

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

THIRD YEAR B.Sc. N.M.T. DEGREE EXAMINATION – DECEMBER 2005**SUBJECT: IMMUNOLOGY, RADIOIMMUNOASSAY AND MEDICAL STATISTICS**

Thursday, December 08, 2005

Time: 3 Hrs.

Max. Marks: 80

- ✍ Answer ALL the questions.
- ✍ Draw diagrams and flow charts wherever appropriate.
- ✍ Use two separate answer books for section 'A' & section 'B'.

SECTION – 'A': IMMUNOLOGY, RADIOIMMUNOASSAY: 50 MARKS1. Write short notes on any **FOUR**:

(5×4 = 20 marks)

- 1A. Basis of specificity in immunity.
- 1B. Types of Immune response.
- 1C. Precipitation Techniques.
- 1D. Complement fixation test.
- 1E. Migration inhibition test.

2. Write short notes on any **SIX**:

(5×6 = 30 marks)

- 2A. Pipettes used in RIA.
- 2B. Equipment and glassware in RIA.
- 2C. Ligand.
- 2D. Binder.
- 2E. Coated tubes.
- 2F. Non specific binding.
- 2G. Standards in RIA.

SECTION – 'B': MEDICAL STATISTICS: 30 MARKS

4. Answer the following:

(5×2 = 10 marks)

- 4A. How can we divide the total time for counting background counts and gross sample counts so as to have minimum error in the net count rate?
- 4B. Write down the general formula for the propagation of errors and derive the formula for the error propagation in multiplication of two data.

5. Enumerate various scales of measurements with brief description of each one of them.

(5 marks)

6. Describe systematic random sampling with its merits and demerits.

(5 marks)

7. Briefly write about various measures of location.

(5 marks)

8. The ages at time of onset of a certain disease is approximately normally distributed with mean 11.5 years and standard deviation 2.5 years. A child has come down with the disease. What is the probability that the child is:

8A. Between ages 11.5 and 14 years

8B. Less than 9 years.

(5 marks)



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THIRD YEAR B.Sc. N.M.T. DEGREE EXAMINATION – DECEMBER 2005**SUBJECT: NUCLEAR MEDICINE INSTRUMENTATION**

Friday, December 09, 2005

Time: 3 Hrs.

Max. Marks: 80

1. Describe the various applications of SPECT study. List the advantages of MRI study over SPECT study.

(20 marks)
2. A patient for brain SPECT study is in a critical condition and co-operation can be least expected, how will you set the acquisition parameters to get the best data? Briefly describe the various acquisitions parameters to be set for the SPECT study.

(20 marks)
3. What do you mean by “Partial Volume Effect”? Which studies are affected due to this effect? How will you correct the same?

(20 marks)
4. Write short notes on:
 - 4A. Dead time
 - 4B. Spatial resolution
 - 4C. Nitrogen – 13
 - 4D. Ultrasonography.

(5×4 = 20 marks)

