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

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2018

PROGRAMME: DM Cardiology (Pediatrics)

Time:90 Minutes

Max. Marks: 100

(Select the most appropriate answer)

(There are **no negative** marks for wrong answers)

1. Which of the following conditions results primarily from mutation in the gene encoding Vitamin D receptor?
 - A. Vitamin D dependent rickets type 1
 - B. Vitamin D dependent rickets type 2
 - C. X-linked hypophosphatemic rickets
 - D. Autosomal dominant hypophosphatemic rickets
2. 'Maltese crosses' are identified in the urinary sediments in
 - A. Niemann Pick disease
 - B. Gaucher disease
 - C. Krabbe's disease
 - D. Fabry disease
3. The most common cause for testicular pain in boys in 2 – 10 years of age is
 - A. Testicular torsion
 - B. Torsion of appendix testis
 - C. Epididymitis
 - D. Congenital varicocele
4. All of the following are true regarding intussusception in children, except
 - A. It is more common in boys than girls
 - B. Adeno virus C has been implicated
 - C. Urgent barium meal follow-through is the investigation of choice
 - D. Postoperative intussusception is commonly ileoileal
5. All of the following are conditions with combined cellular and antibody immunodeficiency, except
 - A. Ataxia telangiectasia
 - B. Reticular dysgenesis
 - C. Common variable immunodeficiency
 - D. Severe combined immunodeficiency

6. What is the recommended hourly maintenance fluid rate (water) for a 20 kg child?
- 50 ml/hour
 - 60 ml/hour
 - 80 ml/hour
 - 100 ml/hour
7. All of the following are true regarding attention deficit hyperactivity disorder (ADHD), except
- Dopamine transporter gene (DAT1) and dopamine 4 receptor gene (DRD4) are implicated in the diagnosis
 - Impaired fine motor movement and poor coordination are "soft" but specific signs of ADHD
 - Developmentally inappropriate behavior must commence before 7 years of age and present for at least 6 months
 - Maternal lead exposure is associated with ADHD
8. All of the following are true regarding proximal renal tubular acidosis, except
- Growth failure in the first few years of life is a characteristic presentation
 - Urine pH cannot be reduced to < 5.5
 - It is usually a component of Fanconi syndrome
 - Non-anion gap metabolic acidosis is common
9. Hypoglycemia in an infant is defined as whole blood glucose level less than
- 40 mg/dl
 - 50 mg/dl
 - 60 mg/dl
 - 80 mg/dl
10. Developmental delay in children below 3 years of age is defined as
- 25% departure from typical performance in ≥ 2 developmental domains
 - 25% departure from typical performance in any developmental domain
 - 30% departure from typical performance in ≥ 2 developmental domains
 - 30% departure from typical performance in any developmental domain
11. All of the following are true regarding transient neonatal pustular melanosis, except
- Increased melanization of epidermal cells is characteristic
 - Active phase shows intracorneal or subcorneal pustules filled with eosinophils
 - Pustular phase rarely lasts more than 2-3 days
 - Lesions of pustular melanosis do not contain bacteria
12. An 18-months old infant weighing 10 kg develops an acute anaphylactic reaction with bronchospasm towards antibiotic injection. What is the most appropriate initial treatment?
- Inj. Hydrocortisone 100 mg IV stat
 - Inj. Epinephrine 0.1 mg IV / IM stat
 - Inj. Epinephrine 0.01 mg IV / IM stat
 - Nebulization Salbutamol + oxygen

13. All of the following immune-mediated diseases are associated with antineutrophil cytoplasmic antibody, except
- A. Wegener granulomatosis
 - B. Churg-Strauss syndrome
 - C. Microscopic polyangiitis
 - D. Henoch-Schönlein purpura
14. Correct statement regarding congenital rubella syndrome (CRS) is
- A. CRS with vaccine-strain of virus has not been reported
 - B. Re-infections during pregnancy do not result in CRS
 - C. Administration of immune globulin immediately after exposure to a case during pregnancy is effective in preventing CRS
 - D. Patent ductus arteriosus is the commonest manifestation of CRS
15. Which of the following statements is incorrect regarding delayed tooth eruption?
- A. Most common cause is idiopathic
 - B. Defined as no teeth eruption by 15 months of age
 - C. Mechanical blockade can be a cause
 - D. Hypothyroidism and hypoparathyroidism should be ruled out
16. Bed-wetting can be considered normal up to
- A. 4 years in boys and 5 years in girls
 - B. 5 years in boys and 4 years in girls
 - C. 4 years in both boys and girls
 - D. 5 years in both boys and girls
17. Recurrent Neisserial meningitis in children is suggestive of deficiency of ----- complement.
- A. C3
 - B. C4
 - C. C8
 - D. All
18. Diamond Blackfan anemia is different from Transient Erythroblastopenia of Childhood as the former has
- A. Increased adenosine deaminase
 - B. Mean corpuscular volume is decreased
 - C. Female predominance
 - D. Antecedent history of viral illness
19. Which of the following is an example of humanized anti-human IL-6 receptor monoclonal antibody?
- A. Infliximab
 - B. Adalimumab
 - C. Tocilizumab
 - D. Anakinra

20. Recurrent pneumonia is defined in children as having a frequency of episodes more than or equal to
- A. 2 episodes in 6 months
 - B. 2 episodes in one year
 - C. 3 episodes ever without radiographic clearance
 - D. 4 episodes ever with radiographic clearance
21. Cerebral salt wasting indicates all, except
- A. Low serum sodium
 - B. High intravascular volume
 - C. High urine output
 - D. Low vasopressin level
22. Which of the following is least considered to be a normal variant in newborns?
- A. Milia
 - B. Neonatal pustular melanosis
 - C. Dermal melanocytosis
 - D. Infantile acropustulosis
23. Which of the following statements is true regarding Glasgow coma scale (GCS) in children?
- A. The scale is validated as a prognostic scoring system in children and young infants
 - B. Patients with GCS \leq 8 require aggressive management
 - C. All patients with GCS \leq 5 should be intubated and mechanically ventilated
 - D. It is useful in children to assess the neurological, circulatory and cardiac status
24. 'Whirlpool' sign in abdominal ultrasonogram is seen in
- A. Duodenal atresia
 - B. Midgut volvulus
 - C. Intussusception
 - D. Anorectal malformation
25. How much bilirubin can be bound to 1 gm of albumin?
- A. 8.5 mg
 - B. 9.8 mg
 - C. 10.5 mg
 - D. 13.6 mg
26. The amino acid used in the treatment of hyperammonemia due to certain urea cycle disorders is
- A. Leucine
 - B. Valine
 - C. Arginine
 - D. Isoleucine

27. 'Blueberry muffin' lesions seen in rubella is due to
- A. Dermal erythropoiesis
 - B. Thrombocytopenia
 - C. Ecchymosis
 - D. Vasculitis
28. Cantwell criteria is used to diagnose
- A. Congenital tuberculosis
 - B. Congenital syphilis
 - C. Congenital rubella
 - D. None of the above
29. Which of the following is a neurocutaneous syndrome without cutaneous manifestations?
- A. Sturge-Weber syndrome
 - B. Tuberos sclerosis
 - C. Ataxia telangiectasia
 - D. Von Hippel- Lindau disease
30. Severe hypothermia in newborn is defined as temperature below
- A. 28° C
 - B. 30° C
 - C. 32° C
 - D. 34° C
31. Third generation cephalosporin that is primarily excreted through bile is
- A. Cefoperazone
 - B. Ceftriaxone
 - C. Cefotaxim
 - D. Cefixime
32. Vitamin used in the treatment of transient tyrosinemia of newborn?
- A. Vitamin A
 - B. Vitamin K
 - C. Vitamin E
 - D. Vitamin C
33. The enzyme producing carbon monoxide within the human body is
- A. Aminolevulinic acid synthase
 - B. Heme oxygenase
 - C. Cyclo-oxygenase
 - D. Nitric oxide synthase

34. SA 14-14-2 Vaccine for Japanese encephalitis is
- A. Live attenuated
 - B. Vero cell derived inactivated
 - C. Mouse-brain derived inactivated
 - D. Live recombinant
35. Atypical hemolytic uremic syndrome is associated with
- A. Factor VII deficiency
 - B. Factor H deficiency
 - C. Interleukin 10 deficiency
 - D. Properdin deficiency
36. Most common autoimmune antibody - mediated encephalopathy is
- A. Anti-NMDA receptor antibody syndrome
 - B. Anti-voltage gated potassium channel antibody syndrome
 - C. Anti-AMPA receptor antibody syndrome
 - D. Anti-Glycine receptor antibody syndrome
37. Histochemical staining used for diagnosing Hirschsprung's disease is
- A. Acetyl choline esterase
 - B. Dopamine
 - C. Glutamate
 - D. Chromogranin and synaptophysin
38. Among the following, Group A beta hemolytic streptococcus has the highest resistance to
- A. Cephalexin
 - B. Clindamycin
 - C. Erythromycin
 - D. Doxycycline
39. Cytosolic glycogen accumulation does not occur in
- A. Pompe disease
 - B. McArdle's disease
 - C. Phosphofructokinase deficiency
 - D. Phosphoglycerate kinase deficiency
40. HLA B27 positivity is least common in
- A. Ankylosing spondylitis
 - B. Juvenile psoriatic arthritis
 - C. Inflammatory bowel disease
 - D. Reactive arthritis

41. All the following antimalarials act by forming heme complexes which are toxic to the parasite, except
- A. Primaquine
 - B. Chloroquine
 - C. Mefloquine
 - D. Quinidine
42. Regarding diphtheria, correct statement is
- A. Falling levels of immunity in the adult population is a reason for sporadic cases in the immunization era
 - B. Immunization abolishes carrier state
 - C. Antibiotic prophylaxis is not indicated for asymptomatic case contacts who are not carriers (negative cultures)
 - D. Asymptomatic case contacts who are carriers should be administered antibiotic prophylaxis and antitoxin
43. Which of the following antibodies has least association with neonatal lupus?
- A. Anti-Ro (SSA)
 - B. Anti-La (SSB)
 - C. Anti-RNP
 - D. Anti-CCP
44. All of the following are features of Behcet disease, except
- A. Reduced T helper cell 1 activity
 - B. Increased expression of HSP60
 - C. Association with HLA-B51
 - D. Vasculitis with fibrinoid necrosis
45. Blau syndrome is associated with
- A. Amyloidosis
 - B. Sarcoidosis
 - C. Hemochromatosis
 - D. Myeloma
46. All of the following are features of congenital hypothyroidism, except
- A. More common in boys than girls
 - B. Neonatal jaundice
 - C. Macrocytic anemia
 - D. Hearing loss

47. Which of the following statements is incorrect regarding shock?
- A. In cardiogenic shock, systemic vascular resistance is high
 - B. In hypovolemic shock, pulmonary capillary wedge pressure is reduced
 - C. In distributive shock, central venous pressure is increased
 - D. In hypovolemic shock, mean arterial pressure is normal
48. Which is not useful to test brainstem death in suspected cervical spine injury?
- A. Pupillary light reflex
 - B. Doll's-eyes reflex
 - C. Corneal reflex
 - D. Oculo-vestibular reflex
49. Which of the following is correct in breast milk jaundice?
- A. Peaks at first week of life
 - B. Recurs with resumption of breast milk after trial stoppage
 - C. Kernicterus can occur
 - D. Seen in up to 10% of infants
50. Which of the following has the highest proportion of etiology of congenital malformations?
- A. Maternal infections
 - B. Maternal illness
 - C. Environmental agents
 - D. Monogenic inheritance
51. The most common cardiac anomaly associated with Coarctation of aorta is
- A. Bicuspid aortic valve
 - B. Subaortic ventricular septal defect
 - C. Atrial septal defect
 - D. Supramitral ring
52. 22q11 deletion is commonly associated with all, except
- A. Tetralogy of Fallot
 - B. Truncus arteriosus
 - C. Interrupted aortic arch
 - D. D-Transposition of great arteries
53. The most common coronary artery anomaly in Tetralogy of Fallot is
- A. Left anterior descending artery from right aortic sinus
 - B. Single coronary artery from right aortic sinus
 - C. Single coronary artery from left aortic sinus
 - D. Left circumflex coronary artery from right aortic sinus

54. The most common indication of heart transplantation in the neonate is
- A. Hypoplastic left heart syndrome
 - B. Hypoplastic right heart syndrome
 - C. Severe Ebstein's anomaly
 - D. Dilated cardiomyopathy
55. Which among the following is an anatomical scoring system
- A. STS Score.
 - B. Euroscore II
 - C. SYNTAX Score
 - D. GRACE Score
56. Which among the following is a systolic event?
- A. E wave
 - B. L wave
 - C. A wave
 - D. S' wave
57. Which among the following is not an admixture lesion?
- A. Transposition of great arteries
 - B. Truncus arteriosus
 - C. Total anomalous pulmonary venous connection
 - D. Pulmonary atresia with intact ventricular septum
58. Inclisiran, used in the treatment of dyslipidemia, is chemically a
- A. Synthetic RNA
 - B. Synthetic histone
 - C. Synthetic DNA
 - D. Synthetic mitochondria
59. All of the following are useful indicators regarding the severity of Tetralogy of Fallot, except
- A. Systemic arterial oxygen saturation
 - B. Intensity of outflow murmur
 - C. Functional class
 - D. Right ventricular outflow gradient by echocardiography
60. What is the Duke Treadmill score for a patient who exercised for 10 minutes (12 METs) and had a maximum of 1 mm ST depression at peak exercise without angina?
- A. 5
 - B. 7
 - C. 9
 - D. 10

61. Left axis deviation of the QRS complex is associated with all the following, except
- A. Inflow ventricular septal defect
 - B. Pulmonary atresia with intact interventricular septum
 - C. Double outlet right ventricle with subaortic ventricular septal defect
 - D. Noonan syndrome with pulmonary stenosis
62. What is the age-predicted maximum heart rate in a 60-year old man on beta blockers?
- A. 122
 - B. 133
 - C. 155
 - D. 166
63. All of the following are minor criteria in the latest Revised Jones criteria for rheumatic fever in moderate-high risk population, except
- A. Monoarthralgia
 - B. Fever with body temperature $\geq 38.5^{\circ}\text{C}$
 - C. ESR ≥ 30 mm/hour
 - D. Prolonged PR interval
64. Which of the following features favor a diagnosis of restrictive cardiomyopathy over constrictive pericarditis?
- A. Elevated pulmonary artery pressures
 - B. Normal BNP levels
 - C. Annulus reversus
 - D. Ventricular interdependence
65. All the following conditions are associated with high volume pulse, except
- A. Aorta to LV tunnel
 - B. Coronary cameral fistula
 - C. Neonatal Blalock Taussig shunt
 - D. Hemitruncus
66. Which of the following is false regarding right ventricle?
- A. It has fine and regular trabeculations
 - B. Septal attachment of AV valve is more apical
 - C. Moderator band is present
 - D. Trabecular septomarginalis is present
67. Which of the following is an example of ductus dependent systemic circulation?
- A. Severe Ebstein's anomaly
 - B. Pulmonary atresia
 - C. Tricuspid atresia
 - D. Interruption of aortic arch

68. All the following statements about spontaneous coronary artery dissection are true, except
- A. More common in young females
 - B. Proximal coronary involvement associated with immuno-inflammatory disease
 - C. Intra-coronary imaging shows 'accordion sign'
 - D. Physical stress precipitates it by causing intimal tear
69. Hemodynamic definition of 'Isolated post-capillary Pulmonary Hypertension' is
- A. Pulmonary artery wedge pressure > 15 mm Hg
 - B. Right ventricular systolic pressure > 36 mm Hg
 - C. Diastolic pressure gradient < 7 mm Hg
 - D. Pulmonary vascular resistance > 3 Wood units
70. Which of the following statements is true regarding alcohol septal ablation?
- A. Indicated when dynamic LV outflow gradient is more than 50 mm Hg at rest
 - B. Targeted septal thickness less than 16 mm is a contraindication
 - C. Usually preferred over surgical myomectomy
 - D. Reduces risk of sudden death
71. Blunt or shallow Y descent in jugular venous waveform is seen in all, except
- A. Tricuspid stenosis
 - B. Cardiac tamponade
 - C. Effusive-constrictive pericarditis
 - D. Ebstein's anomaly
72. Pro-BNP can be increased in all, except
- A. Coronary artery disease
 - B. Sepsis
 - C. Pulmonary hypertension
 - D. Obesity
73. Drug combinations recommended to be avoided include all, except
- A. Metronidazole and Warfarin
 - B. Furosemide and Gentamicin
 - C. Dihydropyridine calcium channel blockers and beta blockers
 - D. Omega-3 and Antiplatelets
74. Which among the following is a correct description for the condition 'mitral arcade'?
- A. Absent chordal insertions
 - B. Absent papillary muscles
 - C. Fused papillary muscles
 - D. Elongated papillary muscles

75. An asymptomatic 45-year old male with newly diagnosed atrial fibrillation and normal echo, refused cardioversion while suggested. The next optimal management strategy for him is
- Sedate and cardiovert against patient wishes
 - Aspirin
 - Anticoagulation
 - Rate control
76. A patient with no structural heart disease: a wide QRS tachycardia of RBBB morphology at a rate of 160 bpm, QRS axis of (-) 40 degrees and AV dissociation was recorded during palpitation. What is the likely diagnosis?
- RV outflow ventricular tachycardia
 - Posterior fascicular VT
 - Anterior fascicular VT
 - Antidromic AVRT
77. All are true about TAPSE (Tricuspid Annular Plane Systolic Excursion), except
- Normal TAPSE is >17 mm
 - Reliable measure of RV systolic function
 - Can be measured using either M-mode or 2D echo
 - TAPSE is measured at septal aspect of tricuspid annulus
78. Mechanisms of dyspnea in left heart disease include all, except
- PVH and decreased lung compliance
 - Respiratory muscle fatigue
 - Elevated LV End diastolic pressure leads to decreased antegrade coronary blood flow
 - Reverse 'Bernheim' effect
79. Functional causes of opening Snap (either due to swift opening of AV valve or due to excess flow across the valve) is seen in all, except
- Mitral regurgitation
 - Ventricular septal defect
 - Atrial septal defect
 - First degree AV block
80. Which is the incorrect statement regarding effect of dobutamine infusion in patients with heart failure
- Left ventricular end diastolic pressure decreases
 - Mean arterial pressure decreases slightly due to interplay of actions on alpha 1 and alpha 2 receptors
 - Left ventricular end systolic volume decreases
 - There is increased myocardial oxygen demand

81. Absent jugular venous pulsations are described in patients with
- Atrial paralysis
 - Budd Chiari syndrome
 - Endomyocardial fibrosis with giant right atrium
 - Fontan procedure
82. The tricuspid valve is in closed position corresponding to which of the following curves of central venous pressure:
- 'a' wave
 - x descent
 - x' descent
 - y descent
83. Isovolumic contraction phase of ventricular systole occurs during which of the following phases of central venous pressure, approximately
- From nadir of y descent to peak of a wave
 - From peak of a wave to trough of x wave
 - From trough of x wave to peak of c wave
 - From peak of c wave to trough of x' descent
84. Pulmonary venous hypertension is a feature of
- Large ostium secundum defect with left to right shunt
 - large ventricular septal defect with left to right shunt
 - large pulmonary arteriovenous malformation
 - Tricuspid atresia with restrictive atrial septal defect
85. Which among the following is not a feature of low flow - low gradient severe aortic stenosis with preserved left ventricular function?
- Mean trans aortic pressure gradient < 40 mm Hg
 - Aortic valve area < 1 cm²
 - Stroke volume > 35 ml/ m²
 - Left ventricular ejection fraction $> 50\%$
86. Ejection systolic murmur in outflow in a neonate is least likely to be due to
- Subaortic membrane
 - Unicuspid aortic valve
 - Bicuspid aortic valve
 - Pulmonary stenosis
87. Systolic murmur in which among the following conditions does not increase in intensity in the cardiac cycle after a premature ventricular contraction?
- Valvular aortic stenosis
 - Hypertrophic obstructive cardiomyopathy
 - Valvular pulmonic stenosis
 - Mitral valve prolapse

88. 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
89. Xanthomas within palmar creases are seen characteristically in
- A. Pseudoxanthoma elasticum
 - B. Type II hyperlipoproteinemia
 - C. Type III hyperlipoproteinemia
 - D. Hypothyroidism
90. All of the following are part of acute aortic syndrome, except
- A. Aortic dissection
 - B. Acute aortic regurgitation
 - C. Intramural hematoma
 - D. Penetrating atherosclerotic ulcer
91. Drug of choice for infective endocarditis due to HACEK organisms is
- A. Vancomycin
 - B. Gentamicin
 - C. Ampicillin
 - D. Ceftriaxone
92. What percentage (%) of patients with rheumatic mitral valve disease has the echocardiographic diagnosis of tricuspid stenosis as a co-existing lesion?
- A. 10
 - B. 20
 - C. 30
 - D. 40
93. In the electrocardiogram of a 40-year old male, the QRS amplitude in lead I and aVF measured (+) 10 and (-)10mV respectively. The frontal QRS axis is
- A. (+) 15°
 - B. (-) 45°
 - C. (-) 75°
 - D. (-) 90°
94. In which of the following valve lesions, Dimensionless Index (DI) is used as an echocardiographic parameter to assess the severity of the lesion?
- A. Aortic stenosis
 - B. Aortic regurgitation
 - C. Mitral regurgitation
 - D. Mitral stenosis

95. All the following are correct about left ventricular assist device implantation, except
- LA pressure is reduced more than RA pressure
 - A PFO/small ASD is created following LVAD implantation for decompressing LA
 - Right to left shunting at atrial level can produce systemic desaturation
 - RV failure is a bad prognostic marker
96. The formula to predict the maximum predicted heart rate for Treadmill exercise testing in CAD patients on beta blockers is $X - (0.7 \times \text{Age})$. The value of X is
- 174
 - 164
 - 184
 - 154
97. The clinical features of subaortic membrane stenosis can include all, except
- Ejection systolic murmur
 - Ejection click
 - End-diastolic murmur of aortic regurgitation
 - Low pulse volume
98. Which of the following is a vasodilator?
- Thromboxane A2
 - Endothelin
 - Prostaglandin E2
 - Urotensin II
99. All are true about genotype - phenotype correlation in Brugada syndrome, except
- SCN5A mutation is associated with short PR interval
 - LTCC mutation is associated with short QT interval
 - Yield of genetic testing is low (25%)
 - No major therapeutic implication of genetic testing
100. At birth, tunica intima of arterial wall contains all of the following, except
- Type IV collagen
 - Laminin
 - Endothelial cells
 - Smooth muscle cells

