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

ENTRANCE EXAMINATION : ACADEMIC SESSION JANUARY 2020

PROGRAMME: DM Cardiovascular Imaging and Vascular Interventional Radiology

Time: 90 minutes

Max. Marks: 100

(Select the most appropriate answer)

(There are no negative marks for wrong answers)

1. True statement regarding bicuspid aortic valve is
 - a. wall shear stress is measured using 4d flow
 - b. aortic regurgitation is common
 - c. may have 3 sinuses in certain cases
 - d. all the above
2. Transtentorial herniation can result in infarct of
 - a. Anterior cerebral artery
 - b. Middle cerebral artery
 - c. Posterior cerebral artery
 - d. Superior cerebellar artery
3. Which of the following is a type of malignant course of coronary artery
 - a. Anterior to pulmonary artery
 - b. Anterior to aorta and posterior to pulmonary artery
 - c. Posterior to aorta
 - d. Inferior to aorta and pulmonary artery
4. Which feature of epidermoid tumor will differentiate it from arachnoid cyst:
 - a. Contrast enhancement
 - b. Smooth margins
 - c. CSF signal on FLAIR imaging
 - d. Restricted diffusion
5. A 20-year old man presented with intractable seizures. MRI revealed periventricular nodules which were isointense to gray matter and did not show any contrast enhancement. What is the most likely diagnosis?
 - a. Cortical dysplasia
 - b. Heterotopia
 - c. Megalencephaly
 - d. Schizencephaly

6. The normal cutoff of abdominal aortic aneurysm for surgery / endovascular treatment in a male patient without underlying infection or collagenopathy is
- 7cm
 - 6cm
 - 5.5cm
 - 6.5cm
7. In a HIV positive patient, the MRI of brain shows multifocal white matter lesions in supra and infratentorial compartments which do not enhance on post contrast images. The most likely diagnosis is :
- HIV encephalopathy
 - Toxoplasmosis
 - Primary CNS lymphoma
 - Progressive Multifocal Leucoencephalopathy
8. Which of the following leukodystrophy shows increased NAA concentration on Proton MR Spectroscopy:
- Canavan's disease
 - Adrenoleukodystrophy
 - Krabbe disease
 - Alexander disease
9. Most common tumor to involve pineal gland is:
- Astrocytoma
 - Meningioma
 - Germinoma
 - Pineocytoma
10. Lake Louise criteria is used in diagnosis of
- Myocardial infarction
 - Myocarditis
 - Adequacy of adenosine in stress perfusion MRI
 - ARVD
11. Air gap (s) in X ray
- Between X-Ray Tube And Patient
 - Introduces Magnification
 - Technique Reduces The Image Contrast
 - Technique could not be used in mammography
12. A 63-year-old gentleman was diagnosed with a q-wave acute myocardial infarction and underwent a cardiac MRI the following day. What is the most likely signal intensity of the infarcted region on T2-weighted imaging?
- Signal void
 - Low
 - Isointense
 - High
13. Normal QRS duration is
- 20-30 ms
 - 40 – 60 ms
 - 80 -120 ms
 - 120-180ms

- 14 Which of the following lesions of liver will not appear hyperintense on T1W MR:
- Focal fat deposit
 - Recent hemorrhage
 - Melanoma metastasis
 - Fibrotic scar
- 15 IVC crosses the diaphragm at level of
- D6
 - D8
 - D10
 - D12
- 16 Which of the following is not useful to management hemoptysis by bronchial / intercostal artery embolization
- Severe bronchiectasis
 - Active TB with bleed
 - Rasmussen aneurysm
 - Pseudo-sequestration of lungs
- 17 Trans Atlantic Society Classification (TASC) is used in classification of
- Peripheral artery disease
 - Aortic aneurysm
 - Pulmonary artery hypertension
 - Pulmonary vasculitis
18. In the case of blowout fractures, which of the following is most likely to be present?
- Fracture of the inferior rim of the ipsilateral orbit.
 - Fracture of the zygomatic arch
 - Fracture of the greater wing of the sphenoid
 - Fracture of the anterior wall of the ipsilateral maxillary sinus.
19. Partial volume artifact
- Does not arise in MRI
 - Could be reduced by reducing the slice thickness
 - Could be reduced by reducing the matrix size
 - Does not arise in multi slice spiral CT
- 20 In Hepatic Veno-occlusive disease, there is occlusion of :
- small centrilobular veins
 - major hepatic veins
 - major hepatic veins and hepatic IVC
 - major hepatic veins and portal vein
- 21 Find the false statement regarding chylothorax and thoracic duct embolisation
- Diet modification (low-fat diet, NPO, and/or total parenteral nutrition), and intravenous infusion of octreotide is useful
 - Conservative management can fail in up to 70% of cases
 - The maximum dose of Lipiodol which can be injected is 60 ml
 - The most common symptoms following Thoracic duct embolization is Diarrhea

- 22 MAPCAS are described for aortopulmonary collaterals more than
- 1mm
 - 2mm
 - 3mm
 - None of the above
- 23 Which of the following material is not used in interventional radiological treatment of Hepato cellular carcinoma :
- Polyvinyl alcohol particles
 - Doxorubicin beads
 - N-butyl cyanoacrylate (glue)
 - Alcohol
24. Which of the following statements regarding gastrointestinal (GI) bleeding and MDCTA is true?
- Oral contrast should be administered to identify the causative lesion.
 - Scans are usually performed in the arterial phase only from diaphragm to ischial tuberosity.
 - Acute GI bleeding can be intermittent. Failure to demonstrate active bleeding does not prove cessation of bleeding.
 - The lowest detectable bleeding rate with MDCTA is 2 ml/min.
- 25 The most common venous thrombosis in pancreatic inflammation is :
- Splenic vein
 - Portal vein
 - Superior mesenteric vein
 - Renal vein
26. A patient is referred for cardiac MRI. Which of the following is a definite contraindication?
- Cardiac pacemaker.
 - Coronary stenting 2 months ago
 - Coronary artery bypass grafting 2 months ago.
 - None of the above.
- 27 Which of the following is not a complication of bidirectional Glenn shunt in congenital heart disease
- Pulmonary AVM
 - Venovenous collaterals
 - Shunt thrombosis
 - LV failure
- 28 A 33-year old male presented to the surgical outpatient clinic with hematuria. Ultrasound demonstrated right solid renal mass, epididymal cysts and increased urinary catecholamines. Which one of the following is the most likely diagnosis?
- Pheochromocytoma
 - Renal cell carcinoma
 - Von Hippel Lindau's Syndrome
 - Tuberous sclerosis

- 29 All the following are true regarding retrocaaval ureter except.
- Typically produces medial deviation of ureter L4 at level
 - Produces pathognomonic appearance on IVU
 - Usually asymptomatic
 - Is a recognized cause of renal failure
- 30 Which of the following MRI contrast agent is a blood pool agent
- Gadobutrol
 - Gadobenate dimeglumine
 - Gadoterate meglumine
 - Gadoversatamide
- 31 In a normal unenhanced CT scan of the upper abdomen, the liver parenchyma measures 65 HU. What would be the expected density of the spleen?
- 20-30HU
 - 40-60 HU
 - 65 HU
 - 70-80 HU
- 32 'Striated' pattern of nephrogram on intravenous urography is not seen in
- Infantile poly cystic kidney disease
 - Medullary sponge kidney
 - Xanthogranulomatous pyelonephritis
 - Acute obstruction
- 33 Renal artery aneurysms are seen in all the following conditions EXCEPT
- Polyarteritis nodosa
 - Takayasu's arteritis
 - Neuro fibromatosis
 - Tuberculosis
- 34 Regrading delayed enhancement in cardiac MRI which of statement is false
- is used in hypertrophic cardiomyopathy in prognostication
 - is a part of lake louise criteria
 - is a part of ARVD task force criteria
 - is normally seen along adventitia of aorta
- 35 Most common drug used as prophylaxis for children undergoing MCU is
- Co-trimoxazole
 - Amoxicillin
 - cefixime
 - metronidazole
36. Which of the statement regarding vascular access is FALSE:
- Double wall puncture and single wall punctures have relatively equal complication rates
 - Vascular closure devices require a minimum vessel lumen size of 5 mm
 - Pseudo aneurysm are more common for high femoral punctures compared to low femoral puncture
 - Radial artery puncture the maximum sheath size ideally possible is 6F

- 37 Which of the following statements is true regarding prostatic carcinoma.
- Cancers usually arise in Transitional zone
 - Benign hypertrophy usually arises from Central zone
 - Cancers are typically hyperechoic on ultrasound
 - Prostate carcinoma is typically hypo intense on T2 W scan
- 38 TIPS is indicated in all EXCEPT
- Budd Chiari syndrome
 - Intractable ascites
 - Portal vein thrombosis
 - Hepatic hydrothorax
- 39 Cola pinto needle is used in
- Renal biopsy
 - TIPS
 - Arthrogram
 - Biliary tract puncture
- 40 CEAP classification is used in
- Peripheral arterial disease
 - Varicose veins
 - Lymphedema
 - Diabetic ulcer
- 41 Regarding percutaneous nephrostomy which is FALSE;
- Pyonephrosis is common indication
 - Ureteric injury is not a contraindication
 - Transplant Kidney with hydronephrosis is an indication
 - Non dilated obstructive uropathy is an indication
- 42 Last Image Hold (LIH) and Road mapping are used in
- CT
 - MRI
 - DSA
 - USG
- 43 Radiofrequency ablations is used in the treatment of all the following EXCEPT
- HCC
 - Lung cancer
 - Osteoid osteoma
 - Vertebral hemangioma
- 44 All the following are indications for penile angiography EXCEPT:
- Ischemic erectile dysfunction
 - High flow priapism
 - Peyronie's disease
 - Penile vascular malformation

- 45 All the following are indications for Uterine artery embolisation EXCEPT
- Fibroid
 - Uterine A-V malformation
 - Adenomyosis
 - Pelvic congestion syndrome
- 46 Following are permanent embolising materials EXCEPT
- PVA particles
 - Sodium tetradecyl sulphate
 - Absolute Alcohol
 - Gelfoam
- 47 Tolazoline is
- Antidote for Heparin
 - Vasodilatator used during arteriography to relieve spasm
 - Vasoconstrictor used intraarterially to control GI bleed
 - Anticoagulant used in peripheral angioplasty
48. Which of the following is NOT associated with myasthenia gravis
- Thymic hyperplasia
 - Thymoma
 - Pure red cell aplasia
 - None of the above
49. Which of the following is NOT associated with HCM
- Septal hypertrophy
 - anterior motion of anterior mitral leaflet in systole
 - Posterior displacement of papillary muscle and mitral leaflet
 - mitral regurgitation
50. Box shaped heart is seen in
- Ebstein anomaly
 - Tricuspid atresia
 - TAPVC
 - DCM
51. Which of the following is associated with pulmonary oligemia
- TAPVC
 - Ebstein anomaly
 - VSD
 - Aortopulmonary window
52. Anomalous origin of left pulmonary artery from right pulmonary artery is associated with all EXCEPT
- tracheal ring
 - T- shaped tracheal bifurcation
 - anterior impression on trachea
 - None of the above

- 53 A 30 year old asymptomatic woman is found to have diffuse mediastinal widening on chest radiograph. CT reveals a cystic mass of homogenous water allocation and few septal in the middle & posterior mediastinum, the most likely diagnosis is
- Mediastinal abscess
 - Necrotic nodal mass
 - Lymphangioma
 - Bochdalek hernia
- 54 Smooth interlobular septal thickening is NOT seen in
- Pulmonary edema
 - Pulmonary venoocclusive disease
 - Acute alveolar hemorrhage
 - Pulmonary capillary hemangiomatosis
- 55 Upper lung predominance of pulmonary involvement is seen in all of the following EXCEPT
- Tuberculosis
 - Silicosis
 - Asbestosis
 - Sarcoidosis
- 56 Typical CT features of pulmonary histiocytosis includes all of the following EXCEPT
- Upper lobe involvement
 - Nodules which cavitate
 - pneumothorax
 - Pleural effusion
- 57 Which of the following is not a cause of aortic aneurysm
- Marfan syndrome
 - Loeys dietz syndrome
 - Neurofibromatosis
 - Syphilis
- 58 Stanford classification is used in management of
- Abdominal aortic aneurysm
 - Aortic valve disease
 - Aortic dissection
 - Aortic regurgitation
- 59 Smoking related pulmonary diseases include all of the following EXCEPT
- Emphysema
 - Histiocytosis
 - Respiratory bronchiolitis
 - Usual Interstitial Pneumonia
- 60 Following are the signs of active pulmonary tuberculosis EXCEPT
- Certilobular nodules
 - Consolidation
 - Thin walled cavity
 - Necrotic nodes

61. A 20 year old man presents with dyspnea. Chest radiograph reveals a conditional hyperlucent lung expiratory film reveals air trapping CT reveals a small pulmonary artery. The most likely diagnosis is
- Pulmonary hypoplasia
 - Swyer – James syndrome
 - Poland's syndrome
 - Scimitar syndrome
62. According to international thymoma classification system of mediastinum , heart is located in
- Anterior mediastinum
 - Middle mediastinum
 - Posterior mediastinum
 - Superior mediastinum
63. Mallformations of the outer ear (Microbia) are commonly associated with all of the following EXCEPT.
- Middle ear abnormalities
 - Ossicular chain abnormalities
 - Facial canal abnormalities
 - Inner ear abnormalities
64. What is the most sensitive sign on non-contrast CT for detecting early hydrocephalus?
- cortical sulcal effacement
 - uncal herniation
 - enlarged third ventricle
 - enlarged temporal horns of the lateral ventricles
65. Which one could not be used to manage the aliasing artifact in USG?
- Increasing the PRF
 - Decreasing the probe frequency
 - Shifting the baseline
 - Decreasing the angle of insonation
66. All of the following are true of carotid body tumours EXCEPT
- Highly vascular masses
 - Rapid enhancement on contrast imaging
 - Distant metastasis is common
 - Cause anterior displacement of internal carotid artery
67. ASPECTS scoring is used in
- Acute myocardial infarction
 - Acute aortic dissection
 - Acute pulmonary embolism
 - Acute stroke

- 68 Which of the following radiographic abnormality is NOT seen in Langerhans cell Histiocytosis
- Lytic lesion in skull with button sequestrum
 - Commonly involve posterior elements of vertebra
 - Lytic lesion in mandible with floating tooth
 - Lytic rib lesion with extra pleural soft tissue
- 69 Diffuse sclerotic cortical lesions in femoral diaphysis may be seen in all of the following conditions EXCEPT
- Fibrous dysplasia
 - Osteoid osteoma
 - Osteo sarcoma
 - Giant cell tumor
- 70 Which of the following soft tissue tumor is most likely to be associated with fluid-fluid levels of MRI?
- Liposarcoma
 - Desmoid tumor
 - Malignant fibrous histiocytoma
 - Fibro lipomatous hamartoma
- 71 The hypoperfusion complex, seen in patients who have suffered major blunt abdominal trauma, includes all but which of the following radiological signs on contrast-enhanced CT?
- hyperenhancement of the adrenal glands
 - hyperenhancement of the pancreas
 - hyperenhancement of the spleen
 - collapsed inferior vena cava
- 72 CT scan of 50 year old man diagnosed to have NHL showed large 10cm retroperitoneal lymphnodes & multiple liver deposits. After treatment a report CT scan shared that LN diameter has decreased by 80%. The liver deposits are unchanged and 2 cm mesenteric LN has developed. The response to the treatment will be categorized as
- Partial response
 - Stable disease
 - Progressive disease
 - Separate category for each of the lesion
- 73 In a case of carcinoma of the base of tongue, an enlarged jugular chain lymph node located between thyroid cartilage & cricoid cartilage is labelled as
- Level 2 LN
 - Level 3 LN
 - Level 4 LN
 - Level 5 LN
- 74 Which of the following small bowel tumor is most likely to be associated with small bowel obstruction?
- Adeno carcinoma
 - Lymphoma
 - Melanoma
 - Leiomyosarcoma

- 75 Which of the following statement about CT features of squamous cell carcinoma of maxillary sinuses is incorrect?
- Most do not show contrast enhancement
 - Enlargement of sinus wall with remodeling infrequently seen
 - Invasion of anterior wall does not affect resectability
 - Perineural spread most commonly affect pterygopalatine fossa
- 76 Which of the following breast cancer is least likely to be associated with microcalcifications?
- Ductal carcinoma in situ
 - Invasive ductal carcinoma
 - Invasive lobular carcinoma
 - Papillary carcinoma
- 77 Regarding cardiac CT, which one is not true?
- The primary challenges are high spatial and temporal resolution
 - With multiple-row detector CT, the increasing number of detectors in the z direction allows a larger volume of the heart to be covered per gantry rotation.
 - Prospective triggering is the mode of data acquisition used for calcium scoring studies
 - The advantage of the retrospective gating mode of acquisition is the less radiation dose
78. The common material used for making peripheral self-expanding metal stent is
- Cobalt chromium
 - Titanium steel
 - Alnico
 - Nickel titanium
- 79 Which of the following is the most common radiological presentation of the Broncho alveolar cell carcinoma of lung?
- Solitary pulmonary nodule
 - Thick walled cavity
 - Lobar collapse
 - Lobar consolidation
- 80 Which of the following is the most common radiological presentation of the dysgerminoma of ovary?
- complex cystic solid adnexal mass
 - Thick walled cyst with mural nodule
 - Large solid homogenous adnexal mass
 - Solid adnexal mass with calcification & fluid fluid levels
- 81 A 40-year-old obese male patient presents with pain right lower quadrant of abdomen. CT scan shows oval peri-colonic fatty nodule with hyperdense ring and surrounding inflammation. The most likely diagnosis is:
- Appendicitis
 - Diverticulitis
 - Epiploic appendagitis
 - Pseudomembranous colitis

- 82 All the following statements regarding Meckel's diverticulum are false EXCEPT:
- Most common congenital anomaly of the GI tract
 - Occurs on the mesenteric border of the bowel
 - Located within 2 feet of the ileo-caecal valve
 - Diverticulosis and intestinal obstruction are the two main complications in adults
- 83 Intravenous urogram of a patient shows that both the kidneys are enlarged and there is elongation, displacement and deformity of the calices (spider leg appearance). What is the most likely diagnosis?
- Lymphoma
 - Autosomal dominant polycystic kidney disease
 - End-stage renal failure
 - Renal vein thrombosis
- 84 In bronchopulmonary sequestration, which of the following features would be more suggestive of intralobar than extralobar type?
- enclosed in visceral pleura
 - no connection to bronchial tree
 - systemic venous drainage
 - presentation in infancy
- 85 Modality of choice for suspected Pseudomembranous colitis is:
- Contrast enhanced CT
 - Barium Enema
 - Virtual Colonoscopy
 - MR Colonography
- 86 Commonest sub-mucosal tumor of the esophagus is:
- Leiomyoma
 - Gastrointestinal Stromal Tumor
 - Neurofibroma
 - Lymphoma
- 87 Which of the following conditions is not associated with ring epiphyses on plain radiograph (dense rim with lucent center)?
- Severe osteoporosis
 - Scurvy
 - Healing rickets
 - Hypothyroidism
- 88 Reversal of jejuno-ileal fold pattern and colonization of jejunum seen on Barium follow through is a hallmark of :
- Whipple's disease
 - Celiac Disease
 - Crohn's disease
 - Mastocytosis

- 89 GIT bleeding occurring at a rate of 0.05 ml/min can be detected by:
- Mesenteric angiography
 - Non-selective aortic angiography
 - Tc99m Labelled RBC scan
 - Tc99m Sulphur colloid scan
- 90 Commonest location for Carcinoid tumor in the GIT is:
- Appendix
 - Stomach
 - Small bowel
 - Colon
- 91 Creeping fat and comb sign on CT are features of:
- Ulcerative colitis
 - Crohn's disease
 - Clostridium Difficile Colitis
 - Amebic colitis
- 92 Common location for ischemic colitis in the elderly patient is:
- Splenic flexure
 - Hepatic flexure
 - Rectum
 - Cecum
- 93 Modality of choice to look for recurrence of carcinoma colon is:
- Double contrast Barium Enema
 - Helical CT
 - PET-CT
 - Virtual Colonoscopy
- 94 A 10-year-old child presents with a lump in the scalp. The skull radiograph shows a lucent lesion with sclerotic margins. The most likely diagnosis is?
- Dermoid cyst
 - Aneurysmal bone cyst
 - Histiocytosis X
 - Neuroblastoma metastasis
- 95 Polyps in Peutz-Jegher's Syndrome
- Not found in the colon
 - Adenomatous polyps
 - Hamartomatous polyps
 - Account for 60% of gastric polyps
- 96 Most sensitive MR sequence for detecting meniscal tears of the knee is
- STIR
 - T1W
 - Fat sat T2W
 - Fat sat Proton Density

- 97 All are true regarding Ewing's Sarcoma EXCEPT
- In Ewing's sarcoma, bone metastases are uncommon and unlike the primary tumor, are usually blastic when they do occur
 - Tubular bones are most commonly affected in Ewing's sarcoma in patients under 20 years old, with flat bones most commonly affected in those older than 20.
 - The vast majority of Ewing's sarcoma in the long bones are of the central diaphyseal type.
 - Ewing's sarcoma is typically a tumor of adolescence.
- 98 All are true regarding Achondroplasia EXCEPT
- It is the most common type of short limb skeletal dysplasia, which shortens stature.
 - The short pedicles of achondroplasia lead to spinal stenosis and paraplegia in more than 15% of patients.
 - Hydrocephalus is an uncommon complication in patients with achondroplasia.
 - Bilateral iliac wings are squared with horizontal acetabuli
- 99 Which of the following best describes the intravenous iodinated contrast agent iodixanol (Visipaque)?
- ionic, high-osmolar, monomeric
 - non-ionic, iso-osmolar, dimeric
 - ionic, low-osmolar, dimeric
 - non-ionic, low-osmolar, monomeric.
- 100 Double PCL sign is seen in
- PCL tear
 - ACL tear
 - Bucket handle medial meniscal tear.
 - Horizontal medial meniscal tear