



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

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**ENTRANCE EXAMINATION - ACADEMIC SESSION JANUARY 2018**

**DM – CARDIOVASCULAR IMAGING AND INTERVENTIONAL  
RADIOLOGY**

Time:90 Minutes

Max.Marks: 100

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

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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. 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.
  
3. 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 black females.

4. Regarding rupture of the thoracic aorta, which of the following is most nearly FALSE
- Thickening of the left apical cap is not the primary or most valuable radiographic sign.
  - The most common site of rupture is in the region of the ligamentum arteriosum.
  - Displacement of an indwelling nasogastric tube to the right suggests mediastinal hematoma.
  - Most commonly, the aortic rupture is limited to the intima.
5. 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.
6. Tracheal narrowing as seen by roentgenogram may be due to all of the following EXCEPT
- Congenital trachial stenosis
  - Congenital laryngeal cyst
  - Chronic relapsing polychondritis
  - Trachiomalacia of the Ellis-van Creveld syndrome
7. Regarding aortic aneurysms, which of the following is LEAST likely?
- Aneurysms in the thoracic aorta are often symptomatic prior to rupture.
  - Rupture of an aneurysm in the ascending aorta is a common cause of death due to cardiac tamponade.
  - A dissecting aneurysm in the ascending aorta rarely involves the coronary arteries.
  - The most common cause of a dissecting aneurysm of the aorta is cystic degeneration of the media.
8. Variation in transcardiac mensuration on a routine erect teleroentgenogram of the chest between diastole and systole is about
- 1%
  - 3%
  - 5-10%
  - 15%

9. An aneurysm of the sinus of Valsalva usually arises from the
- Left aortic sinus \*
  - Right aortic sinus
  - Posterior aortic sinus
  - Pulmonary outflow tract
10. 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
  - It is anterior to the esophagus
  - It is the most common anomaly of the great vessels. \*
11. 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
  - Occurrence predominantly in males \*
12. Generally speaking, cardiac enlargement can be expected in all of the following EXCEPT
- Both chronic hypothyroidism and hyperthyroidism.
  - Severe anemia
  - Fenestration of the aortic cusps
  - Maladie de Roger defect \*
13. The normal limits of pulmonary arterial pressure in systole are
- 10-12mmHg
  - 12-16mmHg \*
  - 16-25mmHg
  - 25-30mmHg
14. Which of the following is NOT true of choroid plexus papillomas?
- In children, they are most commonly in the lateral ventricles.
  - In adults, they are most commonly in the fourth ventricle or cerebellopontine angle. \*
  - They are sometimes multiple
  - The peak incidence is in early adulthood
15. The most common acute CT finding in the head of an abused child is
- Skull fracture
  - Acute interhemispheric subdural hematoma \*
  - Infarct
  - Epidural hematoma

16. In the immuno compromised host, CNS infection is likely to present on CT scan as
- A well-circumscribed, ring-enhancing lesion
  - A meningeal implant
  - Ventricular enlargement
  - A poorly circumscribed, low density lesion,
17. Which of the following metastatic lesions may present as subarachnoid hemorrhage?
- Malignant melanoma
  - Reticulum cell sarcoma
  - Lymphoma
  - Seminoma
18. CNS sarcoid may produce which of the following angiographic findings?
- Small vessel occlusions
  - Major arterial occlusions
  - Neovascularity
  - Mass effect
19. Midline subfrontal meningiomas may produce which of the following findings on plain films?
- Sunburst periostitis
  - Enlargement of the superior orbital fissure
  - Demineralization of the limbus sphenoidale
  - Enlargement of the groove of the middle meningeal artery.
20. Severe chest pain with hematemesis and dysphagia, in association with mediastinal emphysema, is characteristic of
- Ruptured esophageal varices
  - Mallory-Weiss syndrome
  - Boerhaave syndrome
  - Intramural esophageal rupture
21. Concerning colonic obstruction, which of the following is FALSE?
- The rate of recurrence in sigmoid volvulus may be in excess of 50% ✓
  - In distal obstruction of the colon the cecum is most likely to rupture. ✓
  - The most common single cause of distal colon obstruction is carcinoma
  - Because of the danger of bowel wall perforation, water-soluble contrast media should be used in evaluating colonic obstruction/

22. Pelvic lipomatosis is LEAST characterized by which of the following?
- Greater frequency in men than women<sup>a</sup>
  - Ureteral obstruction
  - Generalized morbid obesity
  - Low attenuation values on computerized tomography of the pelvis
23. The roentgen diagnosis of acute pancreatitis is suggested or supported by all of the following EXCEPT
- Blurring of the left psoas and renal shadows
  - Massive left pleural effusion
  - Reverse figure 3 sign
  - On CT scan, swelling confined to the pancreatic head<sup>a</sup>
24. The method of choice in preliminary evaluation of biliary obstruction with clinical jaundice is
- intravenous cholelithography
  - CT scan
  - Ultrasonography,
  - Endoscopic retrograde cholangio pancreatography (ERCP)
25. Concerning diverticula of the gastrointestinal tract, which of the following are commonly symptomatic?
- Zenker's diverticulum
  - Epiphrenic diverticulum
  - Duodenal diverticula arising from the second portion
  - Diverticula of the proximal jejunum
26. Marked hyperacidity, acute peptic ulceration and nonbeta islet cell pancreatic tumors are the hallmark of
- Menetrier's disease
  - Eosinophilic gastroenteritis
  - Benign lymphoid hyperplasia
  - Zollinger-Ellison syndrome
27. Complications of esophageal hiatus hernia include all of the following EXCEPT
- Shortening of the esophagus
  - Bleeding, with or without demonstrable ulceration
  - Shortened esophagus
  - Obstruction from scarring of the smaller sliding herniations
28. Concerning choledochal cysts, which of the following is correct?
- More common in males
  - Most likely related to recurrent cholangitis
  - There is often ultrasonographic demonstration of dilated intrahepatic bile ducts
  - The choledochal cyst is actually the dilated cystic duct.

29. Rectal atresia is often associated with which of the following?
- A patent anus
  - Duodenal obstruction
  - Rectovesical communication
  - Rectovaginal communication
30. 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.
31. The thymus is unusually small or absent in all of the following conditions EXCEPT
- Di George syndrome
  - Adenosine deaminase deficiency
  - Congenital rubella
  - Leukemia
32. In the case of congenital diaphragmatic herniation, which of the following is LEAST correct?
- The major problem faced by these infants is the strangulation of the herniated bowel, if it is not promptly reduced.
  - Herniation is most likely via the foramen of Bochdalek
  - Congenital absence of the ipsilateral hemidiaphragm is commonly associated.
  - Persistent fetal circulation syndrome is often a complication
33. 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.
34. The preferred screen-imaging modality for neonatal renal problems is
- Intravenous pyelography
  - CT scan
  - Radionuclide imaging
  - Ultrasonography

35. Commonest primary malignant tumor of rib is:

- a. Chondrosarcoma
- b. Liposarcoma
- c. Fibrosarcoma
- d. Osteosarcoma

36. In the diagnosis of posterior urethral valves, which of the following is the most valuable sign?

- a. Palpably enlarged kidneys
- b. Markedly thickened bladder with gross trabeculations.
- c. Valvular defects demonstrated by voiding cystourethrography
- d. Absence of a normal powerful urinary stream during micturition

37. In regard to congenital dislocation of the hip, which of the following is LEAST correct?

- a. Excessive circulating maternal hormones have been implicated in the etiology.
- b. In the neonate, physical examination is the preferred and most accurate means of diagnosis.
- c. There is female dominance in incidence and in breech deliveries.
- d. Therapy may be postponed in the neonate until typical radiographic findings are obtained.

38. Early closure of cranial sutures in children is NOT seen in which of the following conditions?

- a. Idiopathic hypercalcemia
- b. Congenital hypophosphatasia
- c. Subsequent to shunting procedures for hydrocephalus
- d. Hypothyroidism

39. Regarding the pericardium, which of the following is LEAST correct?

- a. Congenital pericardial defects are most commonly on the left
- b. Pericardial cysts are most commonly in the right cardiophrenic angle.
- c. Teratoma is the most common neonatal pericardial tumor.
- d. Microcardia is the end result of constrictive pericarditis.

40. The velocity of sound in biological tissues tends to be slowest in which of the following?

- a. Cranial bone
- b. Lens of the eye
- c. Gas contained in the bowel
- d. Blood

41. Which of the following statements regarding treatment of hyperthyroidism with
- I-131 is correct?
  - Treatment is often ineffective
  - There is an increased risk of leukemia
  - The most common complication is hypothyroidism.
42. Severe reactions to intravenous iodinated contrast media can be predicted by which of the following?
- Conjunctival testing
  - Intradermal skin testing
  - Small (1.0ml) intravenous test dose prior to the full injection
  - No accurate pretesting is available
43. Formation of urinary calculi is associated with all of the following EXCEPT
- Hyperparathyroidism
  - Osteolytic metastases
  - Hyperoxaluria
  - Nephrogenic diabetes insipidus
44. The most serious complication of Percutaneous antegrade pyelography is
- Obstruction due to clots
  - Introduction of infection
  - Excessive pressure with extravasation
  - Bleeding
45. CT scanning and ultrasonography are superior to standard roentgenographic techniques using iodinated compounds in the evaluation of which of the following?
- Intrinsic urinary tract obstruction
  - Urinary tract incontinence
  - Cystoureteral reflux
  - Extrinsic bladder compression
46. Vesicocolic fistulas are most commonly due to which single cause?
- Neoplasm of the bladder
  - Surgical trauma
  - Uterine carcinoma (especially of the cervix)
  - Diverticulitis of the colon



47. Non-obstructing lesions, which may result in dilatation of the renal pelvis, calyces and even the ureter, include all of the following EXCEPT
- Nephrogenic diabetes insipidus
  - Appendicitis or peritonitis
  - Urinary tract infection
  - Renal arteriovenous fistula
48. Bladder ear is which of the following?
- An acquired lesion
  - Invariably associated with inguinal herniation
  - Seen most commonly in young, active adult males
  - A lesion best treated by surgical repair
49. Concerning primary bladder neck obstruction, which of the following is most likely?
- It is most often due to chronic infection with cicatricial narrowing.
  - It is due to a congenital bar of tissue at the level of the verumontanum
  - There is controversy concerning the incidence, cause and findings of this condition.
  - It is due to congenital lack of normal sympathetic innervation
50. Jaccoud's arthritis occurs after the subsidence of frequent severe bouts of
- Crohn's disease
  - Ulcerative colitis
  - Rheumatic fever
  - Acute glomerulonephritis
51. Concerning Paget's disease of bone, which of the following is INCORRECT?
- Males are affected twice as often as females
  - The serum calcium levels are elevated in this disease
  - Three percent of the population over 40 years of age is affected.
  - The major incidence is between the ages of 40 and 60 years.
52. Concerning neurotrophic arthropathy, which of the following is correct?
- Trauma is essential to the formation of neurotrophic joint
  - The most common underlying disease is tabes dorsalis
  - The striking feature is painless destruction of joints
  - Neurotrophic shoulder joints are most often due to diabetes

53. Occurrence of osteogenic sarcoma in conjunction with Paget's disease of bone is most nearly
- 1%
  - 3%
  - 10%
  - 25%
54. In chondroblastoma, which of the following is NOT correct?
- It is thought to be a benign lesion
  - Giant cells are prominent on microscopic section
  - The knee is involved in 50% of cases
  - Characteristically, the metaphysis is invaded
55. Chondroblastoma usually presents with which of the following?
- A thin, sharply demarcated sclerotic margin
  - A large mass
  - Soft tissue calcifications
  - Extensive periosteal reaction
56. By radiographic and histologic criteria, giant cell tumors are most likely to be confused with
- Osteosarcoma
  - Haemangioma
  - Aneurysmal bone cyst
  - Enchondroma
57. The most sensitive means of detecting bony metastases by an imaging procedure is
- CT scan
  - Plain film studies
  - Radionuclide scan
  - Conventional tomography
58. Which of the following statement is UNTRUE regarding the azygos lobe fissure?
- Azygos vein is seen at its lower end
  - Azygos vein is seen at its upper end
  - It is the most common accessory fissure visualized in the lungs
  - It is seen in 1% of the population

59. String sign of Kantor is found in barium study of
- Ulcerative colitis
  - Intestinal obstruction
  - Crohn's disease
  - None of the above
60. The earliest sign of tuberculosis of hip joint is
- Haziness of bones with area of illarefaction in Babcock's triangle
  - Wandering acetabulum
  - Diminution of joint space
  - Destruction of articular surface
61. Transient radiographic opacities in lungs may be found in cases of
- Tropical pulmonary eosinophilia
  - Loeffler's syndrome
  - Polyarteritis nodosa
  - All of the above
62. In early cases of idiopathic pulmonary hemosiderosis which of the following is seen on chest radiograph
- Miliary mottling
  - Diffuse stippled mid zone shadows
  - Collapse
  - Mid zone cavitations
63. Pseudotrabeular or soap bubble appearance on x-ray is seen in case of
- Giant cell epulis
  - Dentigerous cyst
  - Both of the above
  - None of the above
64. Rugal convergence is seen on barium meal examination in case of
- Early duodenal ulcer
  - Early gastric ulcer
  - Late duodenal ulcer
  - None of the above
65. Regarding segmental anatomy of liver following are true except
- Upper segment is above the level of portal veins
  - Segment 8 is in the upper segment
  - Caudate lobe is segment 2
  - Segment 4 is in the lower segment

66. Paget's disease is characterized by all except

- a. Osteoporosis circumscripta
- b. Cotton wool areas
- c. Picture frame vertebral body
- d. Extra medullary hemopoiesis is rare ✓

67. Multiple matched ventilation / perfusion defects occur in the following

- a. Chronic bronchitis
- b. Pulmonary infarct ✓
- c. Vasculitis
- d. Sarcoidosis

68. Heel pad thickness is increased in all except

- a. Eptoin therapy
- b. Obesity
- c. Peripheral oedema ✓
- d. Cushing syndrome

69. Horseshoe or boomerang configuration of the brain is seen in :

- a. alobar holoprosencephaly
- b. semilobar holoprosencephaly
- c. Lobar holoprosencephaly
- d. All the above

70. Which of the following is NOT a good estimate of basilar impression?

- a. Chamberlain's line
- b. Bull's angle
- c. Bimastoid line ✓
- d. Basal angle

71. Regarding acoustic neuromas, which is wrong?

- a. A majority arises from the vestibular division of eighth nerve.
- b. Cystic degeneration is common ✓
- c. Most acoustic neuromas arise within the lumen of the internal auditory canal
- d. Early involvement of the adjacent facial nerve is common.

72. The most common acute CT finding in the head of an abused child is:

- a. Skull fracture
- b. Acute interhemispheric subdural hematoma
- c. Infarct
- d. posterior fossa subdural hematoma
- e. epidural hematoma.

73. The Law, Stenvers and Owen radiographic projections are used to demonstrate

- a. Facial structures
- b. Lateral ventricles in pneumoencephalography
- c. Temporal bone.
- d. atlanto – occipital articulation

74. All the following bones in the adult skull has a membranous origin except

- a. Nasal
- b. Parietal
- c. Maxilla
- d. Ethmoid

75. Which of the following is NOT associated with nasal septal destruction?

- a. Midline lethal granuloma
- b. Squamous cell carcinoma
- c. Cocaine abuse
- d. Osteomata

76. Trigonocephaly is produced by premature fusion of

- a. Metopic suture
- b. Coronal suture on both sides
- c. Coronal suture on one side
- d. Sagittal suture

77. Caroli's disease is

- a. Todani's type IV choledochal cyst
- b. Todani's type V choledochal cyst
- c. Primary sclerosing cholangitis
- d. Recurrent pyogenic cholangitis

78. Mesoblastic nephroma is

- a. Hamartomatous renal tumor
- b. Generally benign
- c. Predominantly contains spindle cells and fibroblasts
- d. All the above

79. Which of the following is TRUE about supracondylar transverse fracture of distal humerus in children

- a. It is called Gartland fracture
- b. Caused by bending force hyperflexion
- c. Often due to fall with elbow flexed
- d. All of the above

80. Non-accidental injury can be associated with

- a. Multiple fractures
- b. History of significant trauma
- c. Chronic and Acute SDH
- d. Only A & C

81. Spinal cord astrocytomas are

- a. More common in the thoracic location in children
- b. Most common spinal cord tumor in children
- c. Cannot present with pain
- d. All the above

82. Term neonate has T1 hyper intensity signal on MR normally present in

- a. Dorsal brainstem
- b. Dentate nucleus
- c. Optic tracts
- d. All the above

83. "Choanal atresia" can be

- a. Associated with 'CHARGE' syndrome
- b. Unilateral atresia may not present at birth
- c. Could be bony or membranous
- d. All the above

84. Ideopathic ileo-colic intussusception in children is
- Most common between 3 months to 12 months
  - Boys are more commonly affected
  - Surgery is the treatment of choice
  - Most recurrence is within 6 hours
85. Which of the following is TRUE about osteoid osteoma
- Nidus size is usually less than 2cms
  - Meta diaphysis of long bones is the commonest location
  - Radio frequency is the ablation in the treatment of choice
  - All of the above
86. Corpus Callosal agenesis can be associated with
- Inter hemispheric cyst
  - Colpocephaly
  - Pericallosal lipoma
  - All the above
87. Congenital cytomegalo virus (CMV) infection can be
- Most common TORCH infection
  - Can produce myelination delay
  - White matter hyperintensity can be associated
  - All the above
88. "Holman Miller" sign is classically seen in
- Ewing's sarcoma
  - Juvenile nasopharyngeal angio-fibroma
  - Neurofibroma
  - Schwannoma
89. In Epidermoid tumors
- Keratine flakes are seen on histopathology
  - Shows high linear anisotropy on DTI
  - Shows ciliated columnar epithelium
  - All of the above
90. "Honda sign" is seen in
- Stress fracture of tibia
  - Stress fracture of sacrum
  - Stress fracture of calcaneus
  - Stress fracture of sternum

91. "Dutch bicycle handle" like appearance on T2 weighted imaging is seen in

- a. Corpus callosum
- b. Hippocampal commissure
- c. Anterior commissure
- d. Habenular commissure

92. Metachromatic Leukodystrophy produces

- a. Late involvement of subcortical 'U' fibers
- b. Tigroid appearance
- c. Posterior fossa involvement
- d. All of the above

93. "Hot Cross bun" sign is seen in

- a. Behcet's vasculitis
- b. Multisystem atrophy
- c. Progressive supranuclear palsy
- d. None of the above

94. Which of the following LEAST sensitive to susceptibility changes

- a. FSE
- b. GRE
- c. SWI
- d. EPI-GRE

95. "Silk stent" is used for

- a. Treating coronary arterio-venous fistula
- b. Giant cavernous ICA aneurysm
- c. Large ascending aortic dissecting aneurysm
- d. None of the above

96. FLAIR hyperintensity on MR in acute subarachnoid hemorrhage is due to

- a. Heme
- b. Globin
- c. Water proton
- d. None of the above



97. 320 slice CT is first commercially produced by which company

- a. Siemens
- b. GE
- c. Toshiba
- d. Philips

98. Which of the MR sequence is NOT routinely used in carotid plaque characterization

- a. T1 fatsat
- b. GRE
- c. T2 fatsat
- d. TOF

99. Classically true diffusion restriction is seen in which of the following lesions

- a. Cerebral abscess
- b. Epidermoid
- c. PRESS
- d. All the above

100. Which of the following is associated with spontaneous carotico-cavernous fistula

- a. Ehler-Danlos type IV
- b. Aorto-arteritis
- c. Trauma
- d. Dissection

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