MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BS-M301 Mathematics III

UPID : 003465

Time Allotted : 3 Hours

Full Marks :70

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following :

[1 x 10 = 10]

(I)   The probability that at least one of the events Q and R occur is 0.6. If Q and R have probability of occurring together as 0.2, then P(Q) + P(R) is _____ .

(II)   When the Mean of a number is 18, what is the Mean of the sampling distribution?

(III)   Find the differential equation by eliminating the constant , xy = c.

(IV)   A problem in mathematics is given to three students A, B and C. If the probability of A solving the problem is 1/2 and B not solving it is 1/4. The whole probability of the problem being solved is 63/64 .then what is the probability of solving it?

(V)   Find the mode of the call received on 7 consecutive day 11,13,13,17,19,23,25.

(VI)   The partial differential equation pq=4z is _____ .

(VII)   If P(E) = 0.07, then what is the probability of 'not E'?

(VIII)   If P (1) = P (2) in Poisson's distribution, find the value of mean.

(IX)   The partial differential equation z= px+qy+f(p, q) is known as _____ .

(X)   A dice is thrown in the air. The probability of getting odd numbers is_____ .

(XI)   If K is the Mean of Poisson distribution, then the variance is given by_____ .

(XII)   Iterative method of solving non-linear equations is_____ .

Group-B (Short Answer Type Question)

Answer *any three* of the following :

[5 x 3 = 15]

2.   Solve the equation : yp-log q = 2xy   [5]

3.   The integers x and y are chosen at random with replacement from nine natural numbers 1,2,......,8,9. Find the probability that (x^2-y^2) is divisible by 2   [5]

4.   The mean and standard deviation of marks of 70 students were found to be 65 and 5.2 respectively. Later it was detected that the marks of one student was wrongly recorded as 85 instead of 58. Obtain the correct s.d.   [5]

5.   Solve (r+5s+6t)= 1/(y-2x)   [5]

6.   Following is a frequencies distribution lacking two class frequency. Find them if the mean is 7.74.   [5]

Value	3-5	5-7	7-9	9-11	11-13	Total
Frequency	32	-	57	-	25	200

Group-C (Long Answer Type Question)

Answer *any three* of the following :

[15 x 3 = 45]

7.   (a) A random variable X is exponentially distributed with p.d.f   [5]

$$f(x) = 1/40\ e^{(-x)/40}, x>0$$
$$= 0 , x \leq 0$$

Find: P(X≤20),

(b) find P(32≤X≤48),   [5]

(c) find P(X≥25).   [5]

8.   If X is normal with mean 27 and variable 16, what distributions do -X, 3X, 5X-2 have?   [15]

9.   Solve : (t - r sec⁴ y) = 2q tan y   [15]

10. Find the type, transform to normal form , and solve $u_{xy} - u_{yy} = 0$. [15]

11. Solve $pt - qs = q^3$ [15]

*** END OF PAPER ***