

Cutting, Overwriting, Erasing, Fluid painting and use of Lead Pencil will earn no marks.  
 Write answer of the Question No.1 and 2 on this sheet and handover it to the supervisory  
 staff of examination within first 35 minutes.

**Time Allowed: 35 Minutes**

**(OBJECTIVE PART)**

**Max. Marks: 32**

**Sign of**

**Supdt.** \_\_\_\_\_

**1- a) Encircle the correct answer:**

1x8

i) Historiogram is graph of

a) Time Series

b) Frequency Distribution

c) Probability Distribution

d) None of these

ii) The exact central value of the arrayed data as an average is called:

a) Arithmetic Mean

b) Median

c) Mode

d) Weighted Mean

iii) The possible range of the values of coefficient of correlation is

a) -1 to +1

b) -1 to 0

c) 0 to +1

d)  $-\infty$  to  $+\infty$

iv) In regression equation  $(y + 10) = 0.25 (x + 100)$  the means of X and Y respectively is

a) 10 and 100

b) -100 and -10

c) -10 and -100

d) 10 and -100

v) Fisher's index number is always \_\_\_\_\_

a) Less than Laspeyre's Index

b) More than Paasche's Index

c) Less than Laspyre's but more than Paasche's Index

d) More than Laspyre's but less than Paasche's Index

vi) Matrix  $A = [a_{ij}]_{m \times n}$  is conforming for multiplication with matrix  $B = [b_{ij}]_{m \times n}$  then the size of product matrix shall be:

a)  $M \times m$

b)  $m \times N$

c)  $N \times n$

d)  $M \times n$

vii) Inverse matrix could only exist for

a) Single Matrix

b) Portrait Matrix

c) Landscape Matrix

d) Non-singular Matrix

viii) A point (a, b) obtained by taking  $\frac{dy}{dx}$  equal to zero shall be the minimum point on the curve  $y = ax^2 + bx + c$   
 if second order derivative is

a) Zero

b) Positive

c) Negative

d) Infinity

**b) Encircle True or False:**

1x8

i) Generally Statistics is divided into Two Branches namely Descriptive and Inferential Statistics. **TRUE / FALSE**

ii) The most repeated value of a data is also recognized as an average.

**TRUE / FALSE**

iii) The notation  $r_{UV} = r_{XY}$  indicates that the correlation coefficient is independent from  
 change of origin and scale.

**TRUE / FALSE**

iv) Histogram is graph of Time Series.

**TRUE / FALSE**

v) Per liter Super petrol at Shells petrol pumps situated in Punjab is an example of a constant. **TRUE / FALSE**

vi) Type-I and Type-II are two types of errors relates with testing of hypotheses.

**TRUE / FALSE**

vii) If A is a square matrix, is inverse matrix could exist if its determinant  $|A| \neq 0$ .

**TRUE / FALSE**

viii) The concept of maxima and minima is concerned with non-linear function (Curve).

**TRUE / FALSE**

(Continued Overleaf)

**2- Give short answers of the following questions: 2x8**

i) What is Data and what are its Types as regard source?

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ii) Give the idea of Central Tendency of the Data.

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iii) Write Two Regression Equations and point out the quantities which are common in both.

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iv) Define Sampling Distribution of Sample Mean.

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v) What do mean by the term Index Number?

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vi) Differentiate Sample from Population.

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vii) Define Singular Matrix.

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viii) Write an Equation of Matrices ( $AX = B$ ) using the set of simultaneous equation:

$$2x + 3y = 35 \text{ and } 3x - 2y = 20$$

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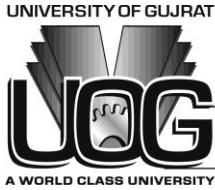
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## SUBJECTIVE PART

Total Marks: 68 + 32 = 100

Pass Marks = 40%



(M.Com Part-I)

## Quantitative Techniques in Business

Roll No: \_\_\_\_\_

Time Allowed : 2:25 hrs  
Max. Marks : 68

Attempt **FOUR** Questions, selecting **TWO** questions from each section. All Questions carry equal marks.

### SECTION-I

- 3- Following distribution indicates daily wages of temporary staff of different factories of an industrial city: 5,6,6

Dairy Wages (Rs.)	60 to 100	100 to 160	160 to 200	200 to 260	260 to 300	300 to 360	360 to 400	400 to 500
Staff	63	159	245	337	425	414	119	73

Required: i) Arithmetic Mean ii) Median iii) Mode

- 4- a) For the following data set, draw a scatter diagram and recommend the possible value of correlation coefficient between x and y seeing the scatter diagram: 5,6,6

x	+2	+1	0	-1	-2
y	10	8	6	4	2

- b) Calculate the Coefficient of Correlation " $r_{xy}$ " from the data given in part-a.

Does it consistent with the afore-stated recommendation?

- c) Develop regression equation to predict y against given value of x also estimate y for  $x = \pm 3$ .

- 5- a) Ten athletes including 3 women are participating in a training camp. The management of the organizing body wants to select at random a team of 4 members having majority of men; in how many combinations team be selected?  
b) According to a survey of the households of suburbs of Gujrat, 35% have freezer and 60% have colour T.V set, 25% of the households have both. Find the probability that a household selected at random shall:  
i) Have freezer given that it has colour T.V set. ii) Have colour T.V set given that it has freezer.  
c) A cigarette manufacturer claims that the amount of nicotine in each cigarette is 7.5 mg. A random sample of 40 cigarettes was tested and found to have mean nicotine content of 7.67 mg with standard deviation of 0.6 mg. Test the manufacturer's claim at 5% level of significance. 5,6,6

### SECTION II

- 6- a) If  $A = \begin{bmatrix} 2 & 5 & -7 \\ 1 & 0 & -2 \\ 4 & 8 & 2 \end{bmatrix}$  &  $B = \begin{bmatrix} -3 & 2 & 5 & 0 \\ 1 & -2 & 3 & -4 \\ -3 & 4 & -2 & 1 \end{bmatrix}$  Find the product matrix of A and B. 5,6,6

- b) Using the Cramer's Rule or Inverse Matrix Rule. Solve the following simultaneous equation:

$$2x + 3y = 11 \quad \text{and} \quad x + 2y = 5$$

- c) The following matrix indicate stock available of six items A, B, C, D, E and F at three stores  $\alpha$ ,  $\beta$  and  $\alpha$  respectively:

50,000	100,000	75,000	50,000	100,000	75,000
200,000	50,000	100,000	200,000	50,000	100,000
100,000	200,000	175,000	100,000	200,000	175,000

Answer following questions with reference to above matrix:

- i) Total stock available at store-  $\alpha$  ii) Total stock available of item-D  
iii) Stock available of item-E at store- $\beta$  iv) Which store has more stock than other two stores?  
v) Total stock available. vi) Total stock available of items A to F respectively.

- 7- Solve the following system of linear equation involving matrices: 17

$$2x_1 + 4x_2 - 3x_3 = 12$$

$$3x_1 - 5x_2 + 2x_3 = 13$$

$$-x_1 + 3x_2 + 2x_3 = 17$$

- 8- a) If  $y = (x^2 - 1)^4 (x^2 + 1)^5$ , show that  $\frac{dy}{dx} = 2x (x^2 - 1)^3 (x^2 + 1)^4 (9x^2 - 1)$  8,9

- b) The demand function for a certain product is given by:  $p = 548 - \frac{x}{20}$

Where: p is per unit price in rupees and x is the units demanded at price p. The total cost function of the product is:  $C(x) = 15,000 + 18x$

- Determine: i) Profit function  $P(x)$  ii) Profit maximizing quantity (x)  
iii) Maximum profit that can be earned.

\*\*\*M.Com-I(13/A) -II \*\*\*