ventricular fibrillation

C:-Atrial flutter

D:-Atrial fibrillation

Correct Answer:- Option-B

Question92:-Drug of choice in severe anaphylaxis

A:-Adrenalin

B:-Hydrocortisone

C:-Noradrenalin

D:-Isoprenalin

Correct Answer:- Option-A

Question93:-Cardiac tamponade is relieved by

A:-Diuretics

B:-DC shock

C:-Pressure controlled ventilation

D:-Aspiration of pericardial fluid

Correct Answer:- Option-D

Question94:-During cardiac resuscitation, chest compressions are given at a rate of

A:-25 per minute

B:-50 per minute

C:-75 per minute

D:-100 per minute

Correct Answer:- Option-D

Question95:-Which is a contraindication for intra-aortic balloon pump?

A:-Multivessel percutaneous coronary intervention

B:-Left main stem coronary lesion

C:-Severe aortic regurgitation

D:-Low cardiac output

Correct Answer:- Option-C

Question96:-Which drug can be given intra-coronary to relieve coronary slow flow?

A:-Isoprenalin

B:-Adrenalin

C:-Tirofiban

D:-Streptokinase

Correct Answer:- Option-B

Question97:-The balloon of the Intra aortic balloon pump is inflated using

A:-Carbon dioxide

B:-Oxygen

C:-Helium

D:-Air

Correct Answer:- Option-C

Question98:-Drug used to treat hypertensive crisis

A:-Sodium nitroprusside

B:-Adrenalin

C:-Adenosine

D:-Ramipril

Correct Answer:- Option-A

Question99:-Dreaded complication of anaphylaxis is

A:-Seizure

B:-Renal failure

C:-Laryngeal edema

D:-Intracranial bleed

Correct Answer:- Option-C

Question100:-Basic life support includes

A:-Intubation and ventilation

B:-Chest compressions

C:-Intravenous adrenalin

D:-Defibrillation

Correct Answer:- Option-B