

BE-401 (GS)
B.E. IV Semester Examination, June 2020
Grading System (GS)
Mathematics - III
(Common for all Branches)
Time : Three Hours

Maximum Marks :70

Note: i) Attempt any five questions out of eight questions.

ii) All questions carry equal marks.

1. Test the analyticity of the function $f(z) = 2xy + i(x^2 - y^2)$.
2. Solve by Gauss-Seidel method the equations are $54x + y + z = 110$, $2x + 15y + 6z = 72$, $-x + 6y + 27z = 85$.
3. Using Newton-Raphson method find a real root of the equation $x \log_{10}^x = 1.2$ correct to four decimal places.
4. Using Newton's iteration method, find the real root of $x \log_{10} x = 1.2$ correct to three decimal place.
5. Evaluate $\int_0^1 \frac{dx}{1+x}$ by simpson's 1/3 rule and 3/8 rule.
6. Use Newton's forward interpolation formula to find the polynomial that passes through (0, -1), (1, 1), (2, 1) and (3, -2).
7. Apply R.K. method find an approximate value of y when $x=0.1$, given that $\frac{dy}{dx} = x + y$ and $y=1$, when $x=0$.

OR

Use Runge kutta method of fourth order to solve:

$$\frac{dy}{dx} = xy \text{ for } x = 1.2$$

Initially $x = 1$, $y = 2$ (take $h = 0.1$)

8. Find mean and variance of Poisson distribution.

OR

A coin is tossed 4 times, what is the probability to getting

- i) two heads
- ii) at least two heads
