

FYBBI sem II Reg. Exam May-2022

MALINI KISHOR SANGHVI COLLEGE OF COMMERCE & ECONOMICS

SUBJECT: Quantitative Methods-II

CLASS: F.Y.B.Com.(B&I)

17/5/22

SEM-II

SECTION II

40 MARKS

- Note:** (i) All Questions are compulsory with internal choice.
(ii) Simple Calculator is allowed.
(iii) Graph papers will be provided on request.



Q:2 Solve the following : (ANY-ONE)

10 Marks

[1]

- Explain the difference between Type I and Type II error.
- Historically, evening long distance phone calls from a particular city have averaged 15.2 minutes per call. In a more recent random sample of 40 calls, the sample mean time was 14.3 minutes per call with a sample standard deviation of 5 minutes. Has the mean duration of long-d-stance phone calls changed? (Use a 5% significance level)
 - Formulate the null and alternative hypothesis.
 - Define your rejection rule. Show the rejection region in a diagram.
 - Can null hypothesis be rejected? What is your conclusion?

OR

[2] Starting annual salaries for individual with master's and bachelor's degree in business were collected in two independent random samples. Use the following data to carry out 5% significance tests for the difference in the salary.

	Master's Degree	Bachelor's Degree
Sample size	60	80
Sample mean	45000	35000
Population Standard deviation	4000	3500

Q:3 Solve the following: (ANYONE)

10 Marks

[1]

- To produce a unit of product I and II, we require 2 and 5 units of raw material A and, 3 and 2 units of raw material b respectively. While product I result into a profit margin of Rs. 25 per unit, product II results into a margin of Rs. 35 per unit. In all 400 units of raw material A and 600 units of raw material B are available every day. Formulate the LPP.
- Solve the following LPP.

$$\text{Minimize, } Z = x + 1.5y$$

Subjected to $20x + 20y \geq 160$, $20x + 60y \geq 300$ and $x, y \geq 0$
OR

[2]

- i. Food I contain 6 units of vitamin A per gram, 7 units of vitamin B per gram and costs 12 paise per gram. Food II contains 8 units of vitamin A per gram, 12 units of vitamin B per gram and costs 20 paise per gram. The daily minimum requirements of vitamin A and vitamin B are 400 units and 480 units respectively. Formulate the LPP.
- ii. Solve the following LPP.

$$\text{Maximize, } Z = 90x + 130y$$
$$\text{Subjected to } 2x + 3y \leq 18, 2x + y \leq 12 \text{ and } x, y \geq 0$$



Q:4 Solve the following: (ANY-ONE)

10 Marks

[1]

- i. Given the following matrices:
 $A = \begin{pmatrix} 2 & 4 \\ 8 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 7 & 7 \end{pmatrix}$ calculate AB and BA . Verify whether $AB=BA$?
- ii. Solve the following system of equations by finding the inverse of associated matrix A.
 $x + 3y = 2, 2x + 5y = 14$ $A = \begin{pmatrix} 1 & 3 \\ 2 & 5 \end{pmatrix}$

OR

[2]

- i. Given the following matrices:
 $A = \begin{pmatrix} 2 & 4 \\ 8 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 7 & 7 \end{pmatrix}$ calculate $2A - 3B$.
- ii. Find the invers of the following matrix.

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 4 \\ 1 & 3 & 4 \end{pmatrix}$$

Q:5 Solve the following: (ANY-ONE)

10 Marks

[1]

- i. A, B and C started business with total capital of Rs.1,00,000. At the end of the year, the profits received by A, B and C were Rs.2,000, Rs.3,000 & Rs.5,000 respectively. Find the amount of capital invested by B.
- ii. By selling an article at Rs.3,000, a person earned 20% profit. What would have been the percentage profit or loss, if he had sold it at Rs.2,750?

OR

[2]

- i. The marks of Babita and Bharat are in the ratio 7:3. The difference between their marks is 56. What are their marks?

- ii. If A takes 5 days to complete a task when he works for 8 hrs a day, how many days he will take to complete the task if he works 5 hrs a day?

