

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321]

MARCH 2021

Sub. Code: 4012

(OCTOBER 2020 EXAM SESSION)

M.Sc. MEDICAL PHYSICS

FIRST YEAR (From 2010-2011 onwards)

PAPER II – RADIOLOGICAL MATHEMATICS

Q.P. Code : 284012

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Find the regression equation Y on X for the following data.

Urine Albumin (mm/dl) X	9	8	10	20	22	24	28
Creatinine(mm/dl) Y	0.7	0.9	1.5	1.8	1	1.2	1.6

2. Find the standard deviation and variance for the following plot of Dose Responsive Curve in a bioassay.

Response	32	58	94	120	150	174	213
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II. Write Short Notes on:

(10x6 = 60)

1. Compare and contrast between correlation and regression.
2. Properties of 't' test.
3. Improved Euler's formula.
4. Trapezoidal rule.
5. Conventional planner imaging.
6. Explain errors and types of errors.
7. Law of Weak Numbers.
8. Using Taylor's method solve  $\frac{dy}{dx} = 1 + xy$  for  $y_0 = 0$ . Find (i)  $y(0,1)$  (ii)  $y(0,2)$ .
9. Show  $\frac{dy}{dx} = x^2 + y^2$  with  $y_0 = 1$  by using Picard's method of successive approximation.
10. Advantages of MATLAB.

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