

# MIZORAM PUBLIC SERVICE COMMISSION

## TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF X-RAY TECHNICIAN (CONTRACT) UNDER HEALTH & FAMILY WELFARE DEPARTMENT, GOVERNMENT OF MIZORAM. FEBRUARY, 2017.

### TECHNICAL PAPER – II

Time Allowed : 2 hours

Full Marks : 150

*All questions carry equal marks of 2 each.  
Attempt all questions.*

1. Which of the following is a wrong statement for Computed Radiography systems:
  - (a) Europium is the activator element
  - (b) Image reading is performed using laser
  - (c) Photo stimulable phosphor is silver halide
  - (d) Cassettes are used.
2. Enteroclysis is an investigation of
  - (a) Esophagus
  - (b) Small Bowel
  - (c) Large bowel
  - (d) Hepato-biliary tree
3. TFT array in Flat panel detector DR systems is made of :
  - (a) Coarse Antimony
  - (b) Amorphous Silicon
  - (c) Powdered Bismuth
  - (d) Dry Manganese
4. CCD means:
  - (a) Charged Couple Detector
  - (b) Continuous Charged Detector
  - (c) Conventional charged Device
  - (d) Continuous Conventional Device
5. Which is the wrong statement for mammography
  - (a) Film screen mammography uses X-Ray
  - (b) CT mammography uses X-Ray
  - (c) Xeromammography uses X-Ray
  - (d) MR Mammography uses X-Ray
6. Grids used in Mammography is made up of
  - (a) Lead
  - (b) Iron
  - (c) Carbon
  - (d) Platinum
7. Digital Radiography (DR) systems are of the following types
  - (a) Slot Scanning type
  - (b) Flat panel detector type
  - (c) Photon counting type
  - (d) All of these
8. In Mammography compression is required due to
  - (a) Immobilise the breasts
  - (b) Decrease scatter radiation
  - (c) For homogenous Image density
  - (d) All of these
9. HSG is an investigation of
  - (a) Urinary Bladder
  - (b) Fallopian Tube
  - (c) Ureters
  - (d) Urethra

10. Digital Tomosynthesis is used for
  - (a) Breast Imaging
  - (b) Inner ear imaging
  - (c) Angiography
  - (d) All of these
11. For screening of Breasts in young women below the age of 30 years the preferred investigation is
  - (a) Sonomammography
  - (b) Two view film screen mammography
  - (c) Ductography
  - (d) CT mammography
12. BIRADS is a system used for reporting
  - (a) Mammogram
  - (b) Ductogram
  - (c) Urethrogram
  - (d) Sinogram
13. Full form of LASER
  - (a) Light after stimulating electron radiation
  - (b) Light analysis by stimulating electron red
  - (c) Light amplification by simulated emission of radiation
  - (d) None of these
14. Breast tissue is composed mainly of
  - (a) Muscle
  - (b) Adipose
  - (c) Fibrous
  - (d) Calcified
15. The most common view used in Mammography for cancer screening is
  - (a) Medial Lateral Oblique ( MLO)
  - (b) Cranio caudal (CC)
  - (c) Both (a) & (b)
  - (d) None of these
16. Which of the following is a negative contrast agent
  - (a) Barium
  - (b) Water
  - (c) Iodine
  - (d) Gadolinium
17. The largest salivary gland is
  - (a) Sub-Mandibular gland
  - (b) Sub – Lingual gland
  - (c) Parotid gland
  - (d) Pituitary gland
18. Non-ionic dimmers have a iodine to particle ratio of
  - (a) 3:1
  - (b) 3:2
  - (c) 5:2
  - (d) 6:1
19. Telepaque is a contrast agent used for which procedure:
  - (a) Oral cholecystography
  - (b) Nephrotomography
  - (c) Micturating Cystography
  - (d) Antegrade Pyelogram
20. Endoscopic Retrograde Cholangio Pancreatography (ERCP) is done to assess
  - (a) Biliary tract
  - (b) Alimentary tract
  - (c) Gall Bladder
  - (d) Liver
21. Brightness gain as a result of reduction of image size in IITV is called
  - (a) Flux gain
  - (b) Minification gain
  - (c) Output gain
  - (d) Amplification gain
22. The lacrimal gland is located in the
  - (a) Ovary
  - (b) Paranasal sinus
  - (c) Eye
  - (d) Medulla

23. In modern Image Intensifiers the input fluorescent screen is made of  
(a) Zinc sulphate (b) Barium Sulphate  
(c) Copper Bromide (d) Cesium Iodide
24. In wide angle tomography the tomographic arc is usually  
(a) 5-10 degrees (b) 10-50 degrees  
(c) 200-220 degrees (d) 0-5 degrees
25. In Myelography the intra-thecal contrast injection is injected into which space:  
(a) Extra-dural (b) Intra-medullary  
(c) Sub-dural (d) Sub-arachnoid
26. Circle of WILLIS is located in the  
(a) Abdominal wall (b) Hindbrain  
(c) Lumbar spine (d) Pelvis
27. Phlebography is a contrast study of  
(a) Arteries (b) Veins  
(c) Joints (d) Lymphatics
28. IVU is an investigation of the  
(a) Ureters (b) Uterus  
(c) Pancreas (d) All of these
29. The Nobel prize for medicine in 1979 for discovery of CT Scan was won by  
(a) Godfrey Hounsefield (b) Alan Cormack  
(c) Both (a) & (b) (d) None of these
30. In CAT Scan – the A stands for  
(a) American (b) Axial  
(c) Atlas (d) Alternative
31. In the fourth generation type of CT scanners  
(a) Tube and Detector do not rotate (b) Both Tube and detector rotate  
(c) Only the tube rotates (d) Only detector rotates
32. Which of the following is not a part of the gantry in CT Scan machines  
(a) Tube (b) Patient couch  
(c) Workstation (d) Detector array
33. In third generation CT Scanners the fan beam angle is about  
(a) 5 degrees (b) 50 degrees  
(c) 80 degrees (d) 120 degrees
34. For performing CT of the abdomen we need to take tomogram in which position  
(a) Axial and Lateral (b) Coronal and Axial  
(c) Lateral and Oblique (d) Oblique and coronal
35. Slip ring technology is used in  
(a) Conventional CT scanners (b) Axial third generation CT scanners  
(c) Spiral CT scanners (d) None of these

36. The ventricles in the brain contain
- (a) CSF
  - (b) Smooth muscles
  - (c) Bone
  - (d) Grey matter
37. Patient couch in CT scanners is made up of
- (a) Lead coated iron
  - (b) Copper sheets
  - (c) Carbon fiber
  - (d) Amalgamated steel
38. What is the type of collimation used in CT scan
- (a) Pre-patient collimation
  - (b) Post patient collimation
  - (c) Both (a) & (b)
  - (d) None of these
39. Mathematical method of image reconstruction used in CT is
- (a) Simple Back Projection
  - (b) Filtered Back Projection
  - (c) Fourier Reconstruction
  - (d) All of these
40. Windowing is a method used for
- (a) Image acquisition
  - (b) Image display
  - (c) Image reconstruction
  - (d) None of these
41. The most common type of post processing protocol used for CT Angiography is
- (a) Maximum Intensity Projection
  - (b) Shaded Surface Display
  - (c) Minimum Intensity Projection
  - (d) Axial Surface Display
42. In CT Brain – hemorrhage or collection between the pia and arachnoid membrane will be
- (a) Extra-Dural collection
  - (b) Sub-Dural collection
  - (c) Sub-Arachnoid collection
  - (d) Intra-parenchymal collection
43. To perform CT of the ankle joint the patient position will be
- (a) Head First Supine (HFS)
  - (b) Head First Prone (HFP)
  - (c) Feet First Supine (FFS)
  - (d) Feet First Prone (FFP)
44. The following type of contrast is used in MRI studies
- (a) Iodinated contrast agents
  - (b) Gadolinium contrast agents
  - (c) Barium contrast agents
  - (d) All of these
45. In T2 weighted images in MRI CSF appears
- (a) Black
  - (b) Grey
  - (c) White
  - (d) No signal
46. RF shielding in MRI magnet room is done using
- (a) Bismuth
  - (b) Manganese
  - (c) Copper
  - (d) Lead
47. Full form of FLAIR sequence used in MRI studies is
- (a) Fluid Level Array Inversion Recovery
  - (b) Fine Level Attenuation Inversion Reaction
  - (c) Fluid Level Array Inversion Reaction
  - (d) Fluid Attenuation Inversion Recovery
48. Field strength of MRI magnets is measured using which unit
- (a) Roentgen
  - (b) Nikol
  - (c) Sievert
  - (d) Tesla

49. The most common sequence used for performing MR angiography is :
- (a) Time of Flight (b) Inversion recovery  
(c) Phase encoded (d) Proton density
50. In superconductor MRI equipments, the required critical temperature in cryostat is maintained by using
- (a) Titanium (b) Helium  
(c) Sulfur (d) Carbon dioxide
51. For personal protection in MRI room technologist should use
- (a) Iron (b) Lead  
(c) Aluminium (d) None of these
52. Trans rectal coils in MRI are used for examination of
- (a) Vagina (b) Uterus  
(c) Prostate (d) Kidneys
53. Preferred position of patient in performing MRI of Breast is
- (a) Prone (b) Lateral  
(c) Supine (d) Oblique
54. Which of the following is not a contraindication for undergoing MRI examination
- (a) Patient with pacemaker (b) Patient with joint prosthesis  
(c) Pregnant patient (d) All of these
55. In MR Enteroclysis the contrast material used is
- (a) Barium (b) Water  
(c) Methylcellulose (d) Iodine
56. Magnetic field inhomogeneities are eliminated by a process called
- (a) Shimming (b) Flushing  
(c) Fractionating (d) Extracting
57. Full form of PET is
- (a) Positron Emission Tomography (b) Positive Excitation Tomography  
(c) Positive Emission Test (d) Positron Emission Test
58. MRU is an investigation of
- (a) Heart (b) Kidneys  
(c) Liver (d) Lungs
59. The crystals used in Ultrasound probes are called
- (a) Piezo electrical crystals (b) Pie mechanical crystals  
(c) Pie square crystals (d) Piezo ceramic crystals
60. Exhocardigraphy is examination of
- (a) Heart (b) Lungs  
(c) Liver (d) All of these
61. Which of the following is not a type of biopsy
- (a) Core (b) Extraction  
(c) Aspiration (d) Vacuum

62. DSA stands for  
(a) Digital Synchronised Anatomy (b) Digital Substraction Anatomy  
(c) Digital Substraction Angiography (d) Digital Synchronsed Angiography
63. Gelfoam is a material commonly used for  
(a) Embolisation (b) Aspiration  
(c) Drainage (d) Coiling
64. Vertebroplasty is a procedure done for  
(a) Spine (b) Brain  
(c) Heart (d) Artery
65. Unit to measure Catheter diameter is  
(a) Meter (b) Angstrong  
(c) French (d) Sievert
66. In the following question, some equations are solved on the basis of a certain system. On the same basis, find out the correct answer for the following question.  
If  $85+25=50$  and  $97+65=93$ , then  $72+94=?$   
(a) 92 (b) 50  
(c) 67 (d) 60
67. In the following number series, how many 9's are which are preceded by 3 but not followed by 4?  
2395139673948934932398393  
(a) 3 (b) 2  
(c) 1 (d) 4
68. Find out the pair in which the words bear the same relationship to each other as similar to the words of the given pair below:-  
Introvert: Extrovert  
(a) Angle : Tangent (b) Extreme : Interim  
(c) Against : Favour (d) Action : Law
69. A group of four words are given in the following question; choose the one which is odd.  
(a) Orange (b) Guava  
(c) Grapes (d) Apple
70. A man starts for his office in the North direction. He turns to his left, and then to his right and again to his right. In which direction will he be facing?  
(a) South (b) East  
(c) West (d) North
71. In the following question, a statement is followed by two courses of action numbered I and II. Assume everything in the statement to be true. Decide which of the two suggested courses of action logically follows for pursuing.  
Statement: Majority of the students have failed in one paper in the first semester examination.  
Courses of Action:  
I. All those students who failed should be asked to drop out of the course.  
II. The faculty teaching the paper should be asked to resign.  
(a) if only I follows (b) If only II follows  
(c) If both I and II follows (d) If neither I nor II follows

72. In the following question, two statements are followed by two conclusions numbered I and II. Assume everything in the statements to be true. Decide which of the conclusions, if any, follow from the given statements.

Statements : All good athletes win.

All good athletes eat well.

Conclusions: I. All those who eat well are good athletes

II. All those who win eat well.

- (a) Only I follows (b) Only II follows  
 (c) Both I and II follows (d) Neither I nor II follows

73. The following question has an Assertion (A) and a Reason (R).

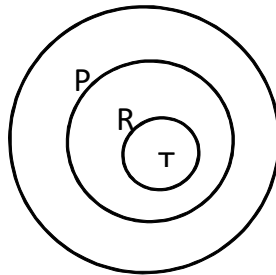
Assertion (A) : Good performance at work causes satisfaction.

Reason (R) : Job satisfaction results in good performance.

Give answer:

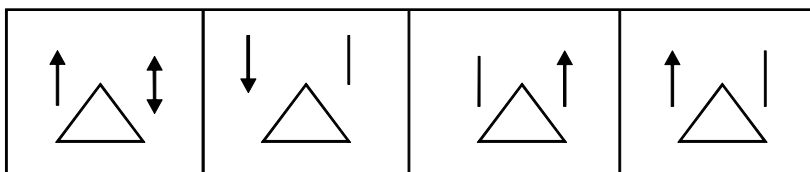
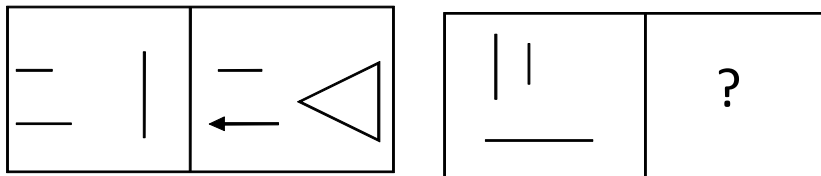
- (a) If both A and R are true but R is not the correct explanation of A.  
 (b) If A is true but R is false.  
 (c) If A is false but R is true.

74. Which of the following is correct about the given diagram?



- (a) All R are T (b) All P are T  
 (c) All T are P (d) All P are R

75. Which of the following answer should be in place of the question mark?



- a) b) c) d)