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

ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2019

PROGRAM: DM CARDIOVASCULAR IMAGING & VASCULAR INTERVENTIONAL  
RADIOLOGY

Time: 90 Minutes

Max. Marks: 100

(Select the most appropriate answer)

(There are no negative marks for wrong answers)

1. Local tracheal displacement in the neck is due most commonly to which of the following?
  - a. Enlarged thyroid gland
  - b. Inflammatory disease of the thyroid
  - c. Pulmonary atelectasis
  - d. Cyst
  
2. Anterior displacement of the trachea may be due to all of the following EXCEPT
  - a. Zenker's diverticulum
  - b. Neuroenteric cyst
  - c. Aneurysm of the ascending aorta
  - d. Cardiospasm (achalasia)
  
3. Asbestosis is characterized by all of the following EXCEPT
  - a. Malignant mesothelioma of the peritoneum is most likely due to asbestos.
  - b. Development of bronchogenic carcinoma in asbestos workers is most likely due to the combined effects of smoking and asbestos.
  - c. Roentgen signs develop early in chronic exposure to this mineral.
  - d. Calcific diaphragmatic pleural plaques are characteristic of asbestosis.
  
4. In all forms of pulmonary sarcoidosis, which of the following is the most predominant finding in roentgenograms of the chest
  - a. Involvement of the mediastinal nodes.
  - b. Involvement of the pulmonary parenchyma and mediastinal nodes.
  - c. Involvement of the lungs in a symmetrical fashion
  - d. Involvement of the right paratracheal chain of lymph nodes.
  
5. Regarding rupture of the thoracic aorta, which of the following is most nearly FALSE
  - a. Thickening of the left apical cap is not the primary or most valuable radiographic sign.
  - b. The most common site of rupture is in the region of the ligamentum arteriosum.
  - c. Displacement of an indwelling nasogastric tube to the right suggests mediastinal hematoma.
  - d. Most commonly, the aortic rupture is limited to the intima.

6. Which of the following is NOT applicable in regard to rupture of a main-stem bronchus?
- Rupture rarely involves a bronchus distal to the main bronchus.
  - The most common cause is blunt trauma to the anterior chest.
  - Bronchial rupture is more common on the left due to the greater length of the left compared to the right.
  - In view of the frequency of bilateral involvement it is important to evaluate both main-stem bronchi if one is found severed / ruptured.
7. Which is the cause of low attenuation in the basal ganglia?
- Pseudohypoparathyroidism
  - Hypoparathyroidism
  - Wilson's Disease
  - Hypothyroidism
8. Tracheal narrowing as seen by roentgenogram may be due to all of the following EXCEPT
- Congenital tracheal stenosis
  - Congenital laryngeal cyst
  - Chronic relapsing polychondritis
  - Tracheomalacia of the Ellis-van Creveld syndrome
9. Regarding radiographic differentiation between a dermoid cyst and a tumor of the thymus gland, which of the following statements support the diagnosis of a dermoid cyst?
- Lobulation of the outline of a mass.
  - Right calcification within the mass.
  - Irregular calcific densities within the tumor mass.
  - Calcific plaques within the capsule of the tumor mass.
10. Which of the following best describes imaging changes in a colloid cyst?
- Appears high SI on T1
  - Appears low SI on T2
  - Typically hypodense on non-contrast CT
  - Commonly widens septum pellucidum
11. The most common congenital heart defect is
- Interatrial defect, ostium secundum
  - Persistent ductus arteriosus.
  - Ventricular septal defect.
  - Tetralogy of Fallot
12. Variation in transcardiac measurement on a routine erect teleroentgenogram of the chest between diastole and systole is about
- 1%
  - 3%
  - 5-10%
  - 15%

13. An aneurysm of the sinus of Valsalva usually arises from the
- Left aortic sinus
  - Right aortic sinus
  - Posterior aortic sinus
  - Pulmonary outflow tract
14. Concerning an aberrant right subclavian artery, which of the following is correct?
- It is often symptomatic from compression of the esophagus
  - It is nearly always associated with the right aortic arch
  - There is an association with the clinical condition, dysphagia aortica.
  - It is the most common anomaly of the great vessels.
15. In pericardial defects, one expects all of the following EXCEPT
- No specific roentgenologic findings
  - Association with other anomalies of the heart, lung, or diaphragm
  - More marked cardiac motion on fluoroscopy
  - Defects more common on the left.
16. Generally speaking, cardiac enlargement can be expected in all of the following EXCEPT
- Both chronic hypothyroidism and hyperthyroidism.
  - Fenestration of the aortic cusps
  - Maladie de Roger defect
  - Alcoholic cardiomyopathy
17. The normal limits of pulmonary arterial pressure in systole are
- 10-12mmHg
  - 12-16mmHg
  - 16-25mmHg
  - 25-30mmHg
18. Regarding mycotic aneurysms of the aorta, which of the following is correct?
- These aneurysms enlarge slowly
  - A source of infection is usually not identifiable
  - Due to the infective nature, these are not amenable to surgical repair.
  - Right-sided bacterial endocarditis as a source of mycotic aneurysms is particularly prevalent in drug addicts.
19. In an elderly patient treated for SCC of the oropharynx undergoes ultrasound neck to evaluate a new swelling. Which feature most likely indicates malignant nodes?
- Matting
  - Calcification
  - Hilar vascularity
  - Peripheral vasculitis

20. Wilm's tumor of the kidney is characterized by all of the following EXCEPT
- Calcification is relatively uncommon
  - Gross hematuria is seldom encountered
  - Metastases are rare and are usually to adjacent bony structures
  - The tumor may be bilateral in 10% of cases.
21. The thymus is unusually small or absent in all of the following conditions EXCEPT
- Di George syndrome
  - Adenosine deaminase deficiency
  - Premature infants
  - Leukemia
22. Which of the following is an extraconal extraorbital lesion, rather than an extraconal intraorbital lesion?
- Squamous cell carcinoma of the sinus
  - Lymphangioma
  - Dermoid cyst
  - Capillary haemangioma
23. Pneumopericardium is characterized by which of the following?
- Spontaneous idiopathic pneumopericardium is the most common form
  - Although a dramatic visual finding, this is an innocuous event.
  - The usual route for air to enter the pericardium is via the fascia about the pulmonary veins from the lungs.
  - Positive pressure – assisted respiration is commonly related.
24. The most sensitive means of detecting bony metastases by an imaging procedure is
- CT scan
  - Plain film studies
  - Radionuclide scan
  - Conventional tomography
25. Jaccoud's arthritis occurs after the subsidence of frequent severe bouts of
- Crohn's disease
  - Ulcerative colitis
  - Rheumatic fever
  - Acute glomerulonephritis
26. The most serious complication of Percutaneous antegrade pyelography is
- Obstruction due to clots
  - Introduction of infection
  - Excessive pressure with extravasation
  - Bleeding

27. CT scanning and ultrasonography are superior to standard roentgenographic techniques using iodinated compounds in the evaluation of which of the following?

- a. Intrinsic urinary tract obstruction
- b. Urinary tract incontinence
- c. Cystoureteral reflux
- d. Extrinsic bladder compression

28. Vesicocolic fistulas are most commonly due to which single cause?

- a. Neoplasm of the bladder
- b. Surgical trauma
- c. Uterine carcinoma (especially of the cervix)
- d. Diverticulitis of the colon

29. Non-obstructing lesions, which may result in dilatation of the renal pelvis, calyces and even the ureter, include all of the following EXCEPT

- a. Nephrogenic diabetes insipidus
- b. Appendicitis or peritonitis
- c. Urinary tract infection
- d. Renal arteriovenous fistula

30. Bladder ear is which of the following?

- a. An acquired lesion
- b. Invariably associated with inguinal herniation
- c. Seen most commonly in young, active adult males
- d. A lesion best treated by surgical repair

31. In the ultrasonic diagnosis of endocrine exophthalmus, the earliest sign often is

- a. Enlargement of the lateral rectus muscle
- b. Edema of the optic nerve
- c. Enlargement of the superior rectus muscle
- d. Enlargement of the inferior rectus muscle

32. Which of the following is factor determine spatial resolution in MRI

- a. TE
- b. Time for acquisition
- c. Voxel Size
- d. flip angle

33. Which of the following is most likely to be a feature of an enteric duplication cyst?

- a. Multilocular nature
- b. Hypoechoic internal layer
- c. Layered echogenic debris within cyst
- d. Dense calcification

34. In multidetector CT angiography of the lower limbs, the effects of calcification on the images can be reduced by the use of which post-processing technique?

- a. curved planar reformat
- b. minimum-intensity projection
- c. volume rendering
- d. digital subtraction of pre- and post-contrast studies

35. Renal artery aneurysms are seen in all the following conditions except

- a. Polyarteritis nodosa
- b. Takayasu's arteritis
- c. Neuro fibromatosis
- d. Tuberculosis

36. Following are permanent embolising materials except

- a. PVA particles
- b. Sodium tetradecyl sulphate
- c. Absolute Alcohol
- d. Gelfoam

37. All the following are indications for Uterine artery embolisation except

- a. Fibroid
- b. Uterine A-V malformation
- c. Adenomyosis
- d. Pelvic congestion syndrome

38. Which of the following statements is true regarding prostatic carcinoma.

- a. Cancers usually arise in Transitional zone
- b. Benign hypertrophy usually arises from Central zone
- c. Cancers are typically hyperechoic on ultrasound
- d. Prostate carcinoma is typically hypo intense on T2 W scan

39. All of the following are features of angio invasive aspergillosis except

- a. Multiple nodules
- b. Halo sign
- c. Crescent sign
- d. Bronchiectasis

40. Zenker's Diverticulum is:

- a. Is a traction diverticulum
- b. Is seen in mid-thoracic esophagus
- c. Neck is seen above the cricopharyngeus
- d. Neck is seen below the cricopharyngeus

41. All of the following are true regarding CT Radiation dose except.
- CT dose index (CTDI) is the principal dose descriptor in CT
  - A 50% reduction in KVP reduces radiation dose by half.
  - Tube current can be substantially reduced for CT of the chest in pediatric patients.
  - Automatic tube current (MAS) modulation can substantially reduce radiation dose.
42. In pancreatic neoplasms, the "sunburst" appearance of calcification on CT scan is a feature of
- Microcystic adenoma
  - Macrocystic cystadenoma
  - Cavernous lymphangioma
  - Metastasis
43. CT angiogram in an elderly patient evaluated for chest pain shows an intimal flap in the ascending aorta with contrast filling on either side of the flap. The arch and descending aorta appear normal. What is the most likely diagnosis?
- Aortic aneurysm
  - Stanford type B dissection of aorta
  - DeBakey type II dissection of aorta
  - DeBakey type III dissection of aorta
44. In Scimitar syndrome, a chest radiograph would show:
- A curved vessel at the left medial costophrenic angle
  - Radiographic features similar to Atrial Septal Defect (ASD)
  - Hypoplasia of the left lung
  - Prominent left atrium
45. In persistent left-sided superior vena cava, drainage usually occurs into which structure?
- right atrium
  - normal right superior vena cava
  - hemiazygos vein
  - coronary sinus
46. A 12-month-old baby presents with an abdominal mass. CT shows a large hepatic mass which displaces the retroperitoneal structures but no extrahepatic invasion is seen. There is heterogeneous enhancement of the lesion with contrast. What is the most likely diagnosis?
- Hepatoblastoma
  - Hepatocellular carcinoma
  - Hepatic adenoma
  - Hemangioendothelioma
47. A 50-year-old male presents with history of weight loss, hypertension and headaches. A selective renal angiogram shows bilateral, multiple small vessel aneurysms. The main renal arteries are normal. What is the most likely diagnosis?
- Rheumatoid disease
  - Polyarteritis nodosa
  - Systemic lupus erythematosus
  - Intravenous drug abuse

48. Zonal anatomy of the prostate is best seen in which of the following sequences?

- a. T1-weighted images
- b. T2-weighted images
- c. Proton density
- d. T1 fat saturation

49. Which of the following is a contraindication for ultrasound-guided liver biopsy?

- a. HIV positive patient
- b. INR 1.5
- c. Suspected metastasis
- d. Suspected hemangioma

50. Which of the following statements regarding bronchial artery embolization is false?

- a. A descending thoracic aortogram is performed prior to selective bronchial angiography.
- b. The abnormal bronchial artery is embolized at its origin.
- c. Polyvinyl alcohol particles (diameter of 350–500  $\mu\text{m}$ ) may be used as the embolic material.
- d. Chest pain is the most common complication.

51. Which of the following further findings on HRCT is most likely to support the diagnosis of Nonspecific interstitial pneumonia (NSIP)?

- a. Centrilobular nodules.
- b. Air-trapping.
- c. Ground Glass opacities.
- d. Cystic changes.

52. Which is a cause of hair-on-end appearance of the skull?

- a. Fibrous dysplasia
- b. Dyke-Davidoff-Masson syndrome
- c. Thalassemia minor
- d. Neuroblastoma

53. The most common venous thrombosis in pancreatic inflammation is :

- a. Splenic vein
- b. Portal vein
- c. Superior mesenteric vein
- d. Renal vein



54. Which of the following findings would make the diagnosis of large renal angiomyolipoma most likely?

- a. The presence of aneurysmal blood vessels within the lesion.
- b. The presence of soft-tissue density areas within the lesion.
- c. The presence of ill-defined margins.
- d. The presence of fluid density components

55. Which lung segments are separated by the superior accessory fissure?

- a. apical segment of lower lobes from other lower lobe segments
- b. apical segment of right upper lobe from other upper lobe segments
- c. superior segment of lingula from inferior segment of lingula
- d. lingular segment of upper lobe from remainder of left upper lobe

56. Which of these features is atypical of renal TB?

- a. High-density material in the calyceal system.
- b. Bladder calcification.
- c. Renal calcification.
- d. Corkscrew appearance to the ureter

57. A 30-year-old male presents with pain in the thigh. A plain radiograph reveals an eccentric expansile lucent lesion without a sclerotic margin but with a narrow zone of transition in the distal femoral metaphysis and epiphysis, which extends to the joint surface. What is the most likely diagnosis?

- a. Giant cell tumour (GCT).
- b. Metastasis.
- c. Aneurysmal bone cyst.
- d. Fibrous dysplasia.

58. In coronary artery anatomy, the vessel supplying the sinoatrial node most commonly arises from which structure?

- a. left anterior descending/anterior interventricular artery
- b. left circumflex artery
- c. right coronary artery
- d. left coronary artery main stem

59. Regarding posterior urethral valves:

- a. Are seen equally on males and females
- b. Associated with antenatal polyhydramnios
- c. Are associated with vesicoureteric reflux
- d. Gradual change in calibre occurs in the posterior urethra

60. Regarding imaging features of plasmacytomas, the correct statement is

- a. Poorly defined margins
- b. A soap bubble appearance is common
- c. Arise in the cortex
- d. Peripheral lesions are common

61. In an asthmatic patient evaluated for non-specific abdominal pain, CT shows a mass with desmoplastic reaction in the terminal ileum. The liver shows multiple lesions enhancing in the arterial phase. The most likely diagnosis is?

- a. Carcinoid tumour of terminal ileum
- b. Carcinoma of the terminal ileum with liver metastases
- c. Fibrosing mesenteritis
- d. Carcinoid syndrome

62. Which of the following is the strongest feature to support a diagnosis of a hamartoma on investigation of a pulmonary mass?

- a. A smooth, lobulated contour
- b. Chondroid calcification
- c. Slow growth
- d. The presence of an extra-adrenal paraganglioma

63. Which of the following favours primary rather than secondary hyperparathyroidism?

- a. Vascular calcification
- b. Osteosclerosis
- c. Brown tumour
- d. Soft tissue calcification

64. Into which structure does the thoracic duct normally drain?

- a. Right brachiocephalic vein
- b. left subclavian vein
- c. superior vena cava
- d. junction of left subclavian and internal jugular veins

65. A 65-year-old woman presents with palpitations and a heart murmur. Which of the following features are more in keeping with an atrial myxoma rather than thrombus as demonstrated on MRI?

- a. Prolapse through the mitral valve on MRI
- b. T1 hyperintensity of the lesion
- c. A lack of enhancement
- d. A smooth surface of the lesion

66. Which of the following is most likely to present as a haemorrhagic rather than a calcified pulmonary metastases?

- a. Breast cancer
- b. Chondrosarcoma
- c. Choriocarcinoma
- d. Mucinous adenocarcinoma of the colon

67. Kissing technique is used in stenting of

- a. Brachiocephalic
- b. Iliac bifurcation
- c. Both a and b
- d. None of the above

68. Most common cause of renal artery stenosis is

- a. Atherosclerosis
- b. Fibromuscular dysplasia
- c. Cystic medial necrosis
- d. Vasculitis

69. The embolic agent of choice for peripheral AVM is

- a. PVA
- b. Micro coil
- c. Glue
- d. Gel foam

70. Increasing dense nephrogram in IVP is seen in

- a. Renal artery narrowing
- b. Ureteric calculus
- c. Renal vein thrombosis
- d. All of the above

71. Sinus venous ASD is associated with

- a. TAPVC
- b. PAPVC
- c. Both of the above
- d. TOF

72. Pulmonary capillary wedge pressure is a measure of

- a. Pulmonary artery pressure
- b. Pulmonary arteriolar pressure
- c. Left ventricular pressure
- d. Left atrial pressure

73. P waves in ECG is due to

- a. Atrial depolarization
- b. Atrial repolarization
- c. Ventricular repolarization
- d. Ventricular repolarization

74. The hepatic uptake phase of BOPTA (multihance) is around

- a. 1-2 min
- b. 3-4min
- c. 10-20 min
- d. 45-70 min

75. Most common vessel involved in Takayasu arteritis is

- a. Subclavian artery
- b. Common carotid artery
- c. Left renal artery
- d. Coronary vessels

76. ASPECTS score is used in evaluation of

- a. Stroke
- b. Epilepsy
- c. Post treatment brain tumour response
- d. Demyelination response to steroids

77. T shaped tracheal bifurcation is associated with

- a. Pulmonary sling
- b. Double aortic arch
- c. Right sided aortic arch
- d. Right sided pulmonary artery interruption

78. Normal ejection fraction of left ventricle is around

- a. 30-40%
- b. 40-50%
- c. 50-60%
- d. 60-70%

79. Regarding SPEN of pancreas which of the following is not true

- a. It occurs in elderly females
- b. Most common in head of pancreas
- c. There is propensity for haemorrhage
- d. Local metastasis is likely to occur

80. All of the following are TRUE statements regarding the "hilum convergence sign" EXCEPT:

- a. It differentiates a potential hilar mass from an enlarged pulmonary artery.
- b. If the pulmonary arteries converge into the lateral border of the apparent hilar mass, the mass represents an enlarged pulmonary artery.
- c. If the pulmonary arteries converge behind the apparent hilar mass, the mass represents an enlarged pulmonary artery.
- d. If the convergence of the pulmonary arteries arises from the cardiac silhouette, a mediastinal mass is likely present.

81. Which of the following tumors crosses the joint space

- a. Osteoid osteoma.
- b. Giant Cell Tumour
- c. Osteochondroma
- d. Ewings sarcoma

82. Most common renal tumor in infants is

- a. lymphoma
- b. metanephric adenoma
- c. renal angiomyolipoma
- d. mesoblastic nephroma

83. In a Brodie abscess, there is a layer of hyper intense T1 signal peripheral to the abscess cavity. What is the term used to describe that layer?

- a. Sequestrum.
- b. Penumbra sign.
- c. Target appearance.
- d. Halo sign.

84. What is the most definitive test for diagnosing CNS vasculitis?

- a. CT angiography with 3D volume rendering.
- b. Cerebral angiography.
- c. Biopsy.
- d. MR angiography..

85. Perilymphatic nodules are seen in

- a. Sarcoidosis
- b. Silicosis\
- c. Lymphangitis carcinomatosa
- d. All the above

86. Pseudo-scalloping cholangitis sign on imaging is a feature of

- a. Extra hepatic portal vein obstruction
- b. Hepatic arterial obstruction
- c. Cholangiocarcinoma of common bile duct
- d. Mirizzi syndrome

87.Regarding a percutaneous biliary intervention procedure which is false;

- a. Balloon dilatation is a good therapeutic option for stricture of biliary enteric anastomosis
- b. Metallic stents are routinely used for benign biliary stricture
- c. Gross ascites is a contraindication
- d. Ring biliary catheter is internal-external drainage catheter

88. Most common location of aortic aneurysm is

- a. Ascending aorta
- b. Descending thoracic aorta
- c. Infra renal aorta
- d. Equal in all areas

89.All of the following increase Signal to Noise Ratio in MR imaging except

- a. Larger voxel
- b. More acquisitions
- c. Longer TR
- d. Decreased slice thickness

90.Which of the following material is not used in interventional radiological treatment of Hepato cellular carcinoma :

- a. Polyvinyl alcohol particles
- b. Doxorubicin beads
- c. N-butyl cyanoacrylate
- d. Cisplatin

91.. Which of the following breast cancer is least likely to be associated with microcalcifications?

- a. Ductal carcinoma in situ
- b. Invasive ductal carcinoma
- c. Invasive lobular carcinoma
- d. Papillary carcinoma

92. Which of the following vascular malformations in brain usually does not require treatment?

- a. Pial AVM
- b. Dural AVM
- c. Venous angioma
- d. AV fistula

93.Most common site of intestinal injury in blunt abdominal trauma is

- a. Duodenum and proximal jejunum
- b. Terminal ileum and cecum
- c. Hepatic flexure
- d. Splenic flexure

94. Most sensitive technique to detect location of GI bleed is

- a. CECT with CT angiography
- b. DSA
- c. Tc 99m labelled RBC scan
- d. DOTATOC PET

95. In-opp phase imaging of adrenal gland is used to diagnose

- a. Angiomyolipoma
- b. Adrenal adenoma
- c. Adrenal lipoma
- d. All of the above

96. Right cardiac border in Chest radiograph is formed by

- a. Right atrium
- b. Right atrium and part of right ventricle
- c. Right atrium and IVC, SVC and part of right ventricle
- d. Right atrium, IVC, SVC

97. MAPCAS are seen in which cardiac condition

- a. TOF
- b. Coarctation of aorta
- c. Mitral atresia
- d. All of the above

98. Most common site of abdominal visceral aneurysm is

- a. Splenic artery
- b. Hepatic artery
- c. Gastroduodenal artery
- d. Superior mesenteric artery

99. Which of the following is a cause of coronary artery aneurysm

- a. Kawasaki disease
- b. Poly arteritis nodosa
- c. Takayasu arteritis
- d. All of the above

100. Squamous cell carcinoma of the oesophagus is more frequent in

- a. Gastroesophageal junction
- b. Upper third
- c. Middle third
- d. Lower third

