

[LJ 1016]

OCTOBER 2016

Sub. Code: 4012

**M.Sc. MEDICAL PHYSICS DEGREE EXAMS
FIRST YEAR
PAPER II – RADIOLOGICAL MATHEMATICS**

Q.P. Code : 284012

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) A radiologist has to diagnose a cancer patient from a list of 50 patients, 20 of them women and 30 men and 10 of them were found cancer and other were not. 15 of them urban patients and the remaining were not urban. What is the probability of the radiologist diagnosing a urban woman cancer patient?
b) Find the mean and variance for the following Systolic Blood Pressure of the cancer patients.
108 107 110 125 120 115 121 118 123 113.
2. Find the regression equation of Y on X for the following data and find the expected blood pressure of a person who is 49 years old.
Ages (X): 52 63 45 36 72 65 47 25
Blood Pressure (Y): 62 53 51 25 79 43 60 33

II. Write notes on:

(10 x 6 = 60)

1. Find the positive root of $x^4 - x - 10$ correct to three decimal places using Newton Raphson Method.
2. Law of large numbers.
3. Line symmetry and Mirror symmetry.
4. Frequency distribution.
5. Trapezoidal rule.
6. Properties of 't' distribution.
7. Probability density function.
8. Types of error.
9. Efficiency.
10. Picard's method.
