

RAGHUNATHPUR COLLEGE
UG 3rd Semester Internal Examination 2020
MATHEMATICS

Course Code: BMTMGEHT10

Course Title: BASIC HIGHER MATHEMATICS-I

Full Marks: 10

Time: 45 Minutes

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Notations and symbols have their usual meanings.

Answer any two questions given below :

2×5=10

1. Apply Descartes' rule of signs to ascertain the minimum number of complex roots of the equation

$$x^7 - 3x^3 + x^2 = 0$$

2. Find the n-th differential co-efficient of

$$e^{ax} \cos^2 x \sin x$$

3. Compute the adjoint and the inverse of the matrix

$$\begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$

4. Find $div \vec{F}$ and $curl \vec{F}$ where $\vec{F} = grad(x^3 + y^3 + z^3 - 3xyz)$

.....END.....