

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

RADIOGRAPHER (Under PILBS, Mohali)

QUESTION BOOKLET:

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THUMB IMPRESSION OF THE CANDIDATE

OMR ANSWER SHEET NO:

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ROLL NO:

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FULL SIGNATURE OF THE CANDIDATE

FULL SIGNATURE OF INVIGILATOR

FULL SIGNATURE OBSERVER

Time Allowed: 2.00 Hours (12.00 noon to 2.00 PM)

Maximum Marks: 100

1. Use BLACK FINE TIP BALL PEN only. Use of pencil is not allowed.
2. Write your Roll number on the OMR answer-sheet and also on the question-booklet only in the space provided for the purpose and at no other place in the question booklets and Answer-sheet
3. Enter the Question Booklet Set and Number on the OMR Answer-sheet and also darken the corresponding bubbles with BLACK FINE TIP BALL PEN.
4. Do not put any marks anywhere in the Question booklet /on the OMR Answer-sheet.
5. **There are 100 objective type questions in all of 1 Mark each.** Before attempting the questions, check that the Question-booklet is complete. In case any question/part of question or page is missing, inform the Centre Superintendent within 5 minutes of the start of the examination. After that no claim will be entertained.
6. **Each question is followed by four alternative responses listed as A), B), C) and D) out of which only one is correct / most correct. In case, all the ovals are left blank, there will be deduction of marks @ 0.25 marks for each such unattempted question. Fifth oval 'E' (introduced for security purpose) is to be darkened in case you do not want to attempt the question to avoid negative marking.**
7. To open the question booklet, remove the seal gently when asked to do so. Handover the OMR Answer-sheet to the officer on duty on the completion of the time before you leave the examination hall.
8. **The candidates are permitted to carry his/her question booklet after completion of the examination but OMR Sheets are compulsory required to be deposited with the invigilator.**
9. A candidate who create disturbance of any kind or changes his/her seat or is found in possession of any paper possibility of any assistance to him/her or unfair means will be expelled from the examination by the Centre superintendent/Observer, whose decision shall be final. ("Expulsion" for this purpose would mean cancellation of the entire examination of the candidate).
10. THE CANDIDATES ARE NOT PERMITTED TO CARRY ANY TELECOMMUNICATION EQUIPMENT SUCH AS WATCH, CELLULAR PHONE, WIRELESS SET, SCANNER ETC. INSIDE THE EXAMINATION HALL.
11. For rough work, use only the blank space of the Question booklet.
12. The candidates will not be allowed to leave the examination hall during the examination.
13. Borrowing any material is not allowed.
14. The answer-sheet is designed for Computer evaluation. If the instructions are not followed properly, the candidate alone shall be responsible for the resultant loss.
15. Smoking/Refreshment shall not be allowed in the Entrance Test Centre/Hall.
16. Male candidates shall affix their Left Thumb Impression (LTI) while Female candidates shall affix Right Thumb Impression (RTI) at the prescribed place on the OMR answer sheet, Question Booklet and attendance sheet. The Centre superintendent shall also obtain and retain it for record.
17. The candidate must fill both the question booklet number and OMR answer sheet number on the attendance sheet.
18. No candidate shall be allowed to leave the centre before **2.00 PM**.

1. Wavelength of x rays ranges from
 - a. 6-7 A*
 - b. 15 – 20 A*
 - c. 0.1-0.5 A*
 - d. 5-10 A*
2. X-rays are electrically charged
 - a. electrons
 - b. protons
 - c. neutral
 - d. neutrons
3. Radioactive substances emit all except
 - a. alpha
 - b. beta
 - c. gamma
 - d. epsilon
4. Most hazardous internally located isotopes are
 - a. alpha particles
 - b. beta particles
 - c. gamma particles
 - d. delta particles
5. Radiation exposure can measured by
 - a. Ionization Chamber
 - b. Scintillation detector
 - c. GM Counter
 - d. All the above
6. TLD badge consists of
 - a. Calcium sulphate
 - b. Dysprosium
 - c. Teflon
 - d. Allthe above
7. In Mammography tube , anode is made of
 - a. Tungsten
 - b. Molybdenum
 - c. Beryllium
 - d. Cobalt
8. Film badge is used to measure
 - a. beta,gamma &thermal neutron radiation
 - b. beta,alpha & delta radiations
 - c. beta, alpha and delta radiations
 - d. gamma,thermal neutrons & delta radiation

9. Advantage of high frequency generator are
 - a. initial conversion of AC to DC waveform
 - b. To ensure accurate voltage and current
 - c. Excellent service and repair
 - d. All the above.
10. Modalities not involving ionizing radiations are
 - a. CT Scan
 - b. x-rays
 - c. PET
 - d. MRI
11. Biological effect at the same energy level is in the order of
 - a. alpha > beta > gamma
 - b. alpha < beta < gamma
 - c. alpha = beta = gamma
 - d. None of the above.
12. Death due to radiation exposure occurs at the dose of
 - a. 100 msv
 - b. >500REM
 - c. 3sv
 - d. 0.25- 1sv
13. Cataract in eye with radiation exposure of 5-8sv occurs within
 - a. one year
 - b. 20-30 years
 - c. 5-10 years
 - d. 6 months
14. Exposure can be reduced to desired level by
 - a. Providing shield
 - b. by reducing duration of exposure
 - c. By measuring distance between source and area under exposure
 - d. All the above.
15. Minimum thickness of lead coat should be
 - a. 2mm
 - b. 1.5mm
 - c. 0.25 mm
 - d. 4mm
16. Radioactivity was discovered by
 - a. Roentgen
 - b. Bacqueral
 - c. Madam Curie
 - d. None of the above
17. Causes of unsharpness in Radiographic image are
 - a. geometry
 - b. movement
 - c. photographic
 - d. all the above

18. Radiographic examination of joints is called
- Arthrography
 - Arteriography
 - Dacryocystography
 - Cholangiography
19. Photoconductor used in Xeroradiography is
- Cobalt
 - Tungsten
 - Selenium
 - Copper
20. Good and uniform compression of Breast in mammography is to
- Immobilise breast
 - Decrease geometric unsharpness
 - Decrease scatter radiations
 - All the above
21. Most commonly used lubricant purgative in abdominal preparation is
- Liquid paraffin
 - Isogel
 - Bisacodyl
 - Castor oil
22. Contraindication for intravenous pyelography is
- Blunt injury abdomen with haematuria
 - Pregnancy
 - Congenital anomalies involving kidney
 - All the above
23. Enteroclysis is
- Small bowel enema
 - Barium meal follow thro
 - T-tube cholangiography
 - Sialography
24. Ohm's law of electric current is
- $V \sim I$
 - $V \sim 1/I$
 - $V \sim 1/R$
 - None of the above
25. According to Maxwell's electromagnetic theory
- light is magnetic wave
 - Light is electrical wave
 - Light is transverse wave
 - All the above
26. Quantum theory fails to explain
- Interference
 - Radiation emission
 - Photoelectric effect
 - All the above

27. Visible spectrum ranges from
- 1000-3000A*
 - 4000-7700A*
 - 8000-9900A*
 - 200-500A*
28. Contrast material used in Micturating cystourethrography
- Sodium Iodide
 - Barium
 - Telepaque
 - Dulcolax
29. Investigation of choice in pericardial effusion:
- cardiac catheterization
 - USG
 - Echocardiography
 - lateral view x-ray chest
30. All are imaging modalities of chest, except
- HRCT
 - USG
 - ventilation perfusion study
 - Echocardiography
31. SI unit for measurement of luminous intensity is
- Fermi
 - Parsec
 - Candela
 - Kelvin
32. Which of the following is semi conductor
- Silicon
 - Germanium
 - carbon
 - all of the above
33. Adverse reaction to contrast are all except
- convulsions
 - cataract
 - laryngeal oedema
 - pulmonary oedema
34. Barium suspension is made of
- barium sulphate
 - barium carbonate
 - barium phosphate
 - barium silicate
35. Biliary contrast medium is
- urograffin
 - barium sulphate
 - barium carbonate
 - telepaque

36. Basic elements of image intensifier are
- input phosphor
 - accelerating anode
 - output phosphor
 - all of the above
37. Walls of radiography room should be lined with
- tin
 - molybdenum
 - lead
 - iron
38. Ear is located in
- frontal bone
 - temporal bone
 - occipital bone
 - none of the above
39. Length of ureter is
- 25 cm
 - 40 cm
 - 15 cm
 - 5 cm
40. Adam's apple is due to prominence of
- thyroid cartilage
 - cricoid cartilage
 - arytenoid
 - epiglottis
41. Working distance of safe light to the film should not be less than
- 9 metres
 - 1.2 metres
 - 3 metres
 - none of the above
42. Wattage of bulb in safe light should be less than
- 100 watts
 - 50 watts
 - 30 watts
 - 15 watts
43. Heart of x-ray film is
- developer
 - substratum
 - base
 - emulsion
44. Automatic film processors have all advantages except
- shortened processing time
 - improves quality
 - increases capacity of radiology deptt
 - temperature regulation is variable

45. All are components of fixer except
- hydroquinone
 - sodium thiosulphate
 - sodium sulphite
 - water
46. Use of hyoscine N Butylbromide (Buscopan) is contraindicated in
- Pain abdomen
 - Bowel spasm.
 - For adequate distension of bowel
 - Severe Prostatism
47. Radiographic contrast depends on
- type of film
 - intensifying screens
 - scatter radiations
 - all the above
48. Penetration power of radiograph is increased by
- decreasing kilo voltage
 - increasing FFD
 - increasing mAS
 - increasing kilo voltage
49. All are advantages of spiral CT except
- no motion artifact
 - improves lesion detection
 - multiplanar image
 - increase image noise
50. Heart of MRI system is
- shim coils
 - computer
 - gradient coils
 - magnet
51. Father of Computed Tomography is
- Curie
 - W C roentgen
 - Robert Koch
 - Godfrey Hounsfield
- 52 . Partial voluming artifact reduced by using
- Small voxel
 - large voxel
 - none
 - both a&b

53. RF pulse causes longitudinal magnetization to _____ and establishes a new transversal magnetization

- a. increase
- b. Remain unchanged
- c. Decrease
- d. Become zero

54. $1/T_2$ is also called _____.

- a. Longitudinal relaxation rate
- b. Transverse relaxation rate
- c. Longitudinal frequency
- d. Transverse frequency

55. TR less than _____ is short.

- a. 300msec
- b. 100msec
- c. 700msec
- d. 500msec

56. T_2 of fat is _____ that of water

- a. Longer than
- b. Shorter than
- c. Equal to
- d. Inversely proportional to

57. TR more than _____ is long.

- a. 700 msec
- b. 1000 msec
- c. 1500 msec
- d. 500msec

58. We get T_1 weighted image, when TR is _____.

- a. short
- b. Long
- c. too to be measured
- d. None of the above.

59. In a normal case, air is seen as dark on
- CT image
 - T1weighted image
 - T2 weighted image
 - All the above.
60. In a normal case, dense bone is seen as dark on
- CT image
 - MR image.
 - Both MR and CT images
 - None of CT or MR images.
61. In medical Ultrasonography , Piezoelectric material used is
- Calcium Tungstate
 - Zinc cadmium sulphate
 - Lead zirconate titanate.
 - None of the above.
62. To sterilise the USG transducer, it should be
- Autoclaved.
 - Heated.
 - Cleaned with spirit.
 - None of the above.
63. USG produces which of the following biological effects.
- Heat
 - Cavitation
 - None of these.
 - Both of these.
64. In Color Doppler venous flow is normally which type?
- Plug flow
 - Circular flow
 - Laminar flow
 - None of the above.
65. Unit of Pulse repetition frequency is
- Per minute
 - msec
 - mm/sec
 - MHz.

66. In which of the following, Doppler has two piezoelectric elements with single head?

- a. CW Doppler
- b. Pulse Doppler
- c. Duplex
- d. Doppler color flow imaging

67. Transrectal scanner is best at which frequency?

- a. 3-7.5
- b. 5-7.5
- c. 3-5
- d. 8-12

68. Contrast resolution in CT is

- a. Same as conventional films
- b. Less than conventional films
- c. Better than conventional films
- d. None of the above

69. CT number of water is

- a. zero
- b. -1000
- c. 200-300
- d. +1000

70. CT number of bone is

- a. zero
- b. +1000
- c. 200-300
- d. -1000

71. In CT reference material is

- a. water
- b. air
- c. bone
- d. none of the above

72. With narrowing of the window, each gray scale covers

- a. less CT numbers
- b. larger CT numbers
- c. no effect on CT numbers
- d. none of the above

73. Barium swallow is indicated in all except
- Motility disorder
 - Tracheo Esophageal fistulae
 - Failed upper GI endoscopy
 - Intestinal obstruction.
74. Virtual Colonoscopy (CT colonoscopy) is the radiological investigation of choice for
- Detection of Lung cancer
 - Acid Peptic disease.
 - Detection of Colonic neoplasia.
 - Detection of esophageal stricture.
75. MR imaging of GI tract is indicated in
- Perianal fistula
 - Local staging of anorectal cancer
 - Inflammatory bowel disease.
 - All the above.
76. Indication for MCU is
- Vesicoureteric reflux
 - To study urethral pathologies
 - Bladder leak.
 - All the above.
77. CT scan of urinary tract is done
- Renal colic/ renal stone disease
 - Intestinal mass
 - Gall stones
 - Acute Pancreatitis
78. Indication for MR Urography
- Congenital anomalies
 - To determine the level of obstruction.
 - Urinary obstruction unrelated to urolithiasis
 - all the above
79. IVU is contraindicated in
- Haematuria
 - Recurrent urinary tract
 - Acute renal colic
 - Vesical calculus.
80. To evaluate Gall Bladder on imaging, patient should be fasting for
- 6hrs
 - 24 hrs
 - 2 hrs
 - 18 hrs.

81. ERCP is contraindicated in
- Post Cholecystectomy syndrome
 - Management of bile duct stones.
 - Severe cardiac disease
 - Treatment of Chronic pancreatitis.
82. In MR , if fluid is darker than solids , the image is _____.
- PD weighted image
 - T1 weighted image
 - T2 weighted image
 - none of the above.
83. If fluid e.g. CSF or urine is white, image is _____.
- PD weighted image
 - T1 weighted image
 - T2 weighted image
 - None of the above.
84. In dual source CT , which of the following filters are used?
- Lead
 - Tungsten.
 - Tin
 - Rhenium.
85. The Ultrasound frequency used in the diagnosis is
- 20 kHz
 - 40 kHz
 - 1MHz -20MHz
 - 60kHz.
86. On applying electric field certain materials change
- Chemical dimension
 - Physical dimension
 - Both a&b.
 - None of the above.
87. Which of the following Phosphor is not used in intensifying screens
- Calcium tungstate.
 - Zinc cadmium sulphide
 - Terbium
 - Thulium blue
88. In CT scan the 4th generation is
- Translate rotate type
 - Rotate- rotate type
 - Stationary – rotate type
 - None of the above .

89. 5th generation CT scan uses
- Pencil beam of x-rays
 - Narrow fan beam.
 - Broad fan beam
 - Multiple x-ray beams.
90. Which of the following is best lateral resolution?
- 15cm
 - 6cm
 - 0.06cm
 - 2cm.
91. Which of the following statements regarding protons are correct?
- They have a negative charge
 - They are equal to the number of electrons in a non-ionized atom
 - They have no mass
 - Hydrogen atom has 2 protons
92. Which of the following is not correct for Tungsten:
- It has an atomic number of 74
 - The K-shell binding energy of tungsten is 69.5 KeV
 - The mass number of tungsten is 284
 - It is represented by the letter W
93. Which of following is correct for electromagnetic radiation:
- It cannot travel in vacuum.
 - Travels with a speed of light in vacuum.
 - Visible light is not a part of electromagnetic spectrum
 - X-rays and gamma rays have different frequency and wavelength
94. In a diagnostic X-ray tube:
- Anode is positive.
 - Cathode is made of aluminium
 - Cathode is positive
 - X-rays are produced by thermionic emission
95. Cathode of X-ray tube is:
- Is commonly made of tungsten
 - Has a low melting point
 - Has a low resistance
 - Is positively charged in relation to the anode

96. The following techniques can be used to minimise scatter

- A. Using collimation
- B. Air gaps between the focus and the object
- C. Intensifying screens
- D. Increasing the tube kV

97. Which of the following is correct for mammography tube:

- A. Tube voltage of 40–50 kVp
- B. Molybdenum target anode
- C. Single-phase voltage supply
- D. Molybdenum window

98. All of these are deterministic effects of radiation except-

- A. Sterility.
- B. Leukaemia.
- C. Formation of cataract.
- D. Hair loss

99. Regarding computed tomography (CT) imaging which of these is true-

- A. CT number of fat is higher than water.
- B. High level of scatter reaches the CT detectors.
- C. Windowing is a technique to adjust the greyscale.
- D. Air corresponds to a CT value of 0 HU

100. All of the following are true for X-rays except

- A. They are invisible
- B. They form part of electromagnetic spectrum
- C. They cannot travel through vacuum
- D. They cause ionization.

