

Code No: F3104

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**MCA I Semester Examinations October/ November - 2020**
**PROBABILITY AND STATISTICS**
**Time: 2 Hours**
**Max. Marks: 60**

**Answer any five questions**  
**All questions carry equal marks**

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1. If  $P(A)=1/2$ ,  $P(B)=1/5$ ,  $P(A \cap B)=1/10$ . Find  
 a)  $P(A \cup B)$       b)  $P(A \cap B^c)$       c)  $P(A^c \cap B^c)$  [12]
2. If  $f(x) = K e^{-|x|}$  is p.d.f in  $-\infty \leq x \leq \infty$ , find  
 a)  $K$       b) the mean      c) Variance. [12]
3. Given that  $2P(x=0)=p(x=2)$  for a Poisson variate  $X$ . Find the Probability that  
 a)  $x \leq 3$       b)  $2 < x \leq 5$  [12]
4. A random sample of size 225 is taken from an infinite population having the mean 55 and the Standard deviation 15. What is the probability that sample mean will be between 48 and 82. [12]
- 5.a) A Random sample of 100 items is taken from a population whose standard deviation is 5.1 the mean of the sample is 21.6. Construct 95% confidence interval for the mean.  
 b) It is claimed that a random sample of 100 tyres with a mean life of 15269 is drawn from a population of tyres which has a mean life of 15200 km and a standard deviation of 1248 km. Test the validity of the claim at 95% level. [12]
6. A sample of 900 members has a mean 3.4 cms and S.D 2.81 cms another sample of 500 members has a mean 4.2 cms and S.D 2.1 cms. Test the difference between the means at 95% level. [12]
7. Five unbiased dice were thrown 96 times and the number of times 4 or 5 or 6 was obtained is given below.

No. of dice showing 4 or 5 or 6	0	1	2	3	4	5
Frequency	1	10	24	35	18	8

Fit a suitable distribution and test for the goodness of fit. [12]

8. If  $\sigma_x = \sigma_y = \sigma$ , if  $\tan^{-1} \frac{4}{3}$  is the angle between the two Regression lines, find the correlation coefficient. [12]

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