[Total No. of Questions: 8] *[Total No. of Printed Pages : 2]*

Enroll No…….

BB.-106

B.Sc. BEd. - I Semester (Reg. / Ex.)

Examination, March-2021

Elective-III Mathematic

Time: Three Hours

Maximum Marks:60

Note: Attempt any five questions from section A & Section-B Separately.

Section -A **(5×6=30)**

Q.1 Find the inverse of the matrix

$$A = \begin{pmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{pmatrix}$$

Q.2 If the sum of two roots is equal to third root of the equation.

$x^3 + px^2 + q\,x + 1 = 0$ then prove that $p^3 - 4pq - 8r = O$

where p , q & r are roots f the equation.

Q.3 Prove that

$\log \frac{\sin(x+iy)}{\sin(x-iy)} = 2\tan^{-1}(\text{Cot x tan hy})$

Q.4 If $u = t^2 i - tj + (2t + 1)k$ and $v = (2t - 3)i + j - tk$

then find the value of

$\frac{d}{dr}$ (u.v) at t = 1

Q.5 Explain reciprocal vector.

Q.6 Solve following equation using matrix method.

$x_1 - x_2 + x_3 = 2$

$3x_1 - x_2 + 2x_3 = -6$

$3x_1 - x_2 + x_3 = -18$

Q.7 Define limit. write basic properties of limit.

Q.8 Explain Eigen value and Eigen vector.

Section -B **(5×6=30)**

Q.1 Explain symmetric & skew symmetric matrix with example.

Q.2 Explain De-moivre's theorem.

Q.3 How can we evaluate π by Gregory's series.

Q.4 Find the n^{th} differential coefficient of

$\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$

Q.5 Show that vectors a , b and c are coplanar if a - b , b - c and c-d coplanar.

Q.6 State and prove cayley Hamilton theorem.

Q.7 Express $\sin\theta$ in a series of sines of θ.

Q.8 Explain Hyperbolic function.