Total No. of Questions : 4]

SEAT No. :

PE-1115

[Total No. of Pages : 3

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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 $X \rightarrow N(0,1)$, then $P(X\alpha 0) = P(X>0)$ =?

a) 1 b) 0

c) 0.5 d) = 0.75

ii) The hypothesis of the no difference is called as _____

a) One sided hypothesis b) Two sided hypothesis

c) Null hypothesis d) Alternative hypothesis

ii) Stratified sampling is used when the population is _____

a) Too small b) Too large

c) Hetrogeneous d) Homogeneous

iv) Testing $H_0: \mu = 100$ against $H_1: \mu \neq 100$ is a _____

a) One sided left tailed test b) One sided right tailed test

c) Two sided test d) Both a and b

v) Lottery method is an example of _____ sampling.

a) SRS b) Stratified

c) Systematic d) Two stage

vi) If $X \rightarrow N(30,9)$ then mode of X _____

a) 3 b) 9

c) 21 d) 30

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

i) Type I error is rejecting H_0 when it is true.
ii) Type II error is accepting H_0 when it is false.
iii) For a certain normal distribution, we have mean > median > mode.
iv) Large sample tests are called as exact test.
v) ANOVA is used to compare two or more qualitative variables.
vi) In simple random sampling method, each unit of the population has an equal chance of being included in the sample.

Q2) **Write short notes (any two) :** **[2 × 5 = 10]**

a) Simple random sampling (SRS).
b) Systematic sampling.
c) Analysis of variance (ANOVA)
d) Chi-square test for goodness of fit.

Q3) **Attempt the following :**

a) If $X \rightarrow N(100, 25)$ then final **[5]**
$P(X \leq 100)$, $P(X \geq 100)$, $P(X \leq 95)$,
$P(X \geq 105)$, $P(95 \leq X \leq 105)$,

b) A random sample of 90 adults is classified according to gender and the no. of hours they watch television during a week :

Hours spend in Watching TV	Gender	
	Male	Female
Over 15 Hours	15	29
Below 15 Hours	27	19

Examine whether the time spent watching television is independent of whether the viewer is male or female? Use 5% level of significance. **[5]**

c) Fill in the blanks of the following ANOVA table :

Source of variation	Degress of freedom	Sum of squares	Mean sum of squares	Variance Ratio
Between Salesman	4	45	-	-
Between Months	3	91	-	-
Error	8	80	-	-
Total	15	216		

Test the homogeneity of machine types and workers. Use 5% level of significance. **[5]**

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Q4) Attempt the following :

a) Explain with an illustration : **[5]**

Types I and II Error.

b) In a population of size 5 the values are 4,3,5,7,10. Draw all possible sample of site 3 using SRSWOR. Verify that sample mean is an unbiased estimator of population mean. **[5]**

c) On the basis of the following data can we say that there is significant difference in average reading rate of boys and girls. Use 5% level of significance. **[5]**

Gender	Sample site	Average reading time	Variance
Boys	100	191	450
Girls	100	206	450



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