Total No. of Questions : 4]

SEAT No. :

PD-964

[Total No. of Pages : 2

[6439]-311
T.Y.B.Com.
365(F) : BUSINESS STATISTICS - II
(2019 Pattern) (Semester - VI)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and statistical table is allowed.***
4) ***Symbols and abbreviations have their usual meaning.***

Q1) A) Choose the correct alternative of the following (any five) : **[5 × 1 = 5]**

i) If $X \rightarrow N(100,9)$ then standard deviation of r.V. X is _____
   a) 100 b) 9
   c) 3 d) 81

ii) If $X \rightarrow N(0,1)$ then $P(X \leq 0) = P(X \geq 0) = ?$
   a) 1 b) 0
   c) 0.25 d) 0.5

iii) The hypothesis of no difference is called as _____ hypothesis.
   a) One sided b) Two sided
   c) Null d) Alternative

iv) To test $H_0 : P = 0.5$ against $H_1 : P \neq 0.5$, then the critical region is ____
   a) Left tailed b) Right tailed
   c) Two sided d) Both a & b

v) Simple random sampling is used when the population is _____
   a) Discrete b) Continuous
   c) Homogeneous d) Hetrogeneous

vi) Analysis of variance is a statistical method of comparing the _____ of several populations.
   a) Means b) Variances
   c) Proportions d) Standard Deviations

B) State whether the following statements are true or false. (Any five) [5 × 1 = 5]

i) For normal distribution mean = median = mode.
ii) Shape of normal probability carve is exactly symmetrical bell shaped.
iii) Level of significance can not be made zero.
iv) Null hypothesis may be one sided left or right tailed.
v) Statistic is random variable and parameter is constant.
vi) ANOVA is the preferred method for finding differences among several population proportions.

P.T.O.

Q2) Write Short notes (Any two) : **[2 × 5 = 10]**

a) Define : critical Region, Level of significance p-value.

b) Simple random sampling with and without replacement.

c) Analysis of variance (ANOVA).

d) Chi-square test for goodness of fit.

Q3) Attempt the following :

a) If $X \rightarrow N(0,1)$ then find $P(X \leq 0)$, $P(X \geq 0)$, $P(X \geq 1)$, $P(X \leq -1)$, $P(-1 \leq X \leq 1)$, $P(|X| \leq 1)$, $P(|X| \geq 1)$, mean, median and mode of r.v.x. **[5]**

b) From a locality of 200 persons were randomly selected and the information regarding computer literacy was collected. The result is as follows : **[5]**

	Computer Literate	Computer illiterate
Male	20	80
Female	30	70

Test at 5% level of significance whether computer literacy depends on gender?

c) Fill in the blanks of the following ANOVA table marked "-". **[5]**

Source of variation	Degrees of freedom	Sum of squares	mean sum of squares	Variance Ratio
Between shifts	2	41.74	-	-
Between workers	4	-	-	-
Error	-	106.79	-	
Total	14	496.96		

Q4) Attempt the following : **[5]**

a) Define the terms : Null hypothesis,
Alternative hypothesis,
Critical Region,
Level of significance,
P-value

b) In a population of size 5 the values are 2,3,6,8,11. Draw all possible sample of site 2 using SRSWOR. verify that sample mean is an unbiased estimator of population mean. **[5]**

c) The hours of sleep for 10 patients before and after giving a new drug was recorded. **[5]**

Hours of Sleep (Before)	6	5	7	6	5	6	7	6	6.5	6
Hours of Sleep (After)	7	6	8	7.5	7	6.5	8	7.5	7.5	7

Test at 5% level of significance whether there is a significant difference in the averages hours of sleep.