BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

RADIOSAFETY OFFICER

(Under DRME, Govt. of Punjab)

QUESTION BOOKLET NO.

OMR ANSWER SHEET NO.

ROLL NO:

RESSION OF THE CANDIDATE

FULL SIGNATURE OF THE CANDIDATE

FULL SIGNATURE OF THE INVIGILATOR

FULL SIGNATURE OF THE OBSERVER

Time Allowed: 1.00 Hours (11.00 AM to 12.00 noon) **Maximum Marks: 50**

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 50 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 mark 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 TELECOMMUNICATIION 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 **12.00 noon**.

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15. Correct sequence of different phases of cell cycle is
a) G0-G1-G2-S-M
b) G0-G1-S-G2-M
c) G0-G1-G2-M-S
d) G0-G1-M-G2-S

16. X rays and gamma rays are
a) Low LET and sparsely ionising radiation
b) Densely ionising radiation
c) High LET radiation
d) Both b and c

17. Oxygen enhancement ratio (OER) is
a) Ratio of doses under hypoxic to aerated conditions to produce same biologic effect
b) Ratio of doses under aerated to hypoxic conditions to produce same biologic effect
c) Always lesser than 1 for all types of radiation
d) Higher for densely ionising radiation than sparsely ionising

18. Stochastic effect of radiation
a) Has a threshold dose
b) Is also known as deterministic effect
c) Is a chance effect with no threshold dose and is independent of dose
d) All of above

19. mAs stands for
a) milli as second
b) milli ampere second
c) mile ampere second
d) milli amplified second

20. Half life of Ir-192 is
a) 76 days
b) 74 days
c) 75 days
d) 79 days

21. As per AERB , permissible dose limit for occupational worker is
a) 20 msv/year averaged over 5 consecutive years
b) 25 msv/year averaged over 5 consecutive years
c) 30 msv/year averaged over 5 consecutive years
d) 50 msv/year averaged over 5 consecutive years

22. Dose limit for pregnant radiation worker is
a) 0.5 msv on the embryo/fetus
b) 1 msv on the embryo/fetus
c) 2 msv on the embryo/fetus
d) 5 msv on the embryo/fetus

23. Relation of dose-rate with distance is
a) Directly proportional to 'd'
b) Inversely proportional to "d'
c) Inversely proportional to "d 2
d) directly proportional to "d 2

24. Who discovered electron
a) Ernest Rutherfold
b) JJ Thomson
c) James Chadwick
d) WC Roentgen

25. In SAD set up on LINAC , the SSD on patient's skin will be
a) Less than 100 cm
b) Greater than 100 cm
c) Equal to 100 cm
d) None of the above

26. What is the principle reason for wearing a dosimeter (a badge)
a) Dosimeter will absorb the radiation and reduce the individual dose
b) It protects the individual from radiation
c) After processing , dosimeter will give the record of radiation doses received by the individual
d) The use of the badge replaces the requirement of radiation surveys in the radiation area

27. Rest mass energy of each particle (electron and positron) emitted during pair production is
a) 0.51 mev
b) 1.02 mev
c) 1 mev
d) 0.5 mev

28. Composition of Cerrobend material is
a) Tin and lead
b) Bismuth , lead, tin , cadmimum
c) Lead, tungsten,tin cadmium
d) Boron, lead,tin,copper

29. Nuclear regulatory body of India is
a) BARC
b) AERB
c) IAEA
d) FDA

30. Exposure is defined for
a) Air only
b) Photons only
c) Photons below 3 mev
d) All of the above

31. Unit of KERMA is
a) Joule/kg
b) cGy / min
c) Gy
d) Both a and c

32. Attenuation coefficient for photoelectric effect is directly proportional to
a) Z 2 /E 3
b) Z/E 3
c) Z 3 /E 2
d) Z 3 /E 3

33. Minimum photon energy required for pair production should be at least
a. 0.5 mev
b. 1 mev
c. 1.02 mev
d. 2.04

34. Which of the following does not help in reduction of patient dose
a) Grid
b) Collimator
c) Gonad shield
d) Intensifying screen

35. For measurement of internal exposure due to radionuclide following method is not used
a) Bioassay
b) Whole body scan
c) Thyroid counting
d) Area monitoring

36. Bragg peak is exhibited by
a) Neutrons
b) Protons
c) X rays
d) Gamma rays

37. The point where the projectile electrons strike the target is called as
a) Focal spot
b) Filament spot
c) Focussing cup
d) All of the above

38. Why are the fast dividing cells more easily targeted?
a) Due to high protein and carbohydrate 6 content of the cells
b) Due to higher energy of the ells
c) Due to low energy of the cells
d) Due to high oxygen content of the cells

39. TAR depends on
a. Depth
b. Field size
c. Beam energy
d. SSD
The correct answer is
a) 1 ,2 and 3 only
b) 1, 3 only
c) 2,4 only
d) All are correct

40. What does a cell survival curve describe ?
a) The relationship between the radiation dose and the number of cells that have gone thorough one mitosis after irradiation
b) The relationship between the radiation dose and the proportion of cells that remain clonogenic
c) The relationship between the radiation dose and the number of cells that have not suffered the loss of a specific function
d) The relationship between the radiation dose and the proportion of cells that can produce DNA

41. Which of the following is therapeutic mode is used in intraoperative radiotherapy ?
a) Electron
b) Photon
c) X ray
d) Gamma ray

42. According to ICRU specifications, the wedge angle is defined at
a) Depth of 50% isodose line
b) Depth of 80% isodose line
c) Depth of Dmax
d) 10 cm depth

43. Dose distribution outside the field boundaries is significantly affected by
a) Flattening filter
b) Dmax
c) Geometric penumbra
d) Scattering foil

44. CT scan acquires images in
a) Sagittal section
b) Coronal section
c) Both sagittal and coronal section
d) Axial sections

45. Which factor will impact the focal spot size of an X ray tube ?
a) Anode angle
b) Anode material
c) KVp
d) mAs

46. the CT number for dense bone tissue is
a) 0
b) -1000
c) 1000
d) -100

47. Compared with 3DCRT, IMRT has a disadvantage in that it
a) Increases integral dose to the [patient
b) Increases planning time
c) Increases treatment time
d) All of the above

48. All of the following are radioresistant tumours except
a) Pancreatic carcinoma
b) Osteosarcoma
c) HCC
d) Ewing sarcoma

49. How much dose a person would receive if he stands for 3hours in an area where exposure rate is 200mR/hr
a) 200mR
b) 300mR
c) 600mR
d) 900Mr

50. Tissue Air Ratio (TAR) is
a. The ratio of dose at depth in phantom to dose at depth of maximum dose in phantom
b. The ratio of dose at depth in phantom to dose in free space at the same point.
c. The ratio of dose at depth in phantom to dose at a specified depth reference depth in phantom
d. The ratio of dose at maximum dose in phantom to dose in free space at the same point