



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनंतपुरम् -11
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY,
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION : ACADEMIC SESSION JANUARY 2020

PROGRAM: DM Cardiology (Pediatrics)

Time: 90 minutes

Max. Marks: 100

(Select the most appropriate answer)
(There are no negative marks for wrong answers)

1. Preference to use one hand (handedness) is established at
 - a) 6 months
 - b) 1 year
 - c) 2 years
 - d) 5 years
2. The average blood pressure of a one - year old child is mm Hg
 - a) 75/50
 - b) 120/80
 - c) 95/65
 - d) 60/30
3. A 2-year old child has a weight of 6.4 kg and has vitamin A deficiency. What is the grade of malnutrition in this child?
 - a) First degree
 - b) Second degree
 - c) Third degree
 - d) Fourth degree
4. Which is of the following is false regarding hyaline membrane disease?
 - a) Severely affected infants die on the first day
 - b) Can occur in term infants
 - c) Can mimic total anomalous pulmonary venous drainage
 - d) Patent ductus arteriosus is associated with severe disease
5. Lactation is contraindicated if mother is on
 - a) Propranolol
 - b) Broad spectrum antibiotics
 - c) Insulin
 - d) Sulfonylureas
6. If dietary iron is not provided, infants begin to deplete their iron stores by
 - a) 1 month
 - b) 2 months
 - c) 4 months
 - d) 6 months

7. Which among the following uses verbal tests for assessing intelligence?
- Stanford Binet test
 - Bayley scale
 - Gessell's scale
 - Vineland Social Maturity Scale
8. Concentrating capacity of newborn kidney is
- 600 mOsmol/kg
 - 1000 mOsmol/kg
 - 1200 mOsmol/kg
 - 1500 mOsmol/kg
9. According to WHO, BCG vaccination can be given up to
- 1 year
 - 2 years
 - 3 years
 - 5 years
10. Which of the following statements regarding dietary reference intake is incorrect?
- Estimated average requirement (EAR) is higher than recommended daily allowance (RDA)
 - EAR is the intake at which the risk of inadequacy is estimated to be 0.5
 - At intakes between RDA and tolerable upper limit of intake (UL), the risk of inadequacy and of excess are zero
 - RDA meets the nutritional needs of >97% of the individuals in a population
11. Stabilising agent used in oral polio vaccine is
- Magnesium chloride
 - Calcium chloride
 - Sodium chloride
 - Potassium chloride
12. A child uncovers toy after seeing it been hidden by the mother and lifts it up with assisted pincer grasp. He can follow one-step command without gesture. What is the developmental age of the child?
- 8 months
 - 10 months
 - 12 months
 - 15 months
13. The stages of lung development are
- Embryonic – canalicular – saccular – pseudoglandular – alveolar
 - Embryonic – pseudoglandular – canalicular – saccular – alveolar
 - Embryonic – canalicular – saccular – pseudoglandular – alveolar
 - Embryonic – pseudoglandular – saccular – canalicular – alveolar

14. In a baby weighing less than 1000 gm, insensible water loss is

- a) 10-20 ml/kg/day
- b) 20-40 ml/kg/day
- c) 40-60 ml/kg/day
- d) 60-80 ml/kg/day

15. For anthropometric data, 25th percentile corresponds to

- a) +0.25 standard deviation
- b) -0.25 standard deviation
- c) +0.7 standard deviation
- d) -0.7 standard deviation

16. All of the following conditions are associated with wide open anterior fontanel in the newborn, except

- a) Congenital rubella syndrome
- b) Patau syndrome
- c) Edward syndrome
- d) Turner syndrome

17. Which of the following is a glomerular disease that presents with proteinuria as a prominent feature?

- a) Alport syndrome
- b) Lowe syndrome
- c) Fanconi syndrome
- d) Dent disease

18. An adolescent was brought to the consulting room with extended rigid posturing of the arms, repetitive grimacing and no verbal response. He appeared conscious but does not respond to instructions. This clinical syndrome is consistent with all of the following, except

- a) Neurolept malignant syndrome
- b) Non convulsive status epilepticus
- c) Catatonic schizophrenia
- d) Cataplexy

19. Which of the following statements regarding evaluation of children with intellectual disability is incorrect?

- a) Microarray analysis is a first tier test advised for intellectual disability
- b) Testing for Rett syndrome is recommended in boys with moderate – severe disability
- c) Genetic testing for fragile X syndrome is recommended for all children with global developmental delay
- d) Karyotyping is useful for chromosomal inversions and balanced inversions

20. Delayed eruption of teeth is diagnosed when no teeth have erupted by

- a) 10 months
- b) 12 months
- c) 13 months
- d) 15 months

21. Which of the following statements is incorrect regarding narcolepsy in children?

- a) Typical onset of symptoms is in adolescence
- b) Cataplexy is pathognomonic of this condition
- c) H1N1 virus is a well-known trigger
- d) Modafinil is the recommended treatment

22. Stereotypical movements are commonly associated with the following conditions in childhood, except

- a) William syndrome
- b) Cornelia de Lange syndrome
- c) Fragile X syndrome
- d) Lesch Nyhan syndrome

23. Which of the following is the recommended replacement fluid for diarrhoeal losses?

- a) D5 ½ NS + 30 mEq/L sodium bicarbonate + 20 mEq/L KCl
- b) NS + 10 mEq/L KCl
- c) D5 ½ NS + Ringer lactate + 10 mEq/L KCl
- d) D5 ½ NS + 20 mEq/L KCl

24. A child with dyspnea presents with marked grunting. Which of the following is the most likely site of respiratory pathology?

- a) Extrathoracic airway obstruction
- b) Intrathoracic – extrapulmonary airway obstruction
- c) Intrapulmonary airway obstruction
- d) Parenchymal pathology

25. What is the initial bolus dose of intravenous Adenosine for a 5 kg child with SVT?

- a) 0.05 mg
- b) 0.5 mg
- c) 1 mg
- d) 5 mg

26. Tetrahydrobiopterin (BH4) loading test is used in

- a) Galactosemia
- b) Alkaptonuria
- c) Niemann Pick disease
- d) Phenylketonuria

27. The most frequent pathogenic bacteria consistently noted to colonize umbilical cord is

- a) Group A beta hemolytic streptococcus
- b) Group B streptococcus
- c) Staphylococcus aureus
- d) Coagulase negative staphylococcus

28. All of the following are salt losing forms of congenital adrenal hyperplasia, except

- a) Congenital lipoid adrenal hyperplasia
- b) 3-beta hydroxysteroid dehydrogenase deficiency
- c) 21-hydroxylase deficiency
- d) 17-alpha hydroxylase deficiency

29. Which of the following is classically a cause of secretory diarrhea?

- a) Escherichia coli
- b) Rotavirus
- c) Salmonella
- d) Glucose malabsorption

30. McIssac score is used for diagnosis of

- a) Infectious mononucleosis
- b) Group A streptococcal pharyngitis
- c) Pseudomembranous pharyngitis
- d) Diphtheria pharyngitis

31. Which of the following is not a macrocytic anemia?

- a) Diamond Blackfan anemia
- b) Folate deficiency
- c) Sideroblastic anemia
- d) Orotic aciduria

32. Which of the following is the definition of central precocious puberty?

- a) Thelarche before 7 years (girls), testicular development before 9 years (boys)
- b) Thelarche before 8 years (girls), testicular development before 9 years (boys)
- c) Thelarche before 7 years (girls), testicular development before 10 years (boys)
- d) Thelarche before 8 years (girls), testicular development before 10 years (boys)

33. Which of the following is the most common cause for congenital hypothyroidism?

- a) Defect of iodide transport
- b) Defective synthesis of thyroxine
- c) Defect of thyroglobulin synthesis
- d) Defect of thyroid gland development

34. What is the gestational age of a newborn, by Modified Ballard score, if the maturity rating is 25?

- a) 28 weeks
- b) 30 weeks
- c) 32 weeks
- d) 34 weeks

35. Severe dehydration in an adolescent represents

- a) >5% body weight dehydrated
- b) >6% body weight dehydrated
- c) >8% body weight dehydrated
- d) >15% body weight dehydrated

36. A person with liver disease caused by *Schistosoma mansoni* is most likely to have

- a) Ascites
- b) Esophageal varices
- c) Gynecomastia
- d) Jaundice

37. Deficits in the complement membrane attack complex (C5b-8) are associated with recurrent infections of

- a) *Pseudomonas aeruginosa*
- b) Catalase positive bacteria
- c) *Streptococcus pneumoniae*
- d) *Neisseria meningitidis*

38. Which of the following hemolytic anemia is classified as extracorporeal ?

- a) Elliptocytosis
- b) Paroxysmal nocturnal hemoglobinuria
- c) Sickle cell anemia
- d) Thrombotic thrombocytopenic purpura

39. The most common inherited prothrombotic disorder is

- a) Activated protein C resistance
- b) Prothrombin gene mutation
- c) Protein C deficiency
- d) Protein S deficiency

40. The pandemic Black death in the thirteenth century is attributed to

- a) Small pox
- b) Plague
- c) Influenza
- d) Malaria

41. Hyponatremia with low urine osmolality occurs in

- a) Diarrhea
- b) Primary polydipsia

- c) Cirrhosis
- d) SIADH

42. True statement in hereditary hemochromatosis is

- a) Serum ferritin levels are useful for predicting occurrence of liver fibrosis
- b) The frequency of phlebotomy should be based on plasma transferrin saturation
- c) Daily administration of deferoxamine is more effective than weekly phlebotomy for removing excess iron stores
- d) Excess iron removal has favorable outcomes on survival, but has little effect on cardiac failure once established

43. Highest risk of developing chronic hepatitis B infection occurs with which mode of transmission?

- a) Intravenous drug abuse
- b) Infected blood products
- c) Sexual transmission
- d) Vertical transmission in perinatal period

44. Which laboratory finding is the last to occur in iron deficiency state without any concomitant abnormality?

- a) Increased red cell distribution width
- b) low transferrin saturation
- c) Low reticulocyte hemoglobin value
- d) Decreased serum ferritin level

45. Receiver Operating Characteristic (ROC) curve is generated by plotting

- a) False positive rate in X axis and true positive rate in Y axis
- b) Positive predictive value in X axis and negative predictive value in Y axis
- c) Specificity in X axis and positive predictive value in Y axis
- d) Sensitivity in X axis and negative predictive value in Y axis

46. Which among the following is a G-protein coupled receptor?

- a) Insulin receptor
- b) Opioid receptor
- c) Steroid receptor
- d) Cytokine receptor

47. Dexmedetomidine is

- a) Alpha 2 adrenergic antagonist
- b) Alpha 2 adrenergic agonist
- c) GABA receptor agonist
- d) Endocannabinoid receptor agonist

48. Which of the following is incorrect regarding leptospirosis?

- a) Non-oliguric hypokalemic renal insufficiency is characteristic
- b) Thrombocytopenia is common
- c) High bilirubin levels with disproportionately elevated transaminases is diagnostic
- d) Amylase levels are often elevated

49. The mechanism of action of oseltamivir is as a

- a) Neuraminidase inhibitor
- b) Matrix-2 protein inhibitor
- c) NS-1 inhibitor
- d) Hemagglutinin inhibitor

50. Which of the following is not an acute phase reactant?

- a) C-reactive protein
- b) Haptoglobin
- c) Alpha fetoprotein
- d) Complement

51. Sonicated microvesicular albumin is used to

- a) Define severity of coarctation of aorta
- b) Define the left ventricular contours and perfusion
- c) Define coronary plaque morphology
- d) Define coronary Doppler flows to assess stenosis severity

52. Among the following, the synthetic statin is

- a) Lovastatin
- b) Simvastatin
- c) Pravastatin
- d) Pitavastatin

53. Features of infective endocarditis that warrant surgical intervention is

- a) First-degree heart block
- b) Negative growth on blood cultures
- c) Fever $>38^{\circ}\text{C}$ for 1 week
- d) Hepatosplenomegaly

54. The treatment least likely to be useful for torsades de pointes is

- a) Defibrillation
- b) Procainamide
- c) Magnesium
- d) Electrical pacing

55. Which of the following statements is correct regarding Brain Natriuretic Factor?

- a) It indicates increased ventricular volume and/or wall stress
- b) It is not affected by renal function
- c) It is elevated in only systolic, but not diastolic heart failure
- d) It will always be elevated in heart failure

56. Which of the following would be most likely seen in a patient with chronic severe mitral regurgitation?

- a) Normal LV cavity size

- b) Dyspnoea
- c) Third heart sound
- d) LV ejection fraction > 65%

57. Regarding hypertension and coarctation of aorta, which of the following is true?

- a) Prevalence of hypertension is higher with later repair
- b) Prevalence of hypertension is lower regardless of age of repair
- c) Prevalence of hypertension is similar to people with no coarctation
- d) Hypertension is not a problem after repair

58. Heart valve most likely to be affected with infective endocarditis following a septic abortion

- a) Mitral valve
- b) Aortic valve
- c) Tricuspid valve
- d) Pulmonary valve

59. A smoker with a history of intermittent claudication, detected to have hypertension was initiated on ACEI. He came back with doubling of the serum creatinine levels. The most likely underlying pathology could be

- a) Hemodynamically significant bilateral renal artery stenosis
- b) Conns syndrome
- c) Pheochromocytoma
- d) Hypernephroma

60. A 65-year old man who underwent a drug eluting stent implantation presents with recurrence of angina on exertion after 5 months of initial procedure. The most likely reason for his symptom is

- a. Progression of coronary microvascular disease
- b. Subacute stent thrombosis
- c. In-stent re-stenosis
- d. Onset of left ventricular dysfunction

61. The treatment of choice of a neonate with Simple TGA with VSD with significant arterial desaturation in a tertiary care pediatric cardiac referral center

- a) Balloon atrial septostomy
- b) Early arterial switch surgery
- c) Prostaglandin infusion
- d) Blade septostomy

62. A patient is discharged after primary angioplasty for single vessel disease following an anterior wall STEMI. His ejection fraction is 40%. The prescription should contain all the following drugs in addition to dual antiplatelets, except.

- a) Beta blocker
- b) Long acting Nitrate
- c) ACE inhibitor
- d) Statin

63. The following are high risk markers of sudden cardiac death in hypertrophic cardiomyopathy, except

- a) Hypotensive response to exercise
- b) Extensive (>15%) late Gadolinium enhancement of LV myocardium
- c) Significant mitral regurgitation

- d) Multiple NSVT episodes on Holter
- 64. The provocative tests to induce coronary spasm include all the following, except**
- Ergonovine
 - Acetylcholine
 - Adenosine
 - Hyperventilation
- 65. The recommended duration of oral anticoagulant therapy following surgery in a patient who had a bio-prosthetic valve implantation and in sinus rhythm is**
- 6 weeks
 - 3 months
 - 6 months
 - 12 months if rheumatic heart disease
- 66. Intravascular ultrasound (IVUS) uses ultrasonic waves while Optical Coherence Tomography (OCT) uses**
- Radiofrequency energy
 - Near Infra-red light
 - Ultraviolet rays
 - LASER
- 67. Combination of Ampicillin and ceftriaxone is recommended in treatment of endocarditis with**
- Streptococcus abiotrophia
 - Streptococcus mitis
 - Enterococcus faecalis
 - Brucella spp.
- 68. The smallest lipoprotein is**
- LDL
 - IDL
 - VLDL
 - HDL
- 69. Atrial flow regulator is useful in the therapy of**
- Severe mitral regurgitation
 - Severe pulmonary hypertension
 - Left atrial thrombus
 - Patent foramen ovale
- 70. QT prolongation is not seen with**
- Digoxin
 - Tricyclic antidepressants
 - Dronedarone
 - Quinidine
- 71. Bifid pulse with systolic and diastolic peak is seen in**
- Aortic regurgitation
 - Hypertrophic cardiomyopathy
 - Septic shock
 - Mitral regurgitation

72. Which of the following ECG changes is associated with acute hyperkalemia?

- a) Prolongation of ST segment
- b) QRS widening
- c) Prominent U wave
- d) T wave flattening

73. All of the following clinical findings are consistent with severe mitral stenosis, except

- a) Atrial fibrillation
- b) Opening snap late after S2
- c) Pulmonary vascular congestion
- d) Pulmonary hypertension

74. All the following ECG findings are suggestive of left ventricular hypertrophy, except

- a) $(S \text{ in } V1 + R \text{ in } V5 \text{ or } V6) > 35 \text{ mm}$
- b) $R \text{ in } avR > 8 \text{ mm}$
- c) $R \text{ in } aVL > 11 \text{ mm}$
- d) $R \text{ in } aVf > 20 \text{ mm}$

75. Which of the following congenital cardiac disorders will lead to left to right shunt, generally with cyanosis?

- a) Anomalous origin of left coronary artery from pulmonary trunk
- b) Patent ductus arteriosus without pulmonary hypertension
- c) Total anomalous pulmonary venous connection
- d) Ventricular septal defect

76. Where are the most common drivers of atrial fibrillation anatomically located?

- a) Left atrial appendage
- b) Pulmonary veins
- c) Pulmonary artery
- d) Coronary sinus

77. What medication is most effective for a wide complex tachycardia in a patient with WPW syndrome?

- a) Adenosine
- b) Digoxin
- c) Procainamide
- d) Diltiazem

78. Which of the following is not usually an admixture circulation in infancy?

- a) Complete atrioventricular septal defect
- b) Totally anomalous pulmonary venous connection
- c) Hypoplastic left heart syndrome
- d) Pulmonary atresia with ventricular septal defect

79. Which of the following is typically associated with increased pulmonary vascularity on chest X-ray?

- a) Pulmonary AV malformations

- b) Neonatal Ebstein's anomaly
- c) Transposition of great arteries with intact ventricular septum
- d) Pulmonary atresia with intact ventricular septum

80. A 10 year-old child, post-ASD surgical closure 6 months back, presented with massive pericardial effusion. The most appropriate diagnosis based on the cath data given below,

	Basal	Post pericardiocentesis
Right atrium	a23 v23 mean 22	a18 v18 mean 17
Pericardium	mean 21	mean 0
Right ventricle	40 Ed 22	35 Ed 17
PCWP	mean 23	a17 v17 mean 16

- a) Massive pericardial effusion, not in cardiac tamponade
- b) Massive pericardial effusion with tamponade, fully resolved on pericardiocentesis
- c) Massive pericardial effusion with tamponade, co-existent restrictive cardiomyopathy
- d) Effusive constrictive pericarditis

81. What is the target heart rate (bpm) for a 50 years old woman during a treadmill test?

- a) 162
- b) 170
- c) 171
- d) 173

82. Which of the following chemotherapeutic agents is commonly associated with pulmonary hypertension?

- a) 5-Fluorouracil
- b) Doxorubicin
- c) Dasatinib
- d) Cisplatin

83. Mechanism of action of Pradigastat is

- a) Upregulation of ABCA 1
- b) Inhibition of cholesterol ester transfer protein (CETP)
- c) Inhibition of diacylglycerol acyltransferase 1 (DGAT1)
- d) Upregulation of lecithin cholesterol acyltransferase (LCAT)

84. All of the following fall in class IV of Modified WHO classification of maternal cardiovascular risk in pregnancy with maternal cardiac event rate risk of >40% , except

- a) Pulmonary arterial hypertension
- b) Severe mitral stenosis
- c) Previous peripartum cardiomyopathy with residual left ventricular impairment
- d) Unrepaired cyanotic congenital heart disease

85. All of the following can be useful in the treatment of reflex syncope, except

- a) Midodrine
- b) Beta adrenergic blockers
- c) Counter-pressure manoeuvres during the prodromal phase
- d) Dual chamber pacemakers

86. Which of the following is incorrect regarding exercise induced bundle branch block

- a) Exercise induced right bundle branch block is not associated with independent cardiovascular risk
- b) Exercise induced left bundle branch is associated with increased cardiovascular risk if it occurs at heart rates < 125/min
- c) ST-T changes are interpretable if they happen before the onset of left bundle branch block
- d) Onset and offset of left bundle branch block occur at the same heart rate

87. Which of the following is incorrect about tachycardia induced cardiomyopathy?

- a) Recurrent non-sustained ventricular tachycardia can cause it
- b) The ventricular function tends to improve once the causative arrhythmia is cured
- c) Diastolic dysfunction can be a part of tachycardia induced cardiomyopathy
- d) It is not known to occur with frequent ventricular ectopics

88. Metastatic infection is least common in infective endocarditis with which of the following agents

- a) Streptococcus mutans
- b) Streptococcus intermedius
- c) Beta hemolytic streptococci
- d) Streptococcus pneumoniae

89. Which of the following statements regarding prosthetic heart valves is incorrect?

- a) Structural valve deterioration occurs earlier in aortic position than mitral position in bioprosthetic valves.
- b) Homograft bioprosthetic valves currently have similar long term durability when compared to current-generation pericardial valves.
- c) Mechanical heart valves have better durability than bioprosthetic valves.
- d) Pulmonary valve autograft in aortic position should be avoided in patients with aortic root dilatation.

90. Which among the following biomarkers is currently recommended for monitoring of patients who are on combination therapy with Sacubitril-Valsartan ?

- a) BNP
- b) MR Pro-ANP
- c) NT- Pro BNP
- d) C-NP

91. The phase in the ECG when the left ventricular volume is the highest in a given cardiac cycle in a healthy individual

- a) PR segment
- b) ST segment
- c) End of T wave
- d) TP segment

92. In which of the following conditions is the systolic blood flow across the aortic valve significantly higher than that across the pulmonary valve in a given cardiac cycle?

- a) Pulmonary arteriovenous malformation
- b) Right pulmonary artery to left atrial fistula
- c) Tetralogy of Fallot
- d) During dynamic exercise in upright position

93. A lady was diagnosed with peripartum cardiomyopathy at 9th month of gestation. Which among the following is the relatively safer medication for management of heart failure for her?
- Telmisartan
 - Enalapril
 - Ivabradine
 - Hydralazine-Nitrate
94. The frequency of the probe used for intra vascular ultrasound is
- 20- 40 MHz
 - 10-20 MHz
 - 5-15 MHz
 - 1-5 MHz
95. Left isomerism is characterized by
- Bilateral right sided bronchial morphology
 - Wandering spleen
 - Asplenia
 - Cabott's rings
96. The recurrence risk of congenital heart disease (CHD) for a baby who has a sibling with CHD is
- 1-2 %
 - 2-6 %
 - 6-8 %
 - 8-10%
97. All are true of atrioventricular septal defect, except
- Unwedged aorta
 - Elongated left ventricular outflow tract
 - Elongated right ventricular outflow tract
 - Counterclockwise rotation of the left ventricular papillary muscles
98. Which aortic arch gives rise to the right and left pulmonary arteries?
- Third
 - Fourth
 - Fifth
 - Sixth
99. The most common coronary anomaly seen in Tetralogy of Fallot?
- Single coronary artery arising from left coronary sinus
 - Single coronary artery arising from right coronary sinus
 - Left anterior descending artery arising from right coronary artery
 - Left circumflex artery arising from right coronary artery
100. The saturation in pulmonary artery is more than the aorta in all the following, except
- Transposition of great arteries
 - Taussig-Bing anomaly
 - Unobstructed supracardiac TAPVC
 - Unobstructed infracardiac TAPVC