PRACTICE SET
End Semester Examination, December, 2025

Program: MBA
Semester - I
Course: – Quantitative Method
Course code: – 11.502

Course Learning Objective:

CLO 1: Analysis and interpretation of quantitative information.

CLO 2: An understanding of the basic ideas underlying statistical methods at an introductory level.

CLO 3: An understanding of certain mathematical tools of business decision making like correlation, regression.

CLO 4: Practical Application of Hypothesis and various test related to it.

CLO 5: Introduction about advance probability and its application for solving real world problems.

CLO 6: Understanding the concept of time series analysis and its applications to solve business problem.

Section -A

I. Multiple Choice Questions: -

1. One major limitation of inferential statistics is:

a) It saves time b) It depends on assumptions and sampling errors
c) It gives exact population data d) It is always accurate
(C01) Understand [LOT]

2. Which of the following is a primary data source?

a) Government report b) Company's balance sheet
c) Direct survey of customers d) Published article (C01) Understand [LOT]

3. The process of arranging data into groups according to their characteristics is called:

a) Collection b) Classification
c) Tabulation d) Analysis (C01) Understand [LOT]

4. Data collected for the first time by the researcher is known as:

a) Secondary data b) Primary data

c) Derived data d) Experimental data (C01) Understand [LOT]

5. Tabulation of data helps in:
a) Increasing data volume b) Making data complex
c) Easy comparison and understanding d) Reducing accuracy (C01) Understand [LOT]

6. A table that shows data for more than one characteristic is called:

a) Simple table b) Frequency table
c) Complex table d) Summary table (C01) Remember [LOT]

7. The process of collecting data by observing events directly is known as:

a) Questionnaire method b) Observation method
c) Interview method d) Secondary data collection
(C01) Remember [LOT]

8. The empirical relationship between mean, median and mode is (C01) Understand [LOT]

(A) 2 Median – 3 Mean = Mode (B) 3 Median – mean = Mode

(C) 3 Median – 2 Mean = Mode (D) 3 Mode – 2 Mean = Median
(C01) Remember [LOT]

9. The sum of the squares deviations for 10 observations taken from their mean 50 is 250.
The coefficient of variation is (C01) Remember [LOT]

(A) 10% (B) 40%

(C) 50% (D) None of these

10. Which of the following is NOT a measure of central tendency?

(A) Mean (B) Median
(C) Mode (D) Standard Deviation
(C01) Remember [LOT]

11. Which measure of dispersion is most affected by extreme values?

(A) Range (B) Interquartile Range
(C) Standard Deviation (D) Mean Deviation
(C01) Understand [LOT]

12. If the variance is 25, what is the standard deviation?

(A) 5 (B) 10

(C) 125 (D) 2.5 (C01) Understand [LOT]

13. If A and B are two mutually exclusive events, then $P(A \cup B) = ?$

(A) $P(A) + P(B) - P(A \cap B)$ (B) $P(A) + P(B)$
(C) $P(A) \times P(B)$ (D) None of these (CO2) Remember [LOT]

14. A fair coin is tossed once. What is the probability of getting a head?

(A) ½ (B) 1/3
(C) ¼ (D) 1 (CO2) Understand [LOT]

15. A card is drawn from a standard deck of 52 cards. What is the probability of drawing a king?

(A) 1/13 (B) 1/26
(C) 1/52 (D) 4/13 (CO2) Understand [LOT]

16. In a binomial distribution, the sum of probabilities of all outcomes is:

(A) 0 (B) 1
(C) ∞ (D) Depends on n (CO2) Remember [LOT]

17. A binomial distribution has $n = 4$ and $p = 0.5$. What is the probability of exactly 2 successes?

(A) 0.25 (B) 0.375
(C) 0.5 (D) 0.625 (CO2) Understand [LOT]

18. The Poisson distribution is used to model: (CO2) Remember [LOT]

(A) Continuous data (B) Normal distribution
(C) Rare events in a fixed interval (D) Uniform distribution

19. The expected value of a random variable is also called:
a) Mean value b) Median value
c) Mode value d) Variance (CO2) Understand [LOT]

20. The second central moment of a distribution measures:
a) Skewness b) Kurtosis
c) Variance d) Mean (CO2) Remember [LOT]

21. The F-test is used to compare:
a) Two means b) Two variances
c) Two proportions d) Two medians (CO2) Understand [LOT]

22. The Chi-square test is a:
a) Parametric test b) Non-parametric test
c) Both a and b d) None of these (CO2) Remember [LOT]

23. Association of attributes is studied using:
a) F-test b) Chi-square test
c) t-test d) z-test (CO2) Remember [LOT]

24. The least squares method is used to find: (CO2) Understand [LOT]

a) Trend line b) Variance

c) Mean d) Median

25. Long-term movement of data is known as:

a) Seasonal variation **b) Secular trend**

c) Cyclical variation d) Irregular variation (CO3) Remember [LOT]

26. The short-term regular variation repeating within a year is called:

a) Trend b) Cyclical variation

c) Seasonal variation d) Random variation

(CO3) Understand [LOT]

27. The value of Karl Pearson's coefficient of correlation lies between:

a) 0 and 1 b) –1 and 1

c) $-\infty$ and $+\infty$ d) 0 and ∞ CO3) Remember [LOT]

28. If r = 0, it means: (CO3) Understand [LOT]

a) Perfect positive correlation b) Perfect negative correlation

c) No correlation d) None of these

29. The correlation between height and weight is usually:

a) Positive b) Negative

c) Zero d) Undefined CO3) Remember [LOT]

30. The method of drawing a scatter diagram is useful for:

a) Finding average b) Studying correlation

c) Measuring dispersion d) None of these CO3) Remember [LOT]

31. The test of significance is used to: (CO3) Understand [LOT]

a) Find the mean of data b) Test the validity of hypothesis

c) Calculate standard deviation d) None of these

32. The null hypothesis (H_0) usually states that:

a) There is no significant difference b) There is significant difference

c) The sample mean equals zero d) Both a and c (CO3) Remember[LOT]

33. The t-test is applicable when:

a) Population standard deviation is known b) Sample size is small and σ is unknown

c) Sample size is large d) None of these (CO3) Remember[LOT]

34. Chi-square test is used to test: (CO3) Understand [LOT]

a) The difference between two means b) The independence of attributes

c) The equality of variances d) None of these

35 In a perfect positive correlation, the two regression lines:

a) Coincide b) Are parallel

c) Intersect at right angles d) None of these (CO4) Understand [LOT]

36. The purpose of one-way ANOVA is to test: (CO4) Understand [LOT]

a) Difference between two means b) Difference among more than two means
c) Relationship between two variables d) None of these

37. In one-way ANOVA, the test statistic used is: (CO4) Understand [LOT]

a) t-test b) z-test
c) F-test d) Chi-square test

38. The assumption of one-way ANOVA includes: (CO4) Understand [LOT]

a) Normality b) Independence
c) Equal variance d) All of the above

39. In Simple Random Sampling: (CO4) Understand [LOT]

a) Each unit has equal chance of selection b) Each unit has unequal chance
c) Only one unit is selected d) None of these

40. The statistic used in one-way ANOVA is distributed as:

a) t-distribution b) Chi-square distribution
c) F-distribution d) Normal distribution

(CO4) Remember [LOT]

UNIT-I (Section –B)

10 MARKS QUESTION

1. From the following distribution determine the Median: - (C01) Understand [LOT]

Marks	10-20	20-30	30-40	40-50	50- 60	60 0-70
No. of student	7	20	35	55	28	20

2. Calculate the Quartiles of the following Distribution – (C01) Apply [LOT]

Ages	50	52	54	58	60	62	64	66	68	70
Frequency	4	12	18	23	30	26	22	16	5	4

3. Calculate mean deviation from median from the following data: - (C01) Apply [LOT]

Variable	0	1	2	3	4	5	6	7	8	9
Frequency	15	46	91	162	110	95	82	26	13	2

4. Calculate the variance and standard deviation of the following frequency Distribution: - (C01) Evaluate [HOT]

Variable	2	4	6	8	10	12	14	16
Frequency	4	4	5	15	8	5	4	5

5. Calculate the Quartiles of the following Distribution – (CO1) Apply [LOT]

Ages (Years)	15-20	20 - 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50	50 and Above
No. of Employees	13	29	46	60	112	94	45	21

20 Marks Questions: -

6. (i) Find the Mode from the following frequency distribution (C01) Evalute [HOT]

Output in units	300 -309	310-319	320- 329	330 - 339	340-349	350-359	360-369	370-379
No. of workers	9	20	24	38	48	27	17	6

(ii) The age of 10 employees and the number of days which they reported sick in a month:

Age	20	30	32	35	40	46	52	55	58	62
Sick Days	11	12	10	13	14	16	15	17	18	19

Calculate Karl Pearson coefficient of correlation.

(C01) Evalute [HOT]

7. (i) Calculate the Quartile s of the following Distribution – (CO1) Evaluate [HOT]

Ages (Years)	15-20	20 - 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50	50 and Above
No. of Employees	13	29	46	60	112	94	45	21

(ii) Calculate mean deviation from median and its coefficient from the given data: (CO1)Apply [HOT]

Size	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200
Frequency	4	6	10	8	5

UNIT-II (Section –B)

10 Marks Question

8. A random variable X takes on the values -3, -1, 2, and 5 with respective probability $\frac{2k-3}{10}, \frac{k+1}{10}, \frac{k-1}{10}, \frac{k-2}{10}$. Determine the distribution of X. (CO2) Evaluate [LOT]
9. **(i) Find** the probability distribution of 3 successes from a total of 10 independent trials where the probability of success on each trial is 0.3. (CO2) Apply [LOT]

   (ii) Discuss a random variable X follows a poisson distribution with mean value 3.4 find P(x) = 6 (C02) Apply [LOT]

10. The three judges X, Y, Z give the following ranks. Find which pair of judges has a common approach. (CO2) Analyze [HOT]

X	1	6	5	10	3	2	4	9	7	8
Y	3	5	8	4	7	10	2	1	6	9
Z	6	4	9	8	1	2	3	10	5	7

11. A random variable X has the following probability distribution values of X,

X	0	1	2	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2 + K$

(i) Find the value of the K

Evaluate (ii) P(X<6) P(X≥ 6) , (iii) $P(0 < X < 5)$ CO2) Apply [LOT]

20 Marks Questions: -

12. The box contains eight bulbs of which three are defective. A bulb is selected from the box and tested. If it is defective another bulb is selected and tested, until a non-defective bulb is chosen. Find the expected number of bulbs chosen. (CO2) evaluate [HOT]

13. Evaluate (i) An unbiased coin is tossed 5 times. Find the probability of getting

    (a) Three head (b) at least 4 Heads

    (ii) If 20% of the bolts produced by the machine are defective.

    Determine the probability that out of 4 bolts drawn

    (a) one is defective (b) at the most two are defective. (CO2) Evaluate [HOT]

UNIT-III (Section –B)

10 **MARKS QUESTIONS:**

15 Explain the sample error. How many types of sampling error? (CO3) Understand [LOT]

16. Compare the relationship between samples size and errors. (CO3) Understand [LOT]

17. Explain the formation of hypothesis test. And how many types of formation hypotheses.

(CO3) Understand [LOT]

18. Find the set off five similar coins is tossed 320 times and the result is

No. of heads	0	1	2	3	4	5
Frequency	6	27	72	112	71	32

Test the hypothesis that the data follow a binomial distribution. By given $X^2_{0.05}$ = 11.07
(CO3) Apply [LOT]

20 Marks Questions

19. The freshman math grades of 250 males and 210 females at a university were distributed as indicated in the following table .Use the Chi-Square random variable to text at the 0.05sinificance level the hypothesis the grade. (CO3) Evalute [HOT]

Grades

Person	A	B	C	D	E	Total
Male	35	42	85	48	40	250
Female	28	50	77	35	20	210
Total	63	92	162	83	60	460

UNIT-IV (Section –B)

10 MARKS QUESTIONS**: -**

20. Describe the regression equation of Y on X. (CO4) Remember [LOT]
21. Solve the following data and find the two-regression equation. (CO4Apply [LOT]

X	1	2	3	4	5	6	7
y	2	4	7	6	5	6	5

22. Two managers are asked to rank a group of employees in order of potential for eventually becoming top managers. The ranking are as follows: - (CO4) Analyze HOT

Employees	A	B	C	D	E	F	G	H	I	J
Ranking by Manager1	10	2	1	4	3	6	5	8	7	9
Ranking by Manager1	9	4	2	3	1	5	6	8	7	10

23. Prove that $r = \sqrt{b_{xy} \times b_{yx}}$ (C04) Apply[LOT]

20 Marks Question

24. (i) Explain the correlation coefficient b/w **x and y** when the lines of regression are
2x- 9y+ 6 = 0 and x- 2y+1 = 0

(ii)Ten students got the following percentage of marks in **QTB a**nd **statistics,** calculate the rank correlation.

Marks in Q M	78	36	98	25	75	82	90	62	65	39
Markes in statistics	84	51	91	60	68	62	86	58	53	47

(CO4) Evaluate [HOT]

25. (a) What is difference between correlation and regression analysis?

(b) (i) The regression coefficients of y on x and x on y are 1.2 and 0.3 respectively. Find the coefficient of correlation.

(ii) If $\sigma_x = 10$, $\sigma_y = 12$, $b_{xy} = -0.8$, find the value of r.

(iii) If $\bar{x} = 6$, $\bar{} = 7$, $b_{xy} = 0.65$ and $b_{yx} = 0.45$, then find the regression equations.

(CO4) Evaluate [HOT]

Summary Sheet

CO Wise

CO	Q. No.	Marks
CO1	Section- A 1,2,3,4,5, 6,7,8,9,10,11,12 Section –B 1,2,3,4,5,6,7	12 90
CO2	Section- A 13,14,15,16,17,18,19,20,21,22,23,24, Section –B 8,9,10,11,12,13,14	12 90
CO3	Section- A 25,26.27,28,29,30,31,32,33,34,35, Section –B 15,16,17,18,19,	11 60
CO4	Section-A 36,37,38,39,40, Section- B 20,21,22,23,24,25,	05 90
	Total =	**370**

Unit Wise

Unit	Q. No.	Marks
Unit 1	Section - A 1,2,3,4,5,6,7,8,9,10,11,12 Section –B 1,2,3,4,5,6,7**,**	**102**
Unit 2	Section- A 1,2,3,4,5,6,7,8,9,10,11,12 Section –B 1,2,3,4,5,6,7	**102**
Unit 3	Section- A 25,26.27,28,29,30,31,32,33,34,35, Section –B 15,16,17,18,19,	**71**
Unit 4	Section-A 36,37,38,39,40, Section- B 20,21,22,23,24,25,	**95**
	Total	**370**

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No.	Marks
LOT	**SectionA-** 1,2,3,4,5,6,7,8,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28.29,30,31.32,33,34,35,36,37,3839,40 **Section –B** 1,2,3,4,5,8,9,11,14,15,16,17,18,,20,21,23,23,	190
HOT	**Section-B** 6,7,10,12,13,19.22,24,25	180
	Total	**370**

Course Outcome:

CO 1: Able to find the central tendency and dispersion of a random variable.

CO 2: Able to find the Hypothesis for framing suitable policies and take decisions relating to wages, prices and consumption etc.

CO 3: Able to find the relationship between variables through mathematical tools - correlation & regression as well as understand its practical application in real world.

CO 4: Able to solve real world problems of probability using certain theorem and axioms.

CO 5: Demonstrate an ability to apply various statistical and sampling tools to solve business problem

CO 6: Able to apply the concept of time series analysis to solve real world problem

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Disclaimer: - This is a Practice Set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.