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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
MCA I Year I Semester Supplementary Examinations Nov/Dec 2019
PROBABILITY AND STATISTICS

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 Two dice are thrown. Let X assign to each point (a,b) in S the maximum of its S numbers i.e, $X(a,b) = \max(a,b)$. Find the probability distribution. X is a random variable with $X(s) = \{1,2,3,4,5,6\}$. Also find the mean and variance of the distribution. 12 M

OR

- 2 The diameter of an electric cable say X is assumed to be a continuous random variable 12 M
with p.d.f. of $f(x) = \begin{cases} kx(1-x^2), & 0 \leq x \leq 1 \\ 0, & \text{elsewhere} \end{cases}$.
Find the value of k and $P(0 \leq x \leq 1/2)$, $P(x \geq 1/4)$.

UNIT-II

- 3 a Ten coins are thrown simultaneously. Find the probability of getting at least 7M
(i) seven heads (ii) six heads.
b If 3 of 20 tyres are defective and 4 of them are randomly chosen for inspection, 5M
what is the probability that only one of the defective tyres will be included?

OR

- 4 Find the mean and variance of a Normal distribution in which 31% of items are under 12 M
45 and 8% are over 63.

UNIT-III

- 5 a A sample of 900 members has a mean of 3.4 cms and S.D 2.61 cms. Is the sample 6M
from a large population of mean 3.25 cm and S.D 2.61 cms. If the population is normal and its mean is unknown find the 95% fiducial limits of true mean.
b In a big city 325 men out of 600 men were found to be smokers. Does this 6M
information support the conclusion that majority of men in this city are smokers?

OR

- 6 Producer of gutkha claims that the nicotine content in his gutkha on the average is 12 M
1.83mg. Can this claim accepted if a random sample of 8 gutkha of this type have the nicotine contents of 2.0, 1.7, 2.1, 1.9, 2.2, 2.1, 2.0, 1.6 mg's? Use a 0.05 level of significance.

UNIT-IV

- 7 A manager of a merchandizing firm wishes to test whether its three salesmen A, B, C 12 M
tend to make sales of the same size or whether they differ in their selling abilities. During a week there have been 14 sale calls; A made 5 calls, B made 4 calls and C made 5 calls. Following are the weekly sales record (in Rs.) of three salesmen:

A	500	400	700	800	600
B	300	700	400	600	-
C	500	300	500	400	300

Perform the analysis of variance and draw your conclusion.

OR

- 8 a Define R.B.D and L.S.D. 5M
b Describe briefly the technique of ANOVA for Two-way classification. 7M

UNIT-V

- 9 The table below gives the sample means and ranges for ten samples, each of size 5. **12 M**
Construct the control charts for mean and range and test whether the process is control or not.

Mean (\bar{x})	4.98	4.92	5.02	4.98	4.98	5.08	5.04	4.95	4.95	4.92
Range (R)	0.3	0.2	0.4	0.1	0.4	0.2	0.7	0.4	0.4	0.5

OR

- 10 **a** Write the constructions of mean, range, p and c –charts. **7M**
b Write the causes of variations. **5M**

*** END ***