



**ENTRANCE EXAMINATION : ACADEMIC SESSION JANUARY 2020**

**DIPLOMA IN ADVANCED MEDICAL IMAGING TECHNOLOGY**

**Time: 90 min**

**Max.Marks: 100**

**(Select the most appropriate answer)**

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

1. The CT number assigned to each pixel is based on
  - a. The X-ray photon intensity reaching the pixel
  - b. Attenuation Coefficient of the object being scanned
  - c. Efficiency of the CT detector
  - d. All the above
  
2. .... is the three-dimensional representation of the amount of X-ray that has been absorbed
  - a. Matrix
  - b. Pixel
  - c. Voxel
  - d. All the above
  
3. The innovation of power slip ring created a development in CT called.....
  - a. First generation CT scanner
  - b. Spiral CT
  - c. Contrast CT scanning
  - d. None of the above
  
4. The CT number of water is
  - a. -1000
  - b. 1000
  - c. 0
  - d. 100
  
5. Mammography equipment usually has
  - a. Beryllium Anode and molybdenum window
  - b. Molybdenum Anode and Technetium window
  - c. Molybdenum Anode and Beryllium window
  - d. Tungsten Anode and Beryllium window

6. Which of the following is a typical adverse reaction to MR contrast
- |                |                   |
|----------------|-------------------|
| a. Convulsions | b. Liver necrosis |
| c. Angina      | d. Nausea         |
7. Which interventional procedure would be indicated to dissolve a blood clot in the femoral vein
- |                               |  |
|-------------------------------|--|
| a. Insertion of an IVC filter | b. Insertion of metal embolization coils |
| c. Angioplasty                | d. Thrombolysis                          |
8. If patient lies on stomach it is called
- |           |                   |
|-----------|-------------------|
| a. supine | b. Prone          |
| c. Erect  | d. Semi recumbent |
9. Movement of the part away from the central axis of body is called
- |              |              |
|--------------|--------------|
| a. Everson   | b. Adduction |
| c. Abduction | d. Extension |
10. Unsharpness can be reduced by
- |                                   |  |
|-----------------------------------|--|
| a. Decreasing the focal spot size | b. Decreasing the object film distance |
| c. Exposure time should be less   | d. All the above                       |
11. What is the centering point for chest PA erect view
- |        |       |
|--------|-------|
| a. T4  | b. T1 |
| c. T12 | d. T8 |
12. The centering point for hip joint AP view is
- |  |  |
|--|--|
| a. 2.5 cm superior to superior border of pubic symphysis | b. 5cm superior to superior border of pubic symphysis  |
| c. 2.5 cm inferior to superior border of pubic symphysis | d. 5 cm inferior to superior border of pubic symphysis |
13. Medial malleolus is seen in
- |          |           |
|----------|-----------|
| a. Ulna  | b. Radius |
| c. Tibia | d. Fibula |
14. Ball catchers view is best for demonstrating erosion at
- |                 |                 |
|-----------------|-----------------|
| a. MCP          | b. IP           |
| c. Both a and b | d. Carpel bones |

15. Pronation and supination is the movement of
- a. Shoulder
  - b. Ankle
  - c. Arm
  - d. Leg
16. .... is the largest synovial joint in the body
- a. Wrist
  - b. Elbow
  - c. Knee
  - d. Ankle
17. Carpel tunnel is in
- a. Elbow joint
  - b. Ankle
  - c. Knee joint
  - d. Wrist joint
18. Scaphoid is a
- a. Metacarpal
  - b. Carpel
  - c. Tarsal
  - d. Metatarsal
19. Head of radius articulates with
- a. Trochlea of Humerus
  - b. Capitulum of Humerus
  - c. Coronoid process on ulna
  - d. Carpel bones
20. What will be the centering point for Chest AP supine view?
- a. T4
  - b. Sternal notch
  - c. Xiphisternum
  - d. Acromioclavicular joint
21. .... are floating ribs
- a. 1<sup>st</sup> & 2<sup>nd</sup>
  - b. 8<sup>th</sup> & 9<sup>th</sup>
  - c. 11<sup>th</sup> & 12<sup>th</sup>
  - d. 4<sup>th</sup> & 5<sup>th</sup>
22. Where will you keep the cassette for PA view
- a. Posterior
  - b. Anterior
  - c. Lateral
  - d. Medial
23. .... is the largest tarsal bone
- a. Calcaneum
  - b. Talus
  - c. Navicular
  - d. Cuboid
24. Coracoid process is seen
- a. Scapula
  - b. Radius
  - c. Ulna
  - d. Fibula
25. Circumduction is possible for
- a. Knee joint
  - b. Hip joint
  - c. Elbow joint
  - d. Ankle joint
26. .... is the largest & strongest bone in the body
- a. Femur
  - b. Tibia
  - c. Fibula
  - d. Humerus

27. During ....., angle between the two contiguous bones will be decreased
- |              |                      |
|--------------|----------------------|
| a. Flexion   | b. Extension         |
| c. Abduction | d. None of the above |
28. Transverse plane is also called
- |             |                    |
|-------------|--------------------|
| a. Sagittal | b. Coronal         |
| c. Axial    | d. Median sagittal |
29. Caldwell projection is
- |                         |                         |
|-------------------------|-------------------------|
| a. 20° occipitofrontal  | b. 40° occipitofrontal  |
| c. 20° fronto-occipital | d. 40° fronto-occipital |
30. Towne's projection is
- |                        |                        |
|------------------------|------------------------|
| a. 10° frontooccipital | b. 20° frontooccipital |
| c. 30° frontooccipital | d. 40° occipitofrontal |
31. Waters projection will help to image
- |         |           |
|---------|-----------|
| a. Hip  | b. PNS    |
| c. Ribs | d. Coccyx |
32. .... is used to guide the needle during amniocentesis and fetal transfusion
- |                          |                                   |
|--------------------------|-----------------------------------|
| a. Mammography           | b. CT scan of reproductive system |
| c. Hysterosalpingography | d. Obstetric ultrasonography      |
33. Barium swallow study will be using
- |                         |                          |
|-------------------------|--------------------------|
| a. Barium pertechnetate | b. Barium tetra chloride |
| c. Barium hydroxide     | d. Barium Sulphate       |
34. .... is called for inflammation of vein
- |                 |              |
|-----------------|--------------|
| a. Thrombitis   | b. Hepatitis |
| c. Haemorrhoids | d. Phlebitis |
35. Blood stained sputum is called as
- |                |                 |
|----------------|-----------------|
| a. Haemoptysis | b. Haematemesis |
| c. Haematuria  | d. Haemorrhoids |
36. Radiographic visualization of fallopian tube is called
- |                          |                             |
|--------------------------|-----------------------------|
| a. Hysterosalpingography | b. Mammography              |
| c. Capnography           | d. Trans vaginal sonography |
37. Which among the following is a indication of intravenous pyelography?
- |                 |                |
|-----------------|----------------|
| a. Haematuria   | b. Haemoptysis |
| c. Haematemesis | d. Hemothrox   |

38. Which of the following is not the pre procedure consideration of IVP?

- a. Screening for allergy
- b. Catharsis
- c. Dehydration
- d. Screening for LFT

39. CSF is formed in

- a. Choroid plexus
- b. Subdural space
- c. Epidural space
- d. All the above

40. FLAIR used the technique of

- a. Gradient echo
- b. Echo planar imaging
- c. Spin echo
- d. Invasion recovery

41. All are true about MR contrast media except

- a. It decreasing T1 & T2 relaxation time of surroundings
- b. Uses gadolinium in its pure form
- c. MR contrast agents are paramagnetic substances
- d. The effect of contrast medium remains up to 45 minutes after administration

42. In a superconducting magnet, the coils are bathed in liquid helium

- a. To reduce RF pulse
- b. To keep the system from overheating
- c. To keep the area around the coils sterile
- d. To reduce the amount of resistance in the wire

43. MRI scans tend to be very noisy. The noise comes from

- a. Opposition of the main magnetic field to the current in the gradient magnets' wires
- b. Production of RF pulse
- c. Movement of the magnet from place to place
- d. Stray particles within the system being thrown about by the magnetic field

44. Except the dedicated bone mineral densitometry unit, which of the following imaging modalities can be used for bone densitometry?
- |        |                 |
|--------|-----------------|
| a. PET | b. MRI          |
| c. CT  | d. Doppler scan |
45. The process of averaging is used in MRI for the purpose of
- |                              |                         |
|------------------------------|-------------------------|
| a. Reducing acquisition time | b. Reducing image noise |
| c. Combining T1&T2 contrast  | d. Improving detail     |
46. The factor which has significant effect on the amount of chemical shift artefact in MRI is
- |                            |                             |
|----------------------------|-----------------------------|
| a. Matrix size             | b. Phase encoding direction |
| c. Magnetic field strength | d. Gradient strength        |
47. The slope of the straight line of the H&D curve is an indication of
- |             |             |
|-------------|-------------|
| a. Contrast | b. Gamma    |
| c. Toe      | d. Latitude |
48. How many cavities are there in the ventricular system of brains?
- |      |      |
|------|------|
| a. 2 | b. 3 |
| c. 4 | d. 5 |
49. The two vertebral arteries enter the cranium through the
- |                      |                      |
|----------------------|----------------------|
| a. Foramen ovale     | b. Foramen magnum    |
| c. Zygomatic foramen | d. None of the above |
50. CSF will be present in
- |                       |                   |
|-----------------------|-------------------|
| a. Epidural space     | b. Subdural space |
| c. Subarachnoid space | d. All the above  |
51. The superior and inferior vena cava empty the deoxygenated blood in to the
- |                    |                   |
|--------------------|-------------------|
| a. Right ventricle | b. Left ventricle |
| c. Right atrium    | d. Left atrium    |
52. Saphenous vein is a
- |                    |                    |
|--------------------|--------------------|
| a. Cerebral vein   | b. Lower limb vein |
| c. Upper limb vein | d. Abdominal vein  |
53. The outermost membrane of meninges is
- |               |                      |
|---------------|----------------------|
| a. Arachnoid  | b. Pia mater         |
| c. Dura mater | d. None of the above |
54. Excessive accumulation of CSF in the ventricles is called
- |                  |                   |
|------------------|-------------------|
| a. Pneumothorax  | b. Hydrocephalus  |
| c. Down syndrome | d. Hydronephrosis |

55. Both Magnevist and Omniscan will cause a ..... in T1 and T2 relaxation times of tissues where it is distributed
- a. Increase  
b. Decrease  
c. No change  
d. First increase and then decrease
56. A T2 weighted sequence is characterised by parameters as listed below
- a. Long TR /short TE  
b. Short TR/Long TE  
c. Short TR /Short TE  
d. Long TR / Long TE
57. Which one of the following is required to maintain the magnetic field in a scanner with a resistive magnet?
- a. Liquid nitrogen  
b. Electricity  
c. Permanently magnetised material  
d. Liquid helium
58. .... is characterised by bowing of weight bearing bones
- a. Acromegaly  
b. Rickets  
c. Osteomalacia  
d. Cretinism
59. Thrombocytes are
- a. Basophils  
b. WBC  
c. Platelets  
d. Anticoagulants
60. Abnormally high WBC count with immature cells is called as
- a. Anemia  
b. Leukemia  
c. Polycythema  
d. Leucocytopenia
61. Which of the following is beam related artefacts?
- a. Streak artefacts  
b. Partial volume effect  
c. Metallic artefacts  
d. Sampling error artefacts
62. Ideal needle size for CT guided aspiration is
- a. 18G  
b. 20G  
c. 26G  
d. All the above
63. Contrast medium flow rate mens
- a. Contrast medium volume/Scan duration  
b. Contrast medium volume + Scan duration  
c. Contrast medium volume x Scan duration  
d. None of the above
64. What will be the average CT value of cartilage?
- a. 0  
b. -100  
c. 150  
d. -1000

65. The .... is the smallest wrist bone
- |             |             |
|-------------|-------------|
| a. Capitate | b. Pisiform |
| c. Hamate   | d. Lunate   |
66. Which of the following facial bones are not paired?
- |             |                  |
|-------------|------------------|
| a. Lacrimal | b. Zygomatic     |
| c. Vomer    | d. All the above |
67. The largest sinuses are the .....
- |             |              |
|-------------|--------------|
| a. Ethmoid  | b. Frontal   |
| c. Sphenoid | d. Maxillary |
68. The best projection to demonstrate the frontal sinuses is the .....method?
- |             |          |
|-------------|----------|
| a. Walters  | b. Rhese |
| c. Caldwell | d. SMV   |
69. Carpel tunnel syndrome is due to compression of
- |                                     |                 |
|-------------------------------------|-----------------|
| a. Radial nerve                     | b. Ulnar nerve  |
| c. Palmar branch of the ulnar nerve | d. Median nerve |
70. Oblique view of petrous temporal region is called
- |                   |                |
|-------------------|----------------|
| a. Stenver's view | b. Martiz view |
| c. Velpeau view   | d. Kandel view |
71. Transverse fracture of the distal radius
- |                       |                    |
|-----------------------|--------------------|
| a. Colles fracture    | b. Bennett racture |
| c. Monteggia fracture | d. Pilon fracture  |
72. A linear ultrasound scan has a ..... Shape
- |                |                  |
|----------------|------------------|
| a. Rectangular | b. Curved        |
| c. Pointed     | d. All the above |
73. .... has negative susceptibility
- |                  |                  |
|------------------|------------------|
| a. Paramagnetic  | b. Diamagnetic   |
| c. Ferromagnetic | d. All the above |
74. SI unit of magnetic field strength is
- |                |               |
|----------------|---------------|
| a. Becquerel   | b. Tesla      |
| c. Volt /Meter | d. Rutherford |
75. A flip angle of ... will provide largest possible transverse magnetization
- |                 |                  |
|-----------------|------------------|
| a. $45^{\circ}$ | b. $10^{\circ}$  |
| c. $90^{\circ}$ | d. $120^{\circ}$ |



76. Which of the following will exhibit a long T2?
- a. Water  
b. CSF  
c. Both A&B  
d. Bones
77. Cryogen is required for
- a. Superconductive magnets  
b. Resistive magnets  
c. Permanent magnets  
d. All the above
78. Which of the following is transmitted by rat urine?
- a. Leptospira  
b. Listeria  
c. Legionella  
d. Mycoplasma
79. A lateral curvature of the vertebral column is called
- a. Scoliosis  
b. Kyphosis  
c. Lordosis  
d. Non of the above
80. In fronto occipital 30° caudal view dorsum sella will be projected within.....
- a. Foramen ovale  
b. Foramen magnum  
c. Foramen rotundum  
d. None of the above
81. External occipital protuberance is called
- a. Glabella  
b. Inion  
c. Vertex  
d. None of the above
82. For submentovertical projection the patient should be
- a. Supine  
b. Prone  
c. Right lateral decubitus  
d. Left lateral decubitus
83. Which is reverse Towne's projection?
- a. Occipito-frontal 30 degree caudal angulation  
b. Occipito-frontal 30 degree cranial angulation  
c. Fronto-occipital 30 degree caudal angulation  
d. Fronto-occipital 30 degree cranial angulation
84. Jugular foramina can be demonstrated by
- a. Submento vertical 20 degree cranial  
b. Submento vertical 20 degree caudal  
c. Submento vertical 40 degree cranial  
d. Submento vertical 40 degree caudal
85. The inferior angle of the scapula indicates the level of ...when the arms are placed by the side
- a. T4  
b. T5  
c. T6  
d. T7

86. Translate –rotate & one detector is of ...CT scanner
- |                               |                               |
|-------------------------------|-------------------------------|
| a. 1 <sup>st</sup> generation | b. 2 <sup>nd</sup> generation |
| c. 3 <sup>rd</sup> generation | d. 4 <sup>th</sup> generation |
87. ...are the result of miscalibration of one detector in a rotate –rotate geometry scanner
- |                     |                             |
|---------------------|-----------------------------|
| a. Motion artifacts | b. Streak artifacts         |
| c. Ring artifacts   | d. Beam hardening artifacts |
88. Ratio of the table increment of the 360 degree gantry rotation to the collimation setting in CT scanning is called
- |                |                 |
|----------------|-----------------|
| a. Pitch       | b. Pixel index  |
| c. Voxel scale | d. Window width |
89. Flying focal spot is associated with
- |                            |                      |
|----------------------------|----------------------|
| a. Conventional CT scanner | b. Spiral CT scanner |
| c. Multislice CT scanner   | d. None of the above |
90. ....is the process of making the magnetic field uniform throughout the imaging volume
- |                          |                  |
|--------------------------|------------------|
| a. Gradient coils fixing | b. Shimming      |
| c. Quadrature coils      | d. All the above |
91. T1 relaxation time is same as
- |                                 |                                 |
|---------------------------------|---------------------------------|
| a. Longitudinal relaxation time | b. Spin-lattice relaxation time |
| c. Both a& b                    | d. Inversion recovery time      |
92. The time from the start of one pulse sequence to the start of the next pulse sequence is
- |                       |                         |
|-----------------------|-------------------------|
| a. Repetition time    | b. Free induction decay |
| c. Inversion recovery | d. Time to Echo (TE)    |
93. If bleeding occurs during withdrawal of a needle following injection one should apply .....at the site of injection
- |                 |                   |
|-----------------|-------------------|
| a. A tourniquet | b. Pressure       |
| c. Heat         | d. Magnetic piece |
94. What is the imaging modality of choice to detect bone metastasis?
- |          |              |
|----------|--------------|
| a. CT    | b. MRI       |
| c. X-ray | d. Bone scan |
95. The MR imaging in multiple sclerosis will show lesion in
- |                 |                  |
|-----------------|------------------|
| a. White matter | b. Grey matter   |
| c. Thalamus     | d. Basal ganglia |
96. The part that is NOT involved in barium swallows study
- |                    |                      |
|--------------------|----------------------|
| a. Body of stomach | b. Fundus of stomach |
| c. Pharynx         | d. Oesophagus        |

97. In myelogram contrast medium is injecting to

- a. Ventricles
- c. Subdural space

- b. Cerebral vessels
- d. subarachnoid space

98. in which format images are stored in PACS

- a. GIFF
- c. DICOM

- b. TIFF
- d. JPEG

99. In IVP, the first film after contrast injection is

- a. Nephrogram
- c. Rengogram

- b. Pyelogram
- d. Venogram

100. Phase wrap artefact is seen in

- a. Mammogram
- c. MRI

- b. Scintigraphy
- d. PET

