Reg. No. : | | | | | | | | | | |

Question Paper Code: 93025

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Civil Engineering

19UMA325 - PROBABILITY, STATISTICS AND TRANSFORM TECHNIQUES

(Regulation 2019)

(Statistical tables are may be permitted)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Probability of an impossible event is CO1- U

   (a) 1 (b) 10 (c) 0 (d) 100

2. Probability of sure event is equal to CO1- U

   (a)0 (b)1 (c) 2 (d) 10

3. The degrees of freedom in t-tests is CO2- R

   (a) n-1 (b) n-2 (c) n-3 d) n-4

4. Large sample size is CO2- U

   a) 30 b) >30 c) <30 d) none of these

5. The root mean square value of f(x) in (0, l) is --------- CO2- U

   (a) l (b) 1/2 (c) $l/\sqrt{3}$ (d) $2l$

6. cos x is a periodic function with period ---------- CO3- U

   (a) π (b) 2π (c) $\pi/3$ (d) $2\pi/3$

7. Convolution theorem on Fourier Transform is F[f(x)*g(x)]= _____ CO4- U

   (a) F(s).G(s) (b) f(s).g(s) (c) F(s)*G(s) (d) f(s)*g(s)

8. If $F[f(x)] = f(s)$ then the function is said to be _____ CO4- R

(a) Odd (b) Even (c) Self Reciprocal (d) Periodic

9. The Z transform of a unit step function is _____. CO5-R

(a) $\log(\frac{z}{z+1})$ (b) $\frac{z}{z+1}$ (c) $\log(\frac{z}{z-1}$ (d) $\frac{z}{z-1}$

10. Evaluate $Z(\frac{\mathbf{1}}{\mathbf{n!}})$ CO5-R

(a) $\mathbf{e}^{-1/z}$ (b) $\mathbf{e}^{1/z}$ (c) $\mathbf{e}^{2z}$ (d) $\mathbf{e}^{1/z} - 2$

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Define Binomial distribution. Find the moment generating function and Hence find mean and variance. CO1- App (8)

12. Five coins are tossed 256 times. The number of heads observed is given below. Examine if the coins are unbiased, by employing χ^2 goodness of fit. CO2- App (8)

No of Heads	0	1	2	3	4	5
Frequency	5	35	75	84	45	12

13. Find the Fourier series of $f(x) = x^2$ *in* $-\pi < x < \pi$. CO3- Ana (8)

14. Evaluate $\int_0^\infty \frac{dx}{(x^2+a^2)(x^2+b^2)}$ CO4- App (8)

15. Evaluate $Z[\cos n\theta]$ *and* $Z[\sin n\theta]$ CO5- U (8)