VCD 11-05-2022 Sub: Quantitative methods-II CLASS : FYBBI SEM -II

Hour: $2\frac{1}{2}$ hrs. Marks:75

Q.1 Fill in the blanks by choosing correct option: **(40)**

A) The central limit theorem states that for a large random sample of size n from population with mean μ, the sampling distribution of the mean $\bar{X}$ is approximately a normal distribution with Standard deviation_____

i) σ ii) $\frac{\sigma}{\sqrt{n}}$ iii) $\frac{\sigma}{n}$ iv) $\frac{\sigma}{\sqrt{n-1}}$

B) If a variable $x_1, x_2, x_3 \ldots x_n$ in LPP are called _____ variables.

i)decision ii) programming iii)feasible iv)objective

C) It is possible to find the inverse of square matrix only if it is a_____matrix

i) singular ii) non singular iii) Zero iv) identity

D) If A α B, then which of the following is false?

i) B α A ii) 7A α 7B iii) A=K/B where K is a constant iv) A α B

E)) A single index model was proposed by _____

i) Minkowski ii) Markowitz iii) Sherit iv) Sharpe

F) $M_4 = M_3 +$ ____

i) Post office saving deposit ii) Time deposit with banks

iii) Total post office deposits iv) technological

G) When there are more than two decisions variables in LPP, then we need to use ____ method to solve it

i) Graphical ii) Duplex iii) Simplex iv) Complex

H) The sub-triplicate ratio of 1:27 is _____

i) 27:1 ii) 3:81 iii) 1:9 iv) 1:3

I)If a matrix of order 3x2, then its determinant will be _____

i) zer ii) one iii) not exist iv) positive

J) Beta of a share is the _____

i) difference between actual and expected return ii) inverse of alpha of the market

iii) slope of the regression line iv) y intercept of regression line

K) If H□ : μ ≥ μ□ is the null hypothesis, then the test is _____

i)two tailed ii) left tailed iii) right tailed iv) non tailed

munotes.in

L)The inverse ratio of 2:3 is _____
i)3:2 ii) 1:6 iii) 6:1 iv) 2:1

M) The compound ratio of $\frac{2}{3}$, $\frac{2}{6}$ and $\frac{5}{2}$ is _____
i) $\frac{20}{36}$ ii) $\frac{6}{90}$ iii) $\frac{1}{15}$ iv) $\frac{6}{15}$

N) The hypothesis rejecting the null hypothesis is called _____hypothesis
i) Alternate ii) Full iii) positive iv) non-null

O) A linear programming problem
i) sometimes has no solution ii) Always has a unique solution iii) always has at least one solution iv) never has solution

P) A matrix of order nx1 is called a _____ matrix.
i) row ii) column iii) unit iv) square

Q) The systematic risk is the risk _____ the marked risk.
i) related to ii) independent of iii) that is double of iv) inverse of

R) The difference between merchandise exports and imports is called _____
i) trade deficit ii) trade profit iii) trade revenue iv) trade balance

S) If a,b,c are in continued proportion, then b is not _____
i) the harmonic mean of a,c ii) the mean proportional iii) i$\sqrt{ac}$ iv) the geometric mean of a,c

T) If we accept H□ when H□ is actually false, then we are committing _____error.
i) Type I ii) Type II iii) both iv) neither

Q2) Solve the following (any 1) **(7 marks)**

A) It is known that Standard deviation of salaries of officers in a certain large town is Rs. 3000. A random sample of 49 officers was selected and the sample mean was found to be Rs. 21543. Find 95% confidence interval for the mean salary of officers in the town.

OR

B) Solve the following LPP with graphical method.

Maximize Z = 7x + 5y
Subject to constraints,

$4x + 3y \leq 240$
$2x + y \leq 100$
$X \geq 0$ and $y \geq 0$

munotes.in

Q3) Solve the following (any 1) **(7 marks)**

A) i) A, B and C invested 10000, 20000 and 30000 respectively in a business. At the end of each year B received Rs 3000 as is share in the profit of the total profit. Find A's share and C's share of profit.

ii) If 4 workers can make 3 tables in 6 days then how many days will 8 workers require to make 5 tables.

OR

B) i) What number must be added to each of the numbers 4, 12 and 28 so that the resulting numbers are in continued proportion.

ii) R.K steel manufacturing company produces two items P and Q. It uses sheet metal, equipment and labour. Input-output relationship and resources are available as follows

Input	Product P	Product Q	Availability
Sheet Metal	1 sq cm	1 sq cm	50 sq cm
Labour	1 man / hrs	2 man / hrs	80 man / hrs
Equipment	3 hrs	2 hrs	140 hrs
Profit	4 per unit	3 per unit	

Formulate the LPP to maximize the profit.

Q4) Solve the following (any 1) **(7 marks)**

A) Find the inverse of matrix using adjoint method

$$A = \begin{bmatrix} 1 & 3 & 0 \\ 2 & -2 & 1 \\ -4 & 1 & -1 \end{bmatrix}$$

OR

B) A portfolio P consists of two shares X and Y. The following table gives probability of the returns of the two shares. Find

i. Expected return from the share X
ii. Expected return from the share Y
iii. Total risk of share X
iv. Covariance of return from share X and share Y.

The proportion of share X and Y in the portfolio is 70% and 30% respectively.

Economic Condition	Probability	Return on X (%)	Return on Y (%)
High growth	0.3	14	16
Low growth	0.4	12	12
Stagnation	0.2	11	10
Recession	0.1	10	8

munotes.in

Q5) Solve the following (any 1) **(7 marks)**

A)i) If $A = \begin{bmatrix} 2 & 4 & 6 \\ 5 & 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 3 \\ 6 & 5 & 4 \end{bmatrix}$ find $3A - 2B$

ii) If $A = \begin{bmatrix} 3 & 1 \\ -1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$ find $A^T + B^T$

OR

B) i) Th following table shows the probability distribution of a shares returned measured in % . Find the expected return of shares

Probability	Return on share %
0.04	-0.35
0.22	0.15
0.44	-0.12
0.26	-0.05
0.04	0.05

ii) Explain briefly electricity generation in infrastructure

Q6) Write Short notes on (any 2) **(7 marks)**

1) Concept of external Debt
2) Price level and inflation.
3) Direct variation and inverse variation
4) Explain the term GDP, GNP and NDP
5) Zero matrix and Row matrix

munotes.in