\To be filled by the candidate) **Booklet S. No. _____**

Roll No. (In figures) _____

Roll No. (In words) _____

_____

Name of the Candidate : _____

Father's Name : _____

Center of Examination : _____

Total No. of Questions : 50

Paper Code-2623

Name of Examination- Senior Resident/Specialist Tutor Entrance 2026

Specialty-Nuclear Medicine

Time Allowed : 90 Minutes **Maximum Marks : 200**

IMPORTANT NOTE:

(i) OMR Answer Sheet will be supplied by the Examination Centre Superintendent for answering the questions.

(ii) Use **Blue/Black Ink/ Ball Pen only**, to darken the appropriate circle in the OMR Answer Sheet.

(iii) Darken one circle deeply for each question in the OMR Answer Sheet, as faintly darkened circle might be rejected by the Optical Scanner.

(iv) Darkening of more than one circle shall be rejected by the scanner. **Over-writing, cutting, erasing or use of White Fluid is not allowed.**

(v) Before dealing with the question paper, fill-up the required information with Blue/Black Ball Pen correctly both in the Question Booklet and in the OMR Answer Sheet.

(vi) Do not fold the OMR Answer Sheet nor put any mark here and there to avoid rejection by the Optical Scanner.

(vii) Write Roll. No. carefully on the OMR Answer Sheet and darken the appropriate circle properly.

(viii) **Each question carries Four Marks while 1 mark shall be deducted for each incorrect response.**

(ix) **Use of Calculator is not allowed.**

(x) **No over-writing, cutting, erasing or use of white fluid is allowed.**

(xi) Rough work be done on the sheet(s) at the end.

(xii) **MOBILE TELEPHONES (EVEN ON SWITCH-OFF MODE) AND SUCH OTHER ELECTRONIC DEVICES ARE NOT ALLOWED INSIDE THE EXAMINATION HALL.**

(xiii) The question paper-booklet will be retained by the candidate after the entrance test is over.

Q1. What is Auger Electron?

a) Electron ejected from an atomic orbit because of internal conversion phenomenon

b) Electron ejected from an atomic orbit by energy released during an electron transition

c) Electron ejected from an atomic orbit as a consequence of an interaction with a photon

d) Electron ejected from orbit after absorbing a portion of a photon's energy during scatter

Answer: B

Q2. Which of the following wavelength could belong to a gamma ray?

a) 0.001nm

b) 0.1nm

c) 1nm

d) 10nm

Answer: A

Q3. Metastable state happens if daughter nucleus remains in exited state for:

a) >1 microsecond.

b) >1 nano second.

c) >1 femto seconds.

d) 10 nanoseconds.

Answer: A

Q4. Which is the right conversion?

a) 1Bq = 27pCi

b) 1 rad = 10 erg/gm

c) 1 Gy = 1000 rad

d) 1 mSv = 10 mR

Answer: A

Q5. Which is the correct statement?

a) Photo-electric effect is seen in low Z materials.

b) Compton scatter is more prominent in tissues with high water content.

c) In Rayleigh scattering, photons can cause electron emission.

d) Pair production is common in clinical imaging.

Answer: B

Q6. Quality control in well-counter consists of all except:

a) Chi-square test.

b) Energy calibration.

c) t-test.

d) Energy resolution.

Answer: C

Q7. Select the correct statement:

a) PET systems do not require collimation.

b) Timing acceptance window for PET imaging is ~20ns

c) RAMP filter attenuates high frequency noise.

d) Filtered back projection is better at addressing noise than iterative reconstruction.

Answer: A

Q8. All are reactor produced except:
a) 131-I
b) 133-Xe
c) 99-Mo
d) 82-Rb

Answer: D

Q9. Maximum 99mTc activity can be eluted after how many hours of last elution:
a) 6 hours
b) 23 hours
c) 36 hours
d) 12 hours

Answer: B

Q10. All are the emissions of the 201 Tl except
a) 175 keV gamma
b) 135 keV gamma
c) 69-83 keV x-rays
d) 167 keV gamma

Answer: A

Q11. 18F-Fluciclovine is
a) Amino-acid analogue.
b) Sympathomimetic.
c) Labelled antibiotic.
d) DAT imaging agent.

Answer: A

Q12. Which is incorrect:
a) Generator elute should have <0.15 microCi of 99-Mo per mCi of 99m-Tc.
b) Limulus amebocyte lysate clot test is used to test for sterility.
c) < 10ppm Aluminium ions in elute is safe.
d) >95% activity in elute should be inform of 99mTc-pertechnetate.

Answer: B

Q13. Which is incorrect regarding AERB dose limits:
a) <20mSV/yr (average over 5 years) for occupational exposure.
b) < 30 mSV in any given year for occupational exposure.
c) <1mSV/yr for public exposure.
d) <100mSv/year to the eye lens for occupational exposure.

Answer: D

Q14. Bone scan is not recommended for staging in which risk category of Prostate cancer?
a) High risk disease.
b) Intermediate risk disease.
c) Low risk disease.

d) It is recommended in all risk categories.

Answer: C

Q15. MDP has which bond?
a) P-O-P
b) P-C-P
c) P-P
d) P-C-O-P

Answer: B

Q16. Which staging system is used for osteonecrosis/AVN of the femoral head?
a) Garden classification.
b) Gardner classification.
c) Ficat and Arlet classification.
d) Delbet Classification.

Answer: C

Q17. Which femoral neck fracture type has highest risk for developing AVN?
a) Subcapital.
b) Transphyseal.
c) Transcervical.
d) Inter-trochanteric.

Answer: B

Q18. Reduced renal uptake may be seen in bone scan in all except:
a) Metastatic superscan.
b) Metabolic bone disease.
c) Delay in imaging.
d) Acute Tubular Necrosis.

Answer: D

Q19. All features may be seen in Osteoid Osteoma except:
a) Nidus.
b) Sclerosis.
c) Increased uptake in the nidus with increased but lower uptake in surrounding.
d) Reduced uptake in the nidus with increased uptake in the surrounding.

Answer: D

Q20. Which targeted therapy has been shown to improve overall survival in Prostate cancer patients?
a) 177Lu-PSMA.
b) 153Sm-EDTMP.
c) 223Ra
d) 89Sr

Answer: C

Q21. Which tracer would you use for radio-synovectomy in the small joints of the hand?
a) 186Re.
b) 169Er.
c) 90Y
d) 198Au

Answer: B

Q22. Which scoring system is used to assess pre-test probability of Pulmonary embolism?

a) Wells score.
b) PIOPED score.
c) Roger score.
d) Anderson Score.

Answer: A

Q23. Number of injected particles in 99mTc-MAA scan should be reduced in all conditions except:
a) Children.
b) Pregnancy.
c) Left to right cardiac shunts.
d) Pulmonary hypertension.

Answer: C

Q24. Which of the following criterion do not require acquisition of ventilation study?
a) PIOPED I
b) PIOPED II
c) Modified PIOPED II
d) PISAPED

Answer: D

Q25. Increased RAIU may be seen in all except:
a) Hashitoxicosis.
b) Graves' disease.
c) Struma Ovarii.
d) Toxic goiter.

Answer: C

Q26. How much radio-iodine activity should be delivered to achieve hypothyroid state in Graves' disease?
a) 10-50 microCi/gm
b) 50-200 microCi/gm
c) 200-500 microCi/gm
d) >500 microCi/gm

Answer: B

Q27. Re-treatment with radio-iodine may be considered after how many months of first radio-iodine therapy in Graves disease?
a) 3 months
b) 6 months
c) 9 months
d) 12 months

Answer: B

Q28. Which thyroid cancer variants are associated with favorable outcomes?
a) Hobnail variant PTC
b) Tall cell variant PTC
c) Follicular variant PTC
d) Columnar cell variant

Answer: C

Q29. Radioactive iodine therapy has been proven to improve disease free survival in which ATA risk categories?
a) High risk only.
b) Intermediate and high risk.
c) Intermediate risk only.

d) All risk categories.

Answer: A

Q30. What should be the initial TSH goal in high-risk thyroid cancer patients post total thyroidectomy and radioiodine ablation?

a) <0.1 mU/L
b) 0.1-0.5 mU/L
c) 0.5-2 mU/L
d) 10 mU/L

Answer: A

Q31. All can be considered as radio-iodine refractory differentiated thyroid cancers except:

a) Disease never concentrated radio-active iodine.
b) Radio-active iodine was concentrated in some lesions but not in others.
c) Metastatic disease progresses despite significant concentration of radio-active iodine.
d) All are correct.

Answer: D

Q32. All can be used for imaging parathyroid adenomas except:

a) 99mTc-Sestamibi
b) 18F-FDG
c) 11C-Methionine
d) 18F-Fluorocholine.

Answer: B

Q33. All these interventions can be clubbed with hepato-biliary scintigraphy, except:

a) Morphine sulfate.
b) Sinclaide infusion.
c) Fatty meal.
d) All of the above.

Answer: D

Q34. Which is the correct statement:

a) SIR-spheres are made up of glass.
b) Thera-spheres are made up of resin.
c) In cases with >10% pulmonary shunting, 90Y-theraspheres should not be used.
d) There is no impact of shunting on the injected dose of SIR-Spheres.

Answer: C

Q35. Radionuclide GI bleeding studies can detect bleeding rates of:

a) <0.1mL/min
b) 1mL/min
c) 10mL/min
d) 100mL/min

Answer: A

Q36. For a diagnosis of active bleeding in labelled RBC scintigraphy, all are true except:

a) Appearance of a new site of activity.

b) It increases with time.

c) It moves with time.

d) Movement of activity is not an essential feature.

Answer: D

Q37. The use of diuretic renography should be preferable delayed till

a) After 4weeks of age.

b) After 8 weeks of age.

c) After 12 weeks of age.

d) After 24 weeks of age.

Answer: A

Q38. In captopril renography, the type of curve seen:

a) Depends on the radiotracer used.

b) Does not depend on the radiotracer.

c) Both are true

d) None is true.

Answer: A

Q39. In a three-year-old child presenting with first episode of UTI and normal ultrasound findings:

a) DMSA scan should be obtained.

b) DMSA scan is not needed.

c) DMSA is only needed if MCU reveals any abnormality.

d) Should be followed up with ultrasound imaging only.

Answer: A

Q40. Which tracer can be used in imaging of Cardiac sarcoidosis?

a) 18F-FDG.

b) 68Ga-DOTANOC.

c) 82Rb

d) All of the above.

Answer: D

Q41. 18F-FDG imaging should be used in

a) Native valve endocarditis.

b) Prosthetic Valve infections.

c) It is equally efficacious in both.

d) High myocardial 18F-FDG uptake means it should not be used for valve related infections.

Answer: B

Q42. 68Ga-Pentixafor binds to:

a) CXC5

b) CXCR4

c) CCL5

d) CC5

Answer: B

Q43. If 18F-FDG activity within the target lesion was mildly higher than liver, what will be the Deauville Score?

a) II
b) III
c) IV
d) V

Answer: C

Q44. Which tracer can be used to image Glomus Jugulare?

a) 18F-FDG.
b) 68Ga-PSMA.
c) 68Ga-DOTANOC.
d) 11C-HED

Answer: C

Q45. Which radiotracer PET/CT would you prefer in a patient with NET and KI-67 of 30%?

a) 18F-FDG
b) 18F-FDOPA
c) 68Ga-DOTATATE
d) 68Ga-DOTANOC

Answer: A

Q46. In a patient receiving 177Lu-DOTATATE therapy, how do you achieve reno-protection?

a) Giving patient alkalizers.
b) Using positively charged amino-acids.
c) Using IV saline infusion with Furosemide.
d) All of the above.

Answer: B

Q47. Which among the following are serum markers for MTC?

a) Calcitonin.
b) CEA.
c) Both.
d) None.

Answer: C

Q48. DAT scan is used to visualize:

a) Pre-synaptic pathology.
b) Post-synaptic pathology.
c) Both.
d) None.

Answer: A

Q49. Degeneration in IPD progresses in:

a) Cranio-caudal direction.
b) Caudo-cranial direction.
c) Uniformly.
d) All are correct.

Answer: B

Q50. In myocardial perfusion imaging, Breast attenuation is seen in which region:

a) Anterior
b) Lateral
c) Septal
d) Inferior

Answer: A

Rough Page
