Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

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Ph.D Course work

RESEARCH METHODOLOGY (MATHEMATICS)

Subject Code : MPHM–101

M.Code : 78001

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT question.
2. Each question carry TWENTY marks.

1. a) Differentiate between Research Methods and Methodology.

   b) Explain research process in a flow chart.

2. a) Write the following polynomial in LATEX code.

   a. $\int \log(1+x)$

   b. $\left(\frac{1+X}{2+Y^2}\right)^2$

   c. $\sqrt[x]{1+a^2}$

   d. $\int_0^{\pi} \sqrt{\sin\theta \, d\theta}$

   b) Write the steps to add cross references in LATEX.

3. Write short note on :

   a) Curve fitting toolbox of MATLAB.

   b) Installation process of MATHEMATICA.

4. a) What are the basic of importing and exporting data in origin?

   b) Write an example code for plotting a 2D graph in origin.

5. a) What is standard error? Describe utility of standard error.

   b) The area of the cross section of a rod is desired up to 0.2%. How accurately should the diameter be measured?

6. a) In the following estimation of regression equation of two variable X and Y results were obtained as follows :

$\Sigma X = 900,$
$\Sigma Y = 700, n = 10,$
$\Sigma x^2 = 6360, \Sigma y^2 = 2860,$
$\Sigma xy = 3900$ where X and Y are derivations from respective means. Obtain the two regression equations.

b) Calculate the mean for the following frequency distribution :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	6	5	8	15	7	6	3

7. a) Differentiate between simple, partial and multiple correlation analysis.

b) Describe in detail multiple discriminant analysis.

8. a) Write the following polynomial in LATEX code :

$3x^3 + 4x^2 + 5x + 6 = 0$

b) Write an example code to multiply two 3 × 3 matrices in MATLAB.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.