

2021

Time - 3 hours

Full Marks - 80

*Answer **all groups** as per instructions.*

Figures in the right hand margin indicate marks.

*Candidates are required to answer
in their own words as far as practicable.*

GROUP – A

1. Answer all questions and fill in blanks as required. [1 × 12]
- (a) Who defined economics as a science of wealth ?
- (b) The demand curve is the relationship between price and _____.
- (c) In case of normal goods, marginal rate of substitution gradually _____.
(rises / falls)
- (d) Indifference curves are _____ to the origin.
(convex / concave)
- (e) The income effect is _____ in case of giffen goods.
(positive / negative)
- (f) Demand for salt is _____.
(less elastic / more elastic)

[2]

- (g) Two indifference curves cannot _____ each other.
- (h) The Short-run Average Cost (SAC) curve is _____ shaped. (U / V)
- (i) What is fixed cost ?
- (j) SMC cuts SAC at the _____ point of SAC.
(maximum / minimum)
- (k) Consumer's surplus is the difference between _____ and actual pay.
- (l) In the longrun production function, all the factors of production are _____.
(fixed / variable)

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [2 × 8

- (a) What is individual demand curve ?
- (b) Write first two principles of Economics.
- (c) What is consumer's surplus ?
- (d) What is cross elasticity of demands ?
- (e) What is income effect ?

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- (f) What is budget line ?
- (g) What are variable costs ?
- (h) What do you mean by Giffen goods ?
- (i) What is value of marginal product of labour ?
- (j) What is Economies of scale ?

GROUP – C

3. Write notes on any eight of the following within 75 words each.

[3 × 8

- (a) Economic models
- (b) Production possibility frontiers
- (c) Graphs in Economics
- (d) Producer's surplus
- (e) Demand for Giffen goods
- (f) Substitution effect
- (g) Market demand
- (h) Economies and Diseconomies of scale
- (i) Relation between average cost and marginal cost
- (j) Marginal product of labour

P.T.O.

[4]

GROUP – D

Answer **any four** questions within 500 words each.

4. Briefly explain the Ten Principles of Economics. [7]
5. What is price elasticity of demand ? Explain its important determinants. [7]
6. Explain how does a consumer attain equilibrium through indifference curve analysis ? [7]
7. "Price effect is the sum of Income and Substitution effect." – Explain with suitable diagram. [7]
8. Explain various short run-cost curves and show their inter-relationships. [7]
9. What is the Indifference Curve ? Explain its important properties. [7]
10. Explain how equilibrium is reached under competitive conditions in Labour Market. [7]

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GROUP - A

1. Fill in the blanks. (all)

[1 × 12]

(a) $x = \{1, 2, 3\}$, $y = \{7, 8, 9\}$, $x \cap y =$ _____.

(b) Suppose $f(x) = 10$ for all x ; then $f(-3)$ is _____.

(c) The binary number system has only _____ choices.

(d) If function is $f(x) = \frac{1}{x+3}$, then domain is _____.

(e) Limit of $\lim_{x \rightarrow 2} (x^2 + 5x)$ is _____.

(f) Codomain of a function consists all the elements of _____.

(g) Slope of a curve is defined by _____.

[2]

(h) $\frac{d}{dx}(a^x) = \underline{\hspace{2cm}}$.

(i) $\frac{d}{dx}(\log_e x) = \underline{\hspace{2cm}}$.

(j) If $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix}$, then $A + B = \underline{\hspace{2cm}}$.

(k) If $A = \begin{bmatrix} 2 & 3 & 5 \\ 6 & 2 & 3 \\ 5 & 6 & 7 \end{bmatrix}$, A transpose (A^T) = $\underline{\hspace{2cm}}$.

(l) If any two rows or columns are identical then the value of the determinant becomes $\underline{\hspace{2cm}}$.

GROUP – B

2. Answer any eight of the following questions. [2 × 8]

(a) If $U = \{5, 6, 7, 8, 9\}$ and $A = \{5, 6\}$. Find \bar{A} or A complement.

(b) Given $A = \begin{bmatrix} 3 & 5 \\ 4 & 6 \end{bmatrix}_{2 \times 2}$, and $B = \begin{bmatrix} 1 & 0 \\ 4 & 7 \end{bmatrix}_{2 \times 2}$, find AB.

(c) Verify $(A')' = A$.

(d) What is Infinite set ?

(e) What is Domain ?

- (f) Given the total cost function, $C = y^3 - 5y^2 + 14y + 75$
Find out a variable cost function.
- (g) Differentiate the following function $(ax - b)(cx^2)$.
- (h) Given $y = f(x_1, x_2) = 3x_1^2 + x_1x_2 + 4x_2^2$. Find the partial derivatives.
- (i) Determine the price elasticity of demand for the function.
 $X = 32 - 4p - p^2$, where $p = 3$.
- (j) Define determinant of a matrix.
- (k) Divide the following matrices.

$$A = \begin{bmatrix} 4 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}_{2 \times 3} \quad \text{and} \quad B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}_{3 \times 2}, \quad \text{find } \frac{A}{B}.$$

GROUP - C

3. Answer any eight of the following questions. [3 × 8]
- (a) Complementary set
- (b) Transitive relation
- (c) If A, B and C be any three sets, then prove that
 $A - (B \cup C) = (A - B) \cap (A - C)$
- (d) Polynomial function.

(e) Evaluate the limit $\lim_{x \rightarrow 0} \frac{\sqrt{a+2x} - \sqrt{3x}}{\sqrt{3a+x} - 2\sqrt{x}}$.

(f) If the function is $y = \log \sqrt{3x+4}$, find $\frac{d^3y}{dx^3}$ or third order derivative.

(g) Determine the minors and cofactors of the following deter-

minant : $|B| = \begin{vmatrix} 2 & 5 & 3 \\ 3 & 1 & 2 \\ 1 & 2 & 1 \end{vmatrix}_{3 \times 3}$

(h) Triangular matrix (with example)

(i) Using the relevant property, prove that

$$\begin{vmatrix} x-y & y-z & z-x \\ y-z & z-x & x-y \\ z-x & x-y & y-z \end{vmatrix} = 0$$

(j) Draw the graph of the function $y = (x) = 5$.

GROUP - D

Answer **any four** questions.

4. Discuss the properties of union and intersection of sets. [7]

5. Determine whether the following function is continuous or not at $x = 2$, $f(x) = x^2 - 4x + 3$. [7]

6. Find $\frac{dy}{dx}$ of the following implicit function $x^3 + y^3 - y^2 + xy = 3$.

[7]

7. Differentiate the following with respect to x :

[3½ × 2]

(a) $y = e^x \cdot \log x$

(b) $y = \sqrt{\frac{x+1}{x-1}}$.

8. Examine the marginal and average cost relation when the total variable cost is $C = x^3 - 3x^2 + 15x$.

[7]

9. Find the elasticity of total cost and average cost of the function.

$$C = 2x^2 + 4x + 3.$$

[7]

10. If $A = \begin{bmatrix} 1 & 4 & 0 \\ -1 & 2 & 2 \\ 0 & 0 & 2 \end{bmatrix}$, find A^{-1} (inverse of A).

[7]

11. Using Cramer's rule solve the following system of equations [7]

$$-x + y + z = a$$

$$x - y + z = b$$

$$x + y - z = c.$$

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GROUP – A

1. Answer all questions and fill in blanks as required. [1 × 12]
- (a) Indian economy is considered as _____ economy.
(developing / developed)
- (b) Sex-ratio indicates the number of females per _____
male in population.
- (c) Youth force in India is known as _____ dividend.
- (d) The average number of population living per square kilometre
is called _____.
- (e) _____ is the main source of livelihood in India.
- (f) In _____ year, Green revolution was started in India.
- (g) The New Industrial Policy was introduced in _____ year.

[2]

- (h) Real Estate Services is one of the fastest growing component of _____ sector.
- (i) Write full form of NABARD.
- (j) In which year, the 1st industrial policy was announced ?
- (k) Write two sources of non-institutional agricultural finance.
- (l) Mention two basic features of Indian economy.

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [2 × 8

- (a) What is colonialism ?
- (b) What is infant mortality ?
- (c) What is primary sector ?
- (d) What do you mean by life expectancy ?
- (e) What is seasonal unemployment ?
- (f) What is consolidation of land holdings ?
- (g) What is sex-composition ?
- (h) What is industrial sickness ?
- (i) What do you mean by Green Revolution ?
- (j) What is multiple cropping ?

[3]

GROUP – C

3. Write notes on any eight of the following within 75 words each.

[3 × 8

- (a) Colonial Exploitation
- (b) Occupational Structure in India
- (c) Sex-Composition in India
- (d) Agricultural marketing in India
- (e) Disguised unemployment
- (f) MGNREGS
- (g) Industrial Policy, 1956
- (h) Growth of service sector
- (i) IT policy in India
- (j) Industrial sickness

GROUP – D

Answer any four questions within 500 words each.

- 4. Discuss the basis features of Indian economy. [7
- 5. Discuss various forms and consequences of colonial exploitation of India by Britishers. [7
- 6. Bring out various causes of rapid growth of population in India. [7

[4]

7. Discuss the causes of low agricultural productivity in India. [7]
8. Explain the multiple problems of agricultural marketing in India. [7]
9. Describe the problems of small scale and cottage industries in India. [7]
10. Explain the importance of service sector in India. [7]