

Radionuclide & Radiopharmaceuticals

- 1. Generator & Reactors**
- 2. Cyclotrons & PET tracer**
- 3. Quality control**
- 4. Renal**
- 5. GIT**
- 6. CNS & Psychiatrics**
- 7. Tumor Diagnosis & Treatment**
- 8. Bones & joints**
- 9. Thyroid Disorder**
- 10. Lung disorder**
- 11. Cardiology**
- 12. RIA & Other assay**
- 13. Infection**
- 14. Miscellaneous**

Generator

Long question

1. Describe the Mo-99mTc generators available. What are the merits and demerits associated with them? Describe the principle on which daughter nuclides are separated from the parents.(25-1993)
2. Give an account four PET RN produced by parents-daughter generator system. Describe their physical characteristics, half life, Average energy of the daughter per disintegration & their potential in clinical applications. (25- 1991)

Short Question

1. Adv n Dis-adv of 99mTc generator systems(10-12/06)
2. Rhenium Generator(10-2005)
3. Transient equilibrium (15-1994)
4. Secular equilibrium (10-1995)
5. What is transient equilibrium & secular equilibrium? Give examples. (10- May 2005)
6. Rhenium Generator. (10- May 2005)
7. Principle of Radionuclide generators. Describe transient & secular equilibrium(10- Dec 2005)
8. Describe procedure of extraction of 99mTc from 99Mo generator supplied by BARC. Describe briefly the QC on 99mTc. (10- 1989)
9. Basic principle & essential features of a Nuclear generator(10- 1989)
10. Generator produced RN. (10- 2007)
11. Working of Nuclear reactor. (10- 2007)
12. Generators for producing RN. (15- 1991)

Cyclotron

Long question

1. Discuss the cyclotron & cyclotron produced radio-isotopes used for imaging- its merits and demerits.(25-1993)
2. Discuss the recent development in PET in particular reference to RPs.(25-1994)
3. Give an account four PET RN produced by parents-daughter generator system. Describe their physical characteristics, half life, Average energy of the daughter per disintegration & their potential in clinical applications. (25- 1991)

Short Question

1. Generator produced PET tracer & their application. Briefly mention about the basic principle of concentration of Radiotracer (10-12/06)
2. Gives an account for non –fluoridal PET RPs(10-12/06)
3. SPECT analogues of PET RPs(10-2005)
4. Discuss the role of 18F-FDG PET imaging in oncology. (15-1994)
5. Principle of Medical Cyclotron. (10-1995)
6. Positron emitter. (15-1996)
7. Clinical uses of positron emitters. (15-1996)
8. Cyclotron- produced generator systems. (10-1996)
9. Cyclotron(10-1997)
10. Radiotracer for PET (10- Dec 2005)
11. 18F-FDG (15- 2004)
12. Cyclotron produced RPs. (15- 2004)
13. Monitoring and preventive practices in a PET-cyclotron facility for radiation exposure. (10- 2007)
14. Production of 18FDG. (10- 2007)
15. Principle of PET imaging with FDG. (10- 2007)
16. Cyclotron produced RN. (15- 1990)
17. Cyclotrons (10- 1992)
- 18.

Quality control

Short Question

1. QC of RPs (10-12/06)
2. QC of RPs. (15-1995)
3. QC programme for RPcal lab. (15-1996)
4. Quality factors. (15-1997)
5. What are the QC parameters for any counting study with isotopes (10-May 2005)
6. Quality assurance of PET RPs (10- Dec 2005)
7. QC programme of RP lab (10- 2002)
8. General considerations in quality assurance of RPs. (10- 1989)
9. QC of RPs. (10- 2007)
10. QC programme foe RPs lab. (15- 1990)

Renal

Short Question

1. RPs in Kidney transplants(10-2005)
2. Discuss the utility of Tc-99m in Glucoheptonate in NM (15-1994)

GIT, Liver & GB disorder

Short Question

1. RPs for liver imaging (10-12/06)
2. Pharmacodynamics of Hepato-biliary RPs. (15-1995)
3. Compare properties of phytate & sulphur colloid. (10- Dec 2005)
4. Radio-labelled colloid & its uses. (15- 2004)
5. RN investigations of GI bleeding (15- 1992)

CNS & Psychiatrics

Short Question

1. RPs for SPECT brain imaging(10-12/06)
2. RPs for regional cerebral blood flow studies(15-1994)
3. Enumerate various RPs for SPECT brain studies indicating their clinical utility. (15-1994)
4. Newer brain scanning agents. . (15-1996)

Tumor Diagnosis & Treatment

Short Question

1. Role of radio labelled peptides in diagnosis & therapy(10-12/06)
2. RPs in diagnosis & FU of neuro-endocrine disorders. (10-12/06)
3. Tumour imaging agents(10-2005)
4. RPs used for localization Tumors. (10-1994)
5. Tumor seeking RPs. (15-1996)
6. Tumor seeking RPs. (15-1997)
7. Evaluate the uses of ^{67}Ga in clinical medicine. Give a brief account of its production in India. (25-1997)
8. Tumor imaging agents (10- May 2005)
9. RPs for infection/inflammation imaging (10- Dec 2005)
10. Tumor seeking RPs in routine Gamma camera imaging (10- Dec 2005)
11. RN used in therapy of tumor. (10- 2007)

Bones & joints

Short Question

1. characteristics of radionuclides for bone palliation(10-12/06)
2. Value of ^{32}P in NM. (15-1996)
3. ^{32}P in NM(10- Dec 2005)

Thyroid disorder

Short Question

1. Work-up, treatment of thyrotoxicosis pregnant lady. (10-12/06)
2. Precaution drug radioiodination. (10-1995)
3. Methods of radio-iodination merits & dis adv of each methods(10-1997)
4. Thyroid uptake study with reference to hyperthyroidism (10- Dec 2005)
5. Iodine 123(15- 1991)
- 6.

1. Lung Disorder

Short Question

1. Discuss the Adv & limitations of various RPs used in Lung ventilation imaging (15-1994)
2. The technique of aerosol ventilation technique (15- 1992)
3. Radio-respirometer (15- 1993)

2. Heart Disorder

Short Question

13. Methods & usefulness of in-vivo labeling of RBCs(10-12/06)
14. Tracer in use for MPI(10-12/06)
15. RPs for Cardiac metabolism assessment(10-2005)
16. Newer RPs in Nuclear cardiology work-up. (15-1995)
17. RPs in myocardial imaging. (15-1996)
18. Myocardial imaging agents. (15-1997)
19. RPs for cardiac metabolism assessment (10- May 2005)
20. Preparation of ^{99m}Tc-Sestamibi. (10- 2007)

RIA & Other assay

Short Question

3. Non isotopic assay labels(10-2005)
4. QC in Radio-immunoassay. (10-1994)
5. QC of radio-immunoassay (10-1995)
6. TSH estimation by IRMA(15-1995)
7. TSH(IRMA) (10-1995)
8. ELISA. (15-1996)
9. Principles of RIA & IRMA. (10-1996)
10. Two sites IRMA. (15-1996)
11. Radio-receptor assay. (10-1996)
12. Non-specific assay labels (10- May 2005)
13. Statistical error in radioactive counting. (10- Dec 2005)
14. ELISA (10- 2002)
15. TSH estimation by IRMA method (10- 2002)
16. Principles of RIA. What are the variants of RIA? Merits/demerits of RIA. RIA Vs ELISA. (10- 1989)
17. ELISA & RIA- Merits & demerits. (15- 1990)
18. T3 Toxicosis. (15- 1990)
19. RIA(15- 1992)
20. Instrument QC in RIA (15- 1992)
21. Discuss the principle of RIA & its variants. What QC methods will you follow periodically to assess the reliability of RIA kit? (15- 1993)
22. Discuss briefly the methods available for measurement of (15- 1993)
 - a. TSH
 - b. Free T4
23. How would you interpret these result in the clinical practice (15- 1993)

Infection & infection Agents

Short Question

24. Infection imaging Agents(10-2005)
25. Leucocytes labelling (15-1994)
26. Labelling of Leucocytes. (15-1997)
27. Infection imaging agents (10- May 2005)
28. RN approach to case of PUO (15- 1992)

Miscellaneous

29. Various RPs in emergency room with indication(10-2005)
30. Discuss the role of radionuclide technique in the development & testing of new drugs in medicine.(25-1994)
31. Mechanisms of localization of radioactive imaging agents (10-1994)
32. Methods of Radio-iodination of proteins. (10-1994)
33. Describe the mechanism of localization of RPs used for hepatic studies & discuss the indication of hepatic imaging. (25-1996)
34. RPs for targeting recognition sites. (10-1996)
35. Tritium labeling. (10-1996)
36. RPs for imaging hypoxia. (10-1996)
37. Discuss the mechanism of RPs localizations & variabilities due to pharmacological interventions. (25-1997)
38. Various RPs used in emergency room with indication(10- May 2005)
39. Intervention in NM (10- May 2005)
40. Mechanism of localization RPs (10- Dec 2005)
41. RPs helpful in the evaluation of patients of road traffic accidents. (10- Dec 2005)
42. Methods of RN production (10- Dec 2005)
43. Methods of Cr-51 labeling of RBC & causes of poor labeling. (10- Dec 2005)

44. What is the ideal RPs? Discuss the various QC measures used in RP lab? (25-2004)
45. Drugs & RPs distribution(15- 2004)
46. RPs for thrombus imaging(15- 2004)
47. Discuss the role of nuclear technique in the evaluation of a diabetic (25- 2004)
48. Radio-immunoscintigraphy (15- 2004)
49. Mechanism of localization of RPs. (10- 2007)
50. Physical properties of ^{99m}Tc . (10- 2007)
51. Iodination of proteins. (10- 2007)
52. Labelling methods of RBCs. (10- 2007)
53. Radioactive tracer & indicators. (10- 1990)
54. Design of Hospital Radio pharmacy (15- 1992)
55. Discuss the QC of various technetiums labelled RPs. Illustrate with examples. (25- 1992)
56. Discuss the different methods of radio-iodination of proteins, peptides & haptans. Give critical comments on selection of suitable isotope for labelling. Iodination damage, stability of iodinated compounds & radiation safety measures you would take during iodination. (25- 1993)
57. Bio-distribution of RPs(15- 1993)
58. Methods & usefulness of in-vivo labeling of RBCs(10-12/06)