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SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2019

DM Cardiology (Pediatrics)

Time: 90 Minutes

Max. Marks: 100

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

1. The earliest change in International normalized ratio after initiation of warfarin occurs due to alterations in the activity of
 - A. Factor II
 - B. Factor VII
 - C. Factor IX
 - D. Factor X
2. A 6- month old infant presented with watery diarrhea. The stool osmolality was found to be 90 mOsm/kg. Which of the following is a likely cause?
 - A. Rotaviral enteritis
 - B. Lactose intolerance
 - C. Cholera
 - D. Shigella
3. Erythema infectiosum (fifth disease) is caused by
 - A. Parvo B19
 - B. HHV 6
 - C. VZV
 - D. HIV
4. Which of the following is false with phenylketonuria?
 - A. Autosomal recessive
 - B. Phenylalanine carboxylase deficiency
 - C. Can cause mental retardation
 - D. Dietary phenylalanine restriction is recommended
5. Which of the following is incorrect with hereditary spherocytosis?
 - A. Autosomal dominant
 - B. Incidence of 1:1000
 - C. Ankyrin deficiency is present
 - D. Pigment gall stones in 50% of patients

6. All of the following are causes of heme-negative red urine without RBCs, except
 - A. Myoglobinuria
 - B. Ibuprofen
 - C. Metronidazole
 - D. Rifampicin
7. The recommended dose of IV atropine for bradycardia in a 3-kg baby on day 3 of life is
 - A. 0.03 mg
 - B. 0.06 mg
 - C. 0.09 mg
 - D. 0.10 mg
8. Which of the following is incorrect regarding high frequency oscillatory (HFO) ventilation?
 - A. The major determinants of oxygenation are FiO₂ and PEEP
 - B. Ventilation is determined by changes in pressure (amplitude) from the mean airway pressure
 - C. 10 – 12 Hz is the common respiratory frequency used in newborns
 - D. Expiration is an active process by sucking out air
9. NEXUS rule is used in which of the following circumstances in an acutely ill child?
 - A. Penetrating thoracic injury
 - B. Penetrating abdominal injury
 - C. Head trauma
 - D. Cervical spine trauma
10. Which of the following statements regarding inguinal hernias in children is incorrect?
 - A. Indirect inguinal hernia is the most common hernia in infants
 - B. Early obliteration of the processus vaginalis in gestation explains the lower incidence in girls
 - C. Genetic abnormalities in collagen synthesis is implicated in indirect inguinal hernia in children
 - D. Sisters of affected girls are at much higher risk compared to brothers of an affected sibling
11. Deficiency or absence of the integral membrane protein 'band 7.2 b' is characteristically associated with
 - A. Hereditary spherocytosis
 - B. Hereditary elliptocytosis
 - C. Hereditary stomatocytosis
 - D. Southeast Asian ovalocytosis
12. In mucopolysaccharidosis, the impaired degradation of which glycosaminoglycan is more closely associated with intellectual disability?
 - A. Dermatan sulfate
 - B. Chondroitin sulfate
 - C. Keratan sulfate
 - D. Heparan sulfate

13. The approximate proportion of pulmonary blood flow to cardiac output in the fetus is
- A. 16%
 - B. 28%
 - C. 55 %
 - D. 66%
14. Growth hormone deficiency is characterised by all except
- A. Chronological age > height age > bone age
 - B. Chronological age = height age < bone age
 - C. Height age < chronological age < bone age
 - D. Bone age = height age < chronological age
15. In a child, Snellens chart letters can be used for testing vision after the age of
- A. 3 Years
 - B. 4 years
 - C. 5 years
 - D. 6 years
16. Osmolality of breast milk is approximately
- A. 240 mOSmol/Kg
 - B. 260 mOsmol/kg
 - C. 290 mOsmol/kg
 - D. 320 mOsmol/kg
17. In therapeutic hypothermia in neonatal resuscitation, the set temperature is
- A. 32.5 -33.5 deg C
 - B. 33.5-34.5 deg C
 - C. 34.5-35.5 deg C
 - D. 31.5-32.5 deg C
18. Normal height with decreased bone age is seen in
- A. Cushing's syndrome
 - B. Hypothyroidism
 - C. Thanatotropic dwarfism
 - D. Down's syndrome
19. Prenatal diagnosis is possible for all of following, except
- A. Sickle cell trait
 - B. Beta Thalassemia
 - C. Ectodermal dysplasia
 - D. Duchenne muscular dystrophy
20. Which of the following contains the least fat content in the milk?
- A. Cow milk
 - B. Goat milk
 - C. Buffalo milk
 - D. Human milk

21. Breast feeding is contraindicated if the mother is taking
- Propranolol
 - Broad spectrum antibiotics
 - Insulin
 - Sulfonylureas
22. Deficiency of which of the following vitamins is not seen in newborn?
- E
 - C
 - D
 - K
23. The sequential order of development of secondary sexual characteristic in male is
- Pubic hair - testicular development - axillary hair – beard
 - Testicular development - beard - pubic hair - axillary hair
 - Testicular development - pubic hair - axillary hair – beard
 - Axillary hair - beard - pubic hair - testicular development
24. A 12-month old infant is on pressure-controlled ventilation for pneumonia. FiO_2 - 40%; PIP – 30; PEEP: 5mm Hg; Mean airway pressure: 20mm Hg; Ventilator rate: 30/min. ABG - PH: 7.3; PCO_2 :55mm Hg; PO_2 :80mm Hg; HCO_3^- :21mEq/L; SaO_2 :90%. The oxygenation index is
- 10
 - 17.8
 - 40
 - 200
25. Which of the following statements regarding Hirshsprung's disease is incorrect?
- It is the most common cause of lower intestinal obstruction in neonates
 - Delayed passage of meconium beyond 48 hours in preterm infants is the usual presentation
 - Absence of Meissner's and Auerbach's plexus in the submucosa is characteristic
 - High concentration of acetyl cholinesterase is noted between the muscle layers and in the submucosa
26. Which of the following clinical manifestations is least commonly seen in hypothyroidism?
- Complete heart block
 - Carotenemia
 - Pretibial myxedema
 - Cardiac tamponade
27. Cytotoxin production is the most important pathological mechanism of diarrhea caused by
- Bacillus cereus
 - Giardia lamblia
 - Salmonella typhi
 - Clostridium difficile

28. Locus heterogeneity in genotype-phenotype relation is seen in
- Retinitis pigmentosa
 - Congenital myopathy
 - Duchene muscular dystrophy
 - Mitochondrial myopathy
29. Normal anion gap metabolic acidosis seen in all, except
- Ureterosigmoidostomy
 - Hyperalimantation
 - Type IV renal tubular acidosis
 - Uremia
30. Number needed to treat (NNT), an important measure in pharmacoeconomics, is derived as
- Inverse of absolute risk reduction
 - Inverse of relative risk reduction
 - Inverse of 'odds ratio'
 - Inverse of 'likelihood ratio'
31. All of the following are true about calcium in correction of hyperkalemia, except
- Calcium raises the action potential threshold
 - Calcium reduces the excitability
 - Lowers resting membrane potential
 - Reverses depolarisation blockade
32. Maturity onset diabetes of the young (MODY) is characterized by all, except?
- Autosomal dominant inheritance
 - Autosomal recessive inheritance
 - Early onset hyperglycemia
 - Impairment of insulin secretion
33. Typical type 1 error in statistical hypothesis testing is
- 0.001
 - 0.01
 - 0.05
 - 0.10
34. Which of the following statements about Lyme disease is incorrect?
- Preferred antibiotic therapy for disseminated Lyme disease is ceftriaxone
 - Early removal of tick reduces infection rate
 - Chief animal reservoir is monkeys
 - Ticks of Ixodes genus are the main vector
35. The cephalosporin that is active against methicillin-resistant Staphylococcus aureus?
- Ceftolozane
 - Ceftaroline
 - Cefpirome
 - Nitrocefin

36. Which of the following regarding Clostridium difficile infection is incorrect?
- A. Toxin mediated diarrhoeal syndrome
 - B. Associated with antibiotic use
 - C. Proton pump inhibitor use is a risk factor
 - D. Community-onset cases occur in very old patients
37. Which of the following type of uncomplicated viral hepatitis in otherwise healthy individuals requires antiviral therapy?
- A. Hepatitis A
 - B. Hepatitis B
 - C. Hepatitis C
 - D. Hepatitis E
38. Which of the following is not a pressure-controlled mode of invasive ventilatory support?
- A. Synchronised intermittent mandatory ventilation (SIMV)
 - B. Pressure-controlled ventilation (PCV)
 - C. Bi-level positive airway pressure (BiPAP)
 - D. Pressure support ventilation (PSV)
39. Which of the following statements about Nipah virus is incorrect?
- A. Nipah virus is an RNA virus
 - B. Person to person transmission can occur
 - C. Latent infections do not occur
 - D. Fruit bats are the natural hosts
40. Bronchial breathing is characterized by
- A. Inspiratory component louder and longer; a gap between expiration and inspiration
 - B. Expiratory component louder and longer; a gap between inspiration and expiration
 - C. Inspiratory component louder and longer; a gap between inspiration and expiration
 - D. Expiratory component louder and longer; a gap between expiration and inspiration.
41. Earliest feature of iron deficiency is
- A. Reduced bone marrow iron stores
 - B. Increased total iron binding capacity
 - C. Increased erythrocyte protoporphyrin
 - D. Hypochromic erythrocytes
42. A pregnant lady with systemic lupus erythematosus has positive anti SS-A antibodies. What is the risk of her baby being born with complete heart block?
- A. <5 %
 - B. 15 %
 - C. 25%
 - D. 33%
43. Which of the following conditions is characterized by T-cell activation and granuloma formation as the mechanism for vessel damage?
- A. Henoch – Schonlein purpura
 - B. Wegener's arteritis

- C. Hepatitis C virus associated vasculitis
 - D. Lupus vasculitis
44. Primary lymphedema is known to be associated with all of the following, except
- A. Turner syndrome
 - B. Klinefelter syndrome
 - C. Down syndrome
 - D. Yellow nail syndrome
45. Erythema migrans is seen in
- A. Rheumatic fever
 - B. Lyme disease
 - C. Systemic lupus erythematosus
 - D. Leishmaniasis
46. Mechanism of action of Lorcaserin is?
- A. 5HT_{2A} receptor agonist
 - B. 5HT_{2A} receptor antagonist
 - C. 5HT_{2C} receptor agonist
 - D. 5HT_{2C} receptor antagonist
47. Drugs commonly used in the treatment of Hepatitis C infection are all, except
- A. Bocepravir
 - B. Indinavir
 - C. Telapravir
 - D. Sofosbuvir
48. Which of the following statements is incorrect?
- A. Prothrombin time assesses the extrinsic pathway of coagulation cascade
 - B. Activated partial thromboplastin time assesses the intrinsic pathway
 - C. Estimation of INR uses an international reference thrombomodulin
 - D. Prothrombin time is prolonged in decompensated liver disease
49. Elevated serum potassium levels without ECG manifestations of hyperkalemia may be found in all of the following conditions, except
- A. Essential thrombocytosis
 - B. Rhabdomyolysis
 - C. Uncorrected cyanotic congenital heart disease
 - D. High altitude
50. Which of the following drugs is a Toll-like receptor-7 (TLR7) agonist used in the treatment of precancerous and cancerous skin conditions?
- A. Imiquimod
 - B. Selexipag
 - C. Anakinra
 - D. Secukinumab

51. In presence of prominent left-sided third heart sound (S3), left atrial (LA) pressure tracing is expected to show
- A. Prominent V wave and elevated LA mean pressure
 - B. Prominent V wave and normal LA mean pressure
 - C. Prominent A wave and normal LA mean pressure
 - D. Prominent A wave and elevated LA mean pressure
52. The venous drainage of right ventricle is predominantly through
- A. Small cardiac vein
 - B. Great cardiac vein
 - C. Middle cardiac vein
 - D. Vein of Marshall
53. Which of following is suggestive of increased left atrial pressure in mitral Stenosis?
- A. Short A2 - OS interval
 - B. Loud first heart sound
 - C. Loud second heart sound
 - D. Murmur of tricuspid regurgitation
54. Upright T wave in lead V1 lead in a neonate at 7-days of life indicates
- A. Right ventricular hypertrophy
 - B. Normal pattern of ECG of an infant
 - C. Possibility of corrected TGA
 - D. Associated left to right shunt lesions
55. Amongst the following, the lowest systemic saturation is seen in
- A. Transposition of great arteries with VSD and pulmonic stenosis
 - B. Tetralogy of Fallot
 - C. Single Ventricle with pulmonary artery hypertension
 - D. Total anomalous pulmonary venous return
56. Early systolic murmur is seen in all, except
- A. Acute mitral regurgitation
 - B. Muscular Ventricular septal defect (VSD)
 - C. Tricuspid regurgitation with pulmonary hypertension
 - D. Non-restrictive VSD with pulmonary hypertension
57. If TR velocity by Doppler is 3m/s, and right atrial pressure is 6 mm of Hg, what is the calculated RV systolic pressure in mm Hg?
- A. 36
 - B. 42
 - C. 48
 - D. 46
58. Prominent X descent in right atrial pressure wave forms is seen in all, except
- A. Cardiac tamponade
 - B. Sub-acute pericardial constriction
 - C. Right ventricular ischemia

- D. Tricuspid regurgitation
59. If the pressure half time across a mitral valve is 220ms, the mitral valve area is
- A. 0.55 cm²
 - B. 1.0 cm²
 - C. 2.0 cm²
 - D. 4.4 cm²
60. Aortic pressure in a patient with aortic stenosis is 110/80 mm Hg. Echo showed peak aortic valve velocity of 5m/s. The peak LV systolic pressure is approximately
- A. 180 mm Hg
 - B. 200 mm Hg
 - C. 210 mm Hg
 - D. 225 mm Hg
61. Most common cause of sudden cardiac death is
- A. Brugada syndrome
 - B. Hypertrophic cardiomyopathy
 - C. Coronary artery heart disease
 - D. Myocarditis
62. The development of Eisenmenger syndrome can lead to supra-systemic pulmonary artery hypertension in
- A. Atrial septal defect
 - B. Ventricular septal defect
 - C. Patent ductus arteriosus
 - D. All of the above
63. Left ventricular pressure tracing differs from that of right ventricle by shorter duration of
- A. Isovolumetric contraction
 - B. Ejection period
 - C. Systole
 - D. Isovolumetric relaxation
64. A 40-year old asymptomatic bank manager is referred with manifest pre-excitation on 12-lead ECG. He has no history of palpitation or syncope. What is the next step in evaluation?
- A. Initiate a beta blocker
 - B. Evaluate with a treadmill test
 - C. Electrophysiology study and radiofrequency ablation
 - D. Initiate on class III antiarrhythmic
65. The most common great arterial relationship in double inlet left ventricle is
- A. Aorta: right and anterior
 - B. Aorta: right and posterior
 - C. Aorta: left and anterior
 - D. Aorta: left and posterior

66. Subaortic stenosis is known to be associated with
- A. Ostium primum defect
 - B. Ebstein anomaly
 - C. Tricuspid atresia with normally related great arteries
 - D. Congenitally corrected transposition of the great arteries
67. All of the following reduces intensity of first heart sound (S1) except
- A. Mechanical ventilation
 - B. Calcific mitral stenosis
 - C. Short PR interval
 - D. LV dysfunction
68. The anti-arrhythmic drug known to be effective in reducing ventricular fibrillation episodes in patients with Brugada Syndrome is
- A. Quinidine
 - B. Sotalol
 - C. Metoprolol
 - D. Amiodarone
69. Cannon a wave in jugular venous pulse is a feature of
- A. Constrictive pericarditis
 - B. Ventricular tachycardia
 - C. Pulmonary stenosis
 - D. Right ventricular endomyocardial fibrosis
70. J point elevation is not a feature of
- A. Hypothermia
 - B. Hypomagnesiemia
 - C. Brugada Syndrome
 - D. Hypercalcemia
71. The most common tumor affecting heart valves is
- A. Myxoma
 - B. Papillary fibroelastoma
 - C. Blood cyst
 - D. Rhabdomyoma
72. Inclisiran, an inhibitor of PCSK9 synthesis, is
- A. Synthetic RNA
 - B. Synthetic histone
 - C. Synthetic DNA
 - D. Synthetic mitochondria
73. Peri-mitral flutters are seen most commonly in a patient with
- A. ASD surgical closure
 - B. with aortic and mitral valve prosthesis
 - C. Who had AF ablation
 - D. Hypertrophic cardiomyopathy

74. The plasma half-life of NT-proBNP is
- 20 minutes
 - 90 minutes
 - 6 hours
 - 18 hours
75. Penetrating bundle of His exits on the left side of the septum at – part of interventricular septum
- Membraneous septum
 - Trabecular septum
 - Subpulmonic septum
 - Apical septum
76. All of the following may cause step up of oxygen saturation at the ventricular level, except
- Coronary-cameral fistula
 - Patent ductus arteriosus with pulmonary regurgitation
 - Direct Gerbode defect
 - Ruptured sinus of Valsalva to right ventricle
77. All of the following are associated with gross cardiomegaly in infancy, except
- Pulmonary atresia with intact ventricular septum
 - Critical pulmonary stenosis
 - Ebstein anomaly
 - Transposition of great arteries
78. Paradoxical split of second heart sound (S2) may be seen in all of the following, except
- Severe aortic stenosis
 - Hypertrophic obstructive cardiomyopathy
 - Right bundle branch block
 - Left bundle branch block
79. Which of the following statements is incorrect regarding Levosimendan
- Produces peripheral vasoconstriction
 - Increases myocardial contractility
 - Causes cardiac myofilament calcium sensitization
 - Higher incidence of atrial fibrillation
80. Which of the following statements is true regarding dobutamine in heart failure?
- Preferred agent in hypotension in the setting of renal dysfunction
 - Patient on beta blocker therapy may require low doses of dobutamine
 - Beta-1 specific agent
 - Significantly reduced mortality in heart failure in multiple trials
81. Which statement is true regarding natriuretic peptides in the diagnosis of heart failure?
- Negative predictive value higher than the positive predictive value
 - NT-proBNP levels are elevated in patients with rheumatic mitral stenosis
 - Lower levels in HFrEF than HFpEF
 - Pulmonary embolism can give false negative tests

82. A brief period of reversible ischemia, before a prolonged coronary occlusion, can lead to a reduction in myocyte necrosis. This phenomenon is
- A. Acute ischemic preconditioning
 - B. Delayed ischemic preconditioning
 - C. Myocardial post conditioning
 - D. Myocardial Stunning
83. The three most common pathophysiologic mechanisms of an acute coronary syndrome include all, except
- A. Plaque rupture
 - B. Plaque erosion
 - C. Spontaneous coronary artery dissection
 - D. Disruption caused by a calcific nodule
84. Secondary causes of hypertriglyceridemia include all, except
- A. Hyperparathyroidism
 - B. Hypothyroidism
 - C. Cyclosporine therapy
 - D. Cushing syndrome
85. Which of the following can cause inverted P waves in lead II of the electrocardiogram?
- A. Transposed lower limb leads
 - B. Junctional rhythm
 - C. Hypothermia
 - D. Left axis deviation
86. The chief concern in the anaesthetic management of a patient with mitral stenosis is to avoid tachycardia because it
- A. Aggravates left ventricular ischemia
 - B. Increases myocardial oxygen consumption
 - C. Frequently precipitates atrial fibrillation
 - D. Increases the trans-mitral pressure gradient
87. Of the following, the strategy that is least to be effective for torsades de pointes is
- A. Procainamide
 - B. Defibrillation
 - C. Magnesium
 - D. electrical pacing
88. Which of the following pacemaker settings represents the sensing of a single chamber pacemaker in synchronous mode?
- A. AAI
 - B. DDI
 - C. VOO
 - D. DOO

89. Which of the following statements is incorrect regarding thrombolytics?
- Streptokinase is preferred over TPA in elderly patients
 - Reteplase is weight-based
 - TPA is weight-based infusion
 - Tenecteplase is weight-based
90. Which of the following is not a narrow QRS tachycardia?
- Orthodromic atrio-ventricular reentrant tachycardia (AVRT)
 - Septal ventricular tachycardia
 - Antidromic AVRT
 - Typical AV Nodal reentrant tachycardia
91. A 5-year old boy was noted to have central cyanosis, pan-digital clubbing, cardiomegaly with LV type of apex, single second heart sound and grade 2/6 ejection systolic murmur at the pulmonary area. ECG showed left axis deviation and LV hypertrophy. What is the diagnosis?
- Tetralogy of Fallot
 - Double outlet RV with VSD and PS
 - Tricuspid atresia with VSD and PS
 - Congenitally corrected TGA with VSD and PS
92. A 25-year old lady presents with progressive exertional dyspnea and fatigue. Which among the following clinical findings is least indicative of presence of severe pulmonary artery hypertension in this patient?
- Harsh holosystolic murmur in lower sternal border
 - Early diastolic murmur in upper left sternal border in second interspace
 - Continuous murmur in left sternal border
 - Single second sound
93. Which among the following HMG-CoA reductase inhibitors should not be prescribed along with protease inhibitors (antiretroviral therapy)?
- Pravastatin
 - Simvastatin
 - Atorvastatin
 - Rosuvastatin
94. Which among the following is not an indication for initiation of thromboprophylaxis with aspirin after the procedure
- Balloon mitral valvotomy
 - mitral valve replacement surgery with TTK- Chitra heart valve prosthesis
 - Percutaneous device closure of atrial septal defect
 - Bidirectional Glenn surgery
95. During invasive cardiac catheterization of a 28-year old lady being evaluated for exertional dyspnea, the recorded pulmonary artery mean pressure was 32 mmHg and the pulmonary capillary wedge mean pressure was 20 mmHg. Which of the following conditions is likely?
- Idiopathic pulmonary hypertension
 - Chronic thromboembolic pulmonary hypertension

- C. Biventricular endomyocardial fibrosis
 - D. Interstitial lung disease
96. Which of the following is incorrect regarding intra-aortic balloon counter-pulsation (IABP)?
- A. Useful in cardiogenic shock related to acute myocardial infarction
 - B. IABP reduces the after load
 - C. Useful in hypotension related to left main disease
 - D. Useful in left ventricular failure related to aortic regurgitation
97. Sudden cardiac death during sleep is a characteristic feature of
- A. Brugada syndrome
 - B. Arrhythmogenic right ventricular dysplasia
 - C. Catecholaminergic polymorphic ventricular tachycardia
 - D. Long QT syndrome type 2
98. Among the following complications of radiation exposure, which is not linearly dependent on the radiation dose
- A. Malignancy
 - B. Hair loss
 - C. Cataract
 - D. Sterility
99. A 14-year old boy weighing 32 kg presents with a diagnosis of rheumatic heart disease and moderate mitral regurgitation. Which among the following options is least appropriate for secondary rheumatic prophylaxis according to WHO guidelines (2004)?
- A. Tablet Sulfadoxine 1 g daily once
 - B. Tablet Penicillin G 400 mg twice daily with food
 - C. Inj. Benzathine Penicillin 1.2 million units by deep intramuscular injection, once in 3 weeks
 - D. Tablet Erythromycin 250 mg twice daily
100. What is the design of TTK-Chitra heart valve?
- A. Stentless bioprosthetic valve
 - B. Bileaflet mechanical prosthetic valve
 - C. Tilting disc mechanic prosthetic valve
 - D. Bioprosthetic valve with stent graft