Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Management Studies

End Sem Examination Dec 2024

MS3CO43 Quantitative Techniques

Programme: BBA Branch/Specialisation: Management

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	The method used to compute average or central value of the collected data is considered as- (a) Measure of positive skewness (b) Measure of negative skewness (c) Measure of central tendency (d) None of these	**1**	01	01	04	
	ii.	The measure of dispersion can never be- (a) Zero (b) Positive (c) Negative (d) None of these	**1**	01	01	04	
	iii.	If an event A is impossible then P(A) is, here P is probability- (a) 0 (b) 0.5 (c) 1 (d) None of these	**1**	01	02	04	
	iv.	The value of ${}^{10}C_3$ is, C represents combination- (a)100 (b) 120 (c) 10 (d) None of these	**1**	01	02	04	
	v.	For Binomial distribution mean is 6, number of trials is 10, then probability of success is- (a) $\frac{3}{8}$ (b) $\frac{3}{5}$ (c) $\frac{3}{4}$ (d) None of these	**1**	01	03	04	
	vi.	For normal distribution curve is bell shaped and symmetrical about the line (a) $x = \mu$ (b) $x = y$ (c) $y = 0$ (d) None of these	**1**	01	03	01	

P.T.O.

vii. Which is not true for the mean of the sampling distribution? **1** 01 04 04
(a) It is the mean of the statistic for all of the samples in the distribution.
(b) It is the same as the population parameter
(c) It depends on the sample size
(d) None of these

viii In statistics, a population consists of- **1** 01 04 04
(a) All people living in a country
(b) All people living in the area
(c) All objects whose characteristics are being studied
(d) None of these

ix. When the available population is _____, we use a stratified sample. **1** 01 05 04
(a) Too small (b) Very large
(c) Homogeneous (d) Heterogeneous

x. Out of these, which is not a probability sampling? **1** 01 05 04
(a) Cluster sampling
(b) Stratified sampling
(c) Quota sampling
(d) Simple random sampling

Q.2 i. Define statistics in singular and plural sense. **4** 01 01 04

ii. What are the criteria for a good measure of central tendency? Write any two properties of arithmetic mean. **6** 01 01 04

OR iii. Find the variance for the following data: **6** 04 01 04

x:	12	15	18	20	25
f:	2	3	5	4	6

Q.3 i. A Bag contains 5 white, 3 red and 4 black balls. A man draws 3 at random, find the probability of being all white. **4** 04 03 04

ii. Write short note on - **6** 02 03 04
(a) Simple probability and conditional probability
(b) Independent events, dependent events
(c) Addition theorem on probability

OR iii. In a bolt factory, Machines A, B, C manufacture 50%, 30% and 20% of the total bolts. It is also

known that 2% of the item manufactured by A are defective while 2% and 3% are defective manufactured by B and C respectively. A bolt is drawn at random and is found to be defective. What is the probability that it was manufactured by machines A, B and C? **6** 04 03 04

Q.4 i. Write the assumptions of binomial distribution. **4** 01 03 01

ii. A coin is tossed 4 times, using binomial distribution find the probability of getting- **6** 04 03 01
(a) Exactly two heads
(b) At least two heads
(c) No head

OR iii. State chief characteristics of normal distribution. Also write the distribution of standard normal variable. **6** 01 03 04

Q.5 i. Write short note on population and sample with example. **4** 01 04 04

ii. Explain three properties of the central limit theorem. **6** 02 04 04

OR iii. Explain the concept of sampling distribution of means and Sampling distribution of proportion. **6** 02 04 04

Q.6 Attempt any two:

i. Define sampling methods with its types. **5** 01 05 04

ii. Explain uses of sampling in market research. **5** 01 05 04

iii. Explain the uses of sampling in quality control. **5** 01 05 04

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Scheme of Marking

MEDI-CAPS UNIVERSITY Knowledge is Power	Faculty of Management Studies End Sem Examination Dec 2024 MS3CO43 (T) Quantitative Techniques (T) Programme: BBA | Branch/Specialisation:

Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.

Q.1	i)	c. Measure of central tendency ✓	1
	ii)	c. Negative ✓	1
	iii)	a. 0 ✓	1
	iv)	b. 120 ✓	1
	v)	b. $\frac{3}{5}$ ✓	1
	vi)	a. $x = \mu$ ✓	1
	vii)	c. It depends on the sample size (c) ✓	1
	viii)	All objects whose characteristics are being studied (c) ✓	1
	ix)	d. heterogeneous ✓	1
	x)	c. quota sampling ✓	1
Q.2	i.	Definition (2) Type (2)	4
	ii.	Explain central Tendency (3), Properties (3)	6
	iii.		6
OR	iv.		
Q.3	i.	1/22	4
	ii.	Answer - 2 marks for each questions.	6
OR	iii.	(.4545) (.2727) (.2727)	6
Q.4	i.	Assumption - 4	4
	ii.	(.375) (.6875) (0.0625)	6
OR	iii.	Characteristics (3), distribution of std normal (3)	6
Q.5	i.	Population (2) + example (2)	4
	ii.	Properties - 3 - 2mark each	6

OR	iii.	Sampling distribution means (3) & properties (3)	6
Q.6			
	i.	Definition (3) Types (2)	5
	ii.	Sampling (3) expl (2)	5
	iii.	sampling (3) quality control (2)	5

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2(3) $\bar{x} = \frac{\Sigma(Fx)}{\Sigma F} = \frac{(2\times12)+(3\times15)+(5\times18)+(4\times20)+(6\times25)}{2+3+5+4+6} = \frac{389}{20} = 19.45$

$\bar{x} = 19.45$

$\sigma^2 = [\Sigma f \times (x-\bar{x})^2] / \Sigma F$

$= [2\times(12-19.45)^2 + (3(15-19.45)^2) + (5(18-19.45)^2) + 4(20-19.45)^2 + 6(25-19.45)^2]$ / 20

$= (109.805 + 59.4075 + 9.5125 + 0.81 + 186.135)/20$

$= 365.67/20 = \boxed{18.2835}$

2(3)(i) T.B = 5W + 3R + 4B = 12 balls

$P(\text{All W}) = \frac{5/3 \text{ (Random)}}{12/3}$

$= \frac{5!}{3!(5-3)!} = 10$

$P = \frac{10}{220} = \boxed{\frac{1}{22}}$

3(ii) S.P = likelihood. / $P(A|B) = \frac{P(A \cap B)}{P(B)}$

I.V = Independent event

Dependent event

(iii) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

3(iii) — A = 45.45% | B = 27.27% | C = 27.27%

Bayes theorem

$P(A|D) = \frac{P(D|A)\cdot P(A)}{P(D)}$

4(ii) n = 4

P = 0.5

q = 1 − P = 0.5

$P(X=r) = \binom{n}{r} p^r q$

$\binom{n}{r} = \frac{n!}{r!(n-r)!}$

① - 0.375

② - 0.6875

③ 0.0625

P.T.O.