



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

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2019

DM Cardiology (Medicine)

Time:90 Minutes

Max. Marks: 100

(Select the most appropriate answer)

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

1. Low brain natriuretic peptide (BNP) levels are known to be associated with
  - A. Renal failure
  - B. Increasing age
  - C. Use of angiotensin receptor-neprilysin inhibitor (ARNI)
  - D. Obesity
2. Which of the following is incorrect about Fabry's disease affecting the kidney
  - A. Zebra bodies are found in renal biopsy
  - B. The disease can affect females in a family
  - C. Post-transplantation graft survival is poor
  - D. The final biopsy picture is of focal segmental glomerulosclerosis
3. Stage V chronic kidney disease is said to occur when glomerular filtration rate falls below
  - A. 5ml/min/1.73m<sup>2</sup>
  - B. 10ml/min/1.73m<sup>2</sup>
  - C. 15ml/min/1.73m<sup>2</sup>
  - D. 20ml/min/1.73m<sup>2</sup>
4. Most common type of leprosy in India is
  - A. Tuberculoid (TT)
  - B. Borderline tuberculoid (BT)
  - C. Mid Borderline (BB)
  - D. Borderline Lepromatous (BL)
5. Which of the following statements correctly describes the role of polymerase chain reaction in the diagnosis of HIV infection?
  - A. It should be used if the western blot is indeterminate
  - B. It is a useful screening test
  - C. It should be used if two consecutive serologic tests (ELISA) are positive
  - D. It should be used if the initial serologic test is positive, but the second is negative

6. All of the following are seen in chronic kidney disease, except
  - A. Phosphaturia
  - B. Reduced ionized calcium in blood
  - C. Increased renal calcitriol production
  - D. Increased PTH secretion
7. Which of the following is true about primary chancre in syphilis?
  - A. Usually multiple
  - B. Painless papule
  - C. Erosions and indurations are uncommon
  - D. Soft consistency on palpation
8. Tuberculin skin test reaction size is considered to be positive if induration is > 5mm in each of the following type of patients, except
  - A. HIV infected persons
  - B. Recent contacts of a patient with tuberculosis
  - C. Patients with radiological signs of previous tuberculosis
  - D. Recent immigrants from countries with high prevalence of tuberculosis
9. Assessment of red cell mass by using hematocrit may underestimate the degree of erythrocytosis in which of the following conditions
  - A. Polycythemia vera
  - B. Smokers
  - C. High altitude
  - D. Chronic obstructive airway disease
10. The commonest organism causing community acquired pneumonia currently is
  - A. Streptococcus pneumonia
  - B. Methicillin-sensitive Staphylococcus aureus
  - C. Mycoplasma pneumonia
  - D. Klebsiella pneumonia
11. The mutation (single nucleotide polymorphism) in CYP2C9 gene affects the metabolism and effects of the following drugs, except.
  - A. Losartan
  - B. Warfarin
  - C. Phenytoin
  - D. Prasugrel
12. Which of the following is not known to be a risk factor to susceptibility for alcoholic liver disease?
  - A. Male gender
  - B. Concurrent Hepatitis C infection
  - C. Obesity
  - D. Nonalcoholic fatty liver

13. Which among the following fungal infections is acquired from environmental sources and not from human microbiota?
- A. Sporotrichosis
  - B. Aspergillosis
  - C. Mucormycosis
  - D. Candidiasis
14. A 56-year old lady without heart disease, on treatment with intravenous amphotericin B deoxycholate for rhinocerebral mucormycosis developed polymorphic ventricular tachycardia. Which among the following measures will help to treat or prevent this complication?
- A. Correction of serum levels of both potassium and magnesium
  - B. Intravenous amiodarone
  - C. Intravenous saline loading prior to next dose of amphotericin
  - D. Reduce the concentration of amphotericin B infusion for next 2-3 days
15. Which of the following is incorrect with hepatorenal syndrome?
- A. Seen in 10% of patients with advanced cirrhosis
  - B. Mediated by severe renal vasoconstriction
  - C. Treatment of type 1 hepatorenal syndrome is albumin infusion with terlipressin
  - D. Type 2 hepatorenal syndrome has poor prognosis
16. Which of the following is incorrect with nonalcoholic fatty liver disease?
- A. It is associated with obesity
  - B. Aspartate aminotransferase levels are elevated more than alanine aminotransferase
  - C. It can predispose to cirrhosis and hepatocellular carcinoma
  - D. Liver biopsy is the gold standard for assessing the degree of inflammation
17. Which of the following statements regarding hepatocellular carcinoma (HCC) is incorrect?
- A. HCC is the most common primary liver tumour
  - B. Increased risk of HCC is seen in patients with alpha-1 antitrypsin deficiency
  - C. Alpha-fetoprotein is increasingly produced in 90% of cases of HCC
  - D. Alpha-fetoprotein levels are usually normal in fibrolamellar variant of HCC
18. Which among the following drugs used in the treatment of rheumatoid arthritis is not an anti-TNF $\alpha$  agent?
- A. Infliximab
  - B. Etanercept
  - C. Adalimumab
  - D. Rituximab
19. Which among the following is not a parameter in HAS-BLED score?
- A. Hypertension
  - B. Liver function abnormalities
  - C. Labile INR
  - D. Diabetes mellitus

20. Onset of therapeutic effect of warfarin is delayed till 4-6 days after initiation in most people and is due to changes in levels of
- A. Factor II
  - B. Factor VII
  - C. Factor IX
  - D. Factor X
21. Evoked-potential testing is most useful in diagnosing
- A. Brainstem involvement in stroke
  - B. A clinically occult lesion in multiple sclerosis
  - C. Large hemispherical stroke
  - D. Spinal cord compression
22. Hypocalcemia is seen in all of the following, except
- A. Radiation
  - B. DiGeorge syndrome
  - C. Vitamin D resistance
  - D. Ureteric malignancy
23. The organ most commonly involved in AL Amyloidosis is
- A. Spleen
  - B. Liver
  - C. Heart
  - D. Kidneys
24. Treatment of cardiac glycoside poisoning includes all, except
- A. Activated charcoal
  - B. Digoxin-specific antibody fragments
  - C. Cardiac pacing
  - D. Hemodialysis
25. Which of the following statements regarding Acinetobacter-related infections is incorrect?
- A. Acinetobacter is part of skin flora
  - B. Inadequate physical barrier between patients predisposes to hospital acquired infections
  - C. Colistin is the drug of choice irrespective of sensitivity to 3<sup>rd</sup> generation cephalosporins or carbapenem
  - D. Growth of Acinetobacter in culture of specimens from hospitalized patients without coexisting clinical features indicates contamination and need not be treated with antibiotics
26. Which of the following clinical manifestations is least commonly seen in hypothyroidism?
- A. Complete heart block
  - B. Carotenemia
  - C. Pretibial myxedema
  - D. Cardiac tamponade

27. Cytotoxin production is the most important pathological mechanism of diarrhea caused by
- A. Bacillus cereus
  - B. Giardia lamblia
  - C. Salmonella typhi
  - D. Clostridium difficile
28. Locus heterogeneity in genotype-phenotype relation is seen in
- A. Retinitis pigmentosa
  - B. Congenital myopathy
  - C. Duchene muscular dystrophy
  - D. Mitochondrial myopathy
29. Normal anion gap metabolic acidosis seen in all, except
- A. Ureterosigmoidostomy
  - B. Hyperalimentation
  - C. Type IV renal tubular acidosis
  - D. Uremia
30. Number needed to treat (NNT), an important measure in pharmacoeconomics, is derived as
- A. Inverse of absolute risk reduction
  - B. Inverse of relative risk reduction
  - C. Inverse of 'odds ratio'
  - D. Inverse of 'likelihood ratio'
31. All of the following are true about calcium in correction of hyperkalemia, except
- A. Calcium raises the action potential threshold
  - B. Calcium reduces the excitability
  - C. Lowers resting membrane potential
  - D. Reverses depolarisation blockade
32. Maturity onset diabetes of the young (MODY) is characterized by all, except?
- A. Autosomal dominant inheritance
  - B. Autosomal recessive inheritance
  - C. Early onset hyperglycemia
  - D. Impairment of insulin secretion
33. Typical type 1 error in statistical hypothesis testing is
- A. 0.001
  - B. 0.01
  - C. 0.05
  - D. 0.10
34. Which of the following statements about Lyme disease is incorrect?
- A. Preferred antibiotic therapy for disseminated Lyme disease is ceftriaxone
  - B. Early removal of tick reduces infection rate
  - C. Chief animal reservoir is monkeys
  - D. 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?
- Toxin mediated diarrhoeal syndrome
  - Associated with antibiotic use
  - Proton pump inhibitor use is a risk factor
  - 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?
- Hepatitis A
  - Hepatitis B
  - Hepatitis C
  - Hepatitis E
38. Which of the following is not a pressure-controlled mode of invasive ventilatory support?
- Synchronised intermittent mandatory ventilation (SIMV)
  - Pressure-controlled ventilation (PCV)
  - Bi-level positive airway pressure (BiPAP)
  - Pressure support ventilation (PSV)
39. Which of the following statements about Nipah virus is incorrect?
- Nipah virus is an RNA virus
  - Person to person transmission can occur
  - Latent infections do not occur
  - Fruit bats are the natural hosts
40. Bronchial breathing is characterized by
- Inspiratory component louder and longer; a gap between expiration and inspiration
  - Expiratory component louder and longer; a gap between inspiration and expiration
  - Inspiratory component louder and longer; a gap between inspiration and expiration
  - Expiratory component louder and longer; a gap between expiration and inspiration
41. Earliest feature of iron deficiency is
- Reduced bone marrow iron stores
  - Increased total iron binding capacity
  - Increased erythrocyte protoporphyrin
  - 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?
- <5 %
  - 15 %
  - 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<sub>2A</sub> receptor agonist
  - B. 5HT<sub>2A</sub> receptor antagonist
  - C. 5HT<sub>2C</sub> receptor agonist
  - D. 5HT<sub>2C</sub> 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.  $0.55 \text{ cm}^2$
  - B.  $1.0 \text{ cm}^2$
  - C.  $2.0 \text{ cm}^2$
  - D.  $4.4 \text{ cm}^2$
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
- ASD surgical closure
  - with aortic and mitral valve prosthesis
  - Who had AF ablation
  - 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?
- A. Negative predictive value higher than the positive predictive value
  - B. NT-proBNP levels are elevated in patients with rheumatic mitral stenosis
  - C. Lower levels in HFrEF than HFpEF
  - D. 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?
- A. Streptokinase is preferred over TPA in elderly patients
  - B. Reteplase is weight-based
  - C. TPA is weight-based infusion
  - D. Tenecteplase is weight-based
90. Which of the following is not a narrow QRS tachycardia?
- A. Orthodromic atrio-ventricular reentrant tachycardia (AVRT)
  - B. Septal ventricular tachycardia
  - C. Antidromic AVRT
  - D. 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?
- A. Tetralogy of Fallot
  - B. Double outlet RV with VSD and PS
  - C. Tricuspid atresia with VSD and PS
  - D. 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?
- A. Harsh holosystolic murmur in lower sternal border
  - B. Early diastolic murmur in upper left sternal border in second interspace
  - C. Continuous murmur in left sternal border
  - D. Single second sound
93. Which among the following HMG-CoA reductase inhibitors should not be prescribed along with protease inhibitors (antiretroviral therapy)?
- A. Pravastatin
  - B. Simvastatin
  - C. Atorvastatin
  - D. Rosuvastatin
94. Which among the following is not an indication for initiation of thromboprophylaxis with aspirin after the procedure
- A. Balloon mitral valvotomy
  - B. mitral valve replacement surgery with TTK- Chitra heart valve prosthesis
  - C. Percutaneous device closure of atrial septal defect
  - D. 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?
- A. Idiopathic pulmonary hypertension
  - B. 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