

BA (Honours) Examination, 2022

Semester-I (CBCS)

Course: CC-1

(Introductory Microeconomics)

Time: Three hours

Full Marks: 60

Questions are of value as indicated in the margin

*Answer two questions from each group***Group A**Answer **Question no 1** and **any one** from the rest of the questions in Group A

1. a. Sam spends Rs. 6/wk on orange juice and apple juice. Orange juice costs Rs2/cup while apple juice costs Rs1/cup. Sam views 1 cup of orange juice as a perfect substitute for 3 cups of apple juice. Find Sam's optimal consumption bundle of orange juice and apple juice each week. Suppose the price of apple juice rises to Rs2/cup, while the price of orange juice remains constant. How much additional income would Sam need to afford his original consumption bundle?

- b. Explain why a consumer will often buy one bundle of goods even though he prefers another. (8+3)+4

2. a. Does a change in consumers' tastes lead to a movement along the demand curve or a shift in the demand curve? Does a change in price lead to movement along the demand curve or a shift in the demand curve?

- b. Let the equations for the demand and supply curves of a particular commodity be $Q^d = 8096 - 3596P$ and $Q^s = 500 + 4000P$. Represent these curves graphically and solve for the equilibrium price and quantity.

- b. Why does a reduction in the price of a good increase consumer surplus?

(3+2)+5+5

3. a. Explain the derivation of an Engel Curve from an income-consumption curve. What does an Engel curve for an inferior good look like?

- b. Illustrate the primary difference between the Hicksian and Slutsky methods of decomposing the substitution and the income effect. (4+2)+9

P.T.O

Group B

Answer any **two** questions from the following:

4. (a) What is a production function? How does a long run production function differ from a short run production function?

(b) Isoquants can be convex, linear, or L-shaped. What does each of these shapes tell you about the nature of the production function? What does each of these shapes tell you about the MRTS?

(c) Do the following function, $Q = LK^2$, exhibit increasing, constant, or decreasing returns to scale?

(d) Explain the term “marginal rate of technical substitution”. What does a $MRTS = 4$ mean?

4+6+3+2

5. (a) What assumptions are necessary for a market to be perfectly competitive?

(b) Explain the short run and long run equilibrium of a competitive firm using suitable diagrams.

5+10

6. (a) A monopolist is producing at a point at which marginal cost exceeds marginal revenue. How should it adjust its output to increase profit?

(b) Why is there no market supply curve under conditions of monopoly?

(b) Why is there a social cost to monopoly power? If the gains to producers from monopoly power could be redistributed to consumers, would the social cost of monopoly power be eliminated? Explain briefly.

4+6+5

7. Critically explain Ricardian theory of rent. How does the modern theory of rent explain existence of rent in all factors of Production? What is quasi rent?

6+6+3

B.A. (Honours) Examination, 2022
Semester - I (CBCS)
Subject: Economics
Course: CC-02
(Mathematical Methods for Economics - I)

Time: 3 Hours

Full Marks: 60

Questions are of value as indicated in the margin
Answer any four (04) of the following questions

1. Solve the following equations: [5×3=15]
 - (a) $px^2 + qx + r = 0$, solve for x .
 - (b) $Y = C + \bar{I}$, $C = a + bY$; solve for Y when $\bar{I} = 100$, $a = 100$ and $b = 0.60$.
 - (c) $1 + \frac{2x}{x^2+1} = 0$, solve for x .

2. Let $A = [2, 4, 5, 6]$, $B = [1, 2, 3, 4]$, $C = [2, 3, 4]$ and $D = [5, 6]$; then find: [5×3=15]
 - (a) $(A \cup B) \cap C$
 - (b) $(A \cap D) \cup B$
 - (c) $A \cap B \cap C$
 - (d) $(C \cup D) \cap (A \cup B)$
 - (e) $A \cap B \cap C$

3. If $X(t) = \sqrt{t^2 - 2t + 4}$, then compute $X(0)$, $X(-3)$, $X(t+1)$, $X(-t)$ and $X(t-1)$. [5×3=15]

4. (a) If $y = \sin^2 x$, then derive $\frac{dy}{dx}$ using the first principle.
 (b) Differentiate $y = e^{\log \sin x} + \frac{1}{x^2}$ with respect to x . [10+5]

5. Prove that if $f(x)$ is differentiable at $x = a$, then $f(x)$ is also continuous at $x = a$. Find the maximum or minimum value of the function $y = x^2 + 6x + 18$. [10+5]

6. Maximize $U = xy^2$ subject to: $50 = 2x + 4y$. State the first and second order conditions. [9+6]

7. Solve the following two equations both graphically and by using Cramer's rule: [8+7]

$$\begin{aligned} 3x + 4y &= 10 \\ x - y &= 1 \end{aligned}$$

8. Find the dot product of vectors $P(1, 3, -4)$ and $Q(3, -5, 2)$. Find the value of $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$ [6+9]

GENERIC ELECTIVE COURSE EXAMINATION, 2022

Semester – I

GEC-1 (Economics) - Introductory Microeconomics

Time - Three Hours

Full marks – 60

Answer any five questions. Questions are of values as indicated at the margin.

1. (a) State the laws of demand and supply. Following usual demand and supply curves, show the occurrence of equilibrium and check the stability of the equilibrium.
(b) Under what circumstances, price ceiling and floor are imposed by the government?8+4
2. (a) Draw an indifference map and state its properties. (b) Why a usual indifference curve is negatively sloped and convex to the origin? (c) Check under what conditions, an indifference curve might be a straight line.4+6+2
3. Assuming price of one commodity changes, keeping money income and price of other commodity unchanged, illustrate the total effect, income effect and substitution effect. Hence draw the ordinary and compensated demand curve for the commodity whose price is changing.8+4
4. What is a production function? Illustrate a short run total product curve and derive the average and marginal product curves from there. Also show the optimum stage of production.2+7+3
5. Define cost function and its components. Using the concept of returns of scale, examine the curvature of the short run total, average and marginal cost curves with suitable diagrams.4+8
6. (a) Define a perfectly competitive market and discuss its properties. (b) Illustrate the short run equilibrium in such market.4+8
7. (a) What is monopoly market and why does it arise? (b) Using a suitable diagram, discuss the short run monopoly equilibrium.4+8
8. Write short notes on (any three):4X3
(a) Price consumption curve, (b) Income consumption curve, (c) Ridge lines & Isoquant, (d) Long run cost function, (e) cross price elasticity of demand.

B.A. (Honours) Examination-2022

Semester-I (CBCS)

Political Science

Generic Elective Course: GEC-I

(Political Theory-I)

Time: 3 Hours

Full Marks: 60

Questions are of value as indicated in the margin

Question 1 is compulsory and choose any three from the rest

(15x4=60)

- 1) Examine the Gandhian perspective of the State.
(15)
- 2) What do you understand by the "State of Nature"? Explain the Mechanistic theory of the State.
(3+12)
- 3) Write a note on the Structural-Functional analysis. Discuss the significance of the Systems analysis.
(10+5)
- 4) Examine the concept of nature of law. What are some of the major sources of law?
(7.5+7.5)
- 5) Define rights. Critically examine the theories of moral rights and legal rights.
(3+12)
- 6) Define Behaviouralism and Post-Behaviouralism. Write a short note on the intellectual foundations of Behaviouralism, as propounded by David Easton.
(7.5+7.5))

BA (Honours) Examination, 2023

Semester-I (CBCS)

Course: CC-1

(Introductory Microeconomics)

Time: 3 hours

Full Marks: 60

Questions are of value as indicated in the margin

*Answer **two** questions from each group*

Group A

Answer **Question no 1 and any one** from the rest of the following questions

1. a. A person likes soft drinks but does not distinguish between brands A and B.
 - (i) Draw his indifference curves showing brands A and B on two axes.
 - (ii) Draw his indifference curves showing soft drinks and other goods on two axes.
- b. Show that inferiority of a good is necessary for its being Giffen.
- c. Explain the following statement. The distance between two indifference curves is immaterial; the only relevant issue is which is higher and which is lower.

(4+3)+5+3

2. a. What does the term "ceteris paribus" mean? How does it relate to the distinction between a change in quantity demanded and change in demand?
- b. If the equation for a market demand curve is $Q_d = 10 - 4P$, and the equation for the market supply curve is $Q_s = 4P$, find the market equilibrium price and quantity. Verify your answer graphically.

7+8

3. a. Explain why economists usually oppose controls on prices?
- b. Explain Non-binding price ceiling in detail.
- c. Why does a reduction in the price of a good increase consumer surplus?

5+5+5

Group B

Answer any **two** questions from the following:

4. (a) What is a production function? How does a long run production function differ from a short run production function?
- (b) Assuming that prices of factors of production are given, show how a firm minimises her cost to produce a certain level of output defined by an iso-quant.
- (c) If a firm's average cost curve is U-shaped, why does its average variable cost curve achieve its minimum at a lower level of output than the average total cost curve.
- (d) Why is the marginal product of labour likely to increase initially in the short run as more of the variable input is hired?
- (1+2)+5+4+3
5. (a) Derive the short-run supply curve of a perfectly competitive firm. How do you get short run industry supply curve?
- (b) Explain why a competitive firm cannot make excess profit in long run equilibrium. How do you define normal profit?
- 8+7
6. (a) A monopolist is producing at a point at which marginal cost exceeds marginal revenue. How should it adjust its output to increase profit?
- (b) Why is there no unique supply curve under conditions of monopoly?
- (c) Why is there a social cost to monopoly power? If the gains to producers from monopoly power could be redistributed to consumers, would the social cost of monopoly power be eliminated? Explain briefly.
- 4+5+6
7. Why is demand for an input called derived demand? Derive an individual Firm's demand curve for a variable input. Do you agree with the view that "the supply curve of a factor such as labour need not be upward-sloping"?

2+5+8

B.A. (Honours) Examination, 2023
Semester - I (CBCS)
Subject: Economics
Course: CC-02
(Mathematical Methods for Economics - I)

Time: 3 Hours

Full Marks: 60

Questions are of value as indicated in the margin
Answer any four (04) of the following questions

1. (a) Show that if $f(x)$ is differentiable at $x = x_0$, then $f(x)$ is also continuous at $x = x_0$.
(b) If a function is continuous over the closed interval $[a, b]$ and differentiable over the open interval (a, b) , then prove that there exists at least one point $c \in (a, b)$ such that $f'(c) = \frac{f(b) - f(a)}{b - a}$.7+8 = 15
2. (a) Prove that $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$.
(b) Using the Cauchy's theorem on limit, prove that: $\lim_{n \rightarrow \infty} \left(\frac{1}{n^2} + \frac{1}{(n+1)^2} + \dots + \frac{1}{(2n)^2} \right) = 0$.7+8 = 15
3. (a) Find the 2nd degree Taylor Polynomial of $y = \log x$ at $x = 1$.
(b) Using the first principle of differentiation, derive $\frac{dy}{dx}$ when $y = x^2 + 1$.8+7 = 15
4. (a) Find the critical point(s) and the maximum or minimum value of the function $y = x^2 + 2x + 1$.
(b) A rectangular garden has to be built using a brick wall as one side and wire fencing for the other three sides. Given 100 meters of wire fencing, determine the dimensions that creates a garden of maximum area. What is the maximum area?6+9 = 15
5. (a) Graphically and mathematically interpret a convex combination of two points on a function.
(b) Differentiate the function $y = \log x^2$ with respect to x , using first principle of differentiation.7+8 = 15
6. (a) Derive $\frac{dy}{dx}$ from the equations: (i) $x^3 + y^3 + 3x^2y + 3xy^2 = 0$; (ii) $y = 5x^2 - e^y$
(b) Verify whether the functions satisfy the Rolle's theorem:
(i) $f(x) = x^2 + 2x$, over $[-2, 0]$
(ii) $f(x) = 2x^2 - 8x + 6$, over $[1, 3]$ 7+8 = 15
7. (a) Briefly explain (with diagram) the concept of vector addition and scalar multiplication.
(b) For a rectangular $2' \times 3' \times 4'$ box, find the angle that the longest diagonal makes with the $4'$ side.
(c) Define a unit vector. For a vector $U = (-1, 2, -3)$, find a vector of length $2/\sqrt{3}$ which points in the opposite direction.5+5+5 = 15
8. (a) State the conditions for a system of two non-degenerate linear equations in two unknowns have (i) one solution (ii) no solution (iii) infinite number of solutions with diagrams.
(b) $L_1: x - 3y - 2z = 6$; $L_2: 2x - 4y - 3z = 8$; $L_3: -3x + 6y + 8z = -5$
For the above system, find the solution by Gaussian forward elimination and backward substitution method.7.5+7.5 = 15

Undergraduate Examination, 2023
Semester – I
Economics
Generic Elective Course – GEC-1
(Introductory Microeconomics)

Time: Three Hours

Full Marks: 60

Questions are of value as indicated in the margin.

Answer **any five** questions.

1. (a) Clearly state and illustrate the laws of demand and supply. Show the incidence and stability of equilibrium through the interaction of the demand and supply curves.
(b) How do the equilibrium prices and quantities change, if – (i) there is increase in consumer's income and (ii) drought in the supply?
8+4
2. (a) When and how does the government intervene in the market to create price ceiling and floor? When can a black market in the commodity market be created?
(b) State and show the concepts of perceived demand and supply curves when unit tax is imposed by the government.
7+5
3. (a) What do you mean by own and cross price elasticities of demand? Would their signs be same or different?
(b) Examine the relationship between price elasticities of demand and total revenue?
6+6
4. (a) What is a budget line? How can we determine the horizontal and vertical intercepts of the budget lines? How can a budget line shift as income and/or commodity prices change?
(b) If two commodities are perfect substitutes, what are the possible consumer equilibria when indifference curve interacts with the budget line?
8+4
5. Define production function and distinguish between the short and long run of it. In case of a single variable production function, what are different stages of production? Show that a rational producer will always operate at the 2nd stage of production.
4+4+4
6. Define perfectly competitive market and its assumptions? Show that in long run perfectly competitive market, producers always earn normal profit.

4+8

7. What is a monopoly market? How is monopoly power generated? Using a diagram show that a monopolist always earns positive profit

2+3+7

8. Write short notes on: (a) Expansion path, (b) Relationship between total, average and marginal costs, (c) Implicit and opportunity costs.

3+5+4

B.A. (Honours) Examination-2023
Semester-I
Generic Elective Course: GEC-I (CBCS)
Subject: Political Science
(Political Theory-I)

Time: 3 Hours

Full Marks: 60

Questions are of value as indicated in the margin

Question 1 is compulsory and choose any three from the rest (15x4=60)

- 1) State is an instrument of class exploitation- Explain. How does the Marxist concept of 'equality' differ from the liberal concept of 'equality'? (7.5+7.5=15)
- 2) Briefly describe Plato and Aristotle's theories of Justice. Mention the basic tenets of liberalism. (10+5=15)
- 3) What is "State of Nature"? Referring to the idea of Social Contract, elucidate the Mechanistic theory of State. (5+10=15)
- 4) Freedom is the quality of human being and a condition of human being-Explain the concept of freedom in the light of the above statement. Define evolutionary socialism and revolutionary socialism. (10+5=15)
- 5) Write a note on the nature of law. What are the sources of law? (7.5+7.5=15)
- 6) What do you understand by state as a natural institution and state as an ethical institution? Discuss in brief the theories of natural, moral and legal rights. (7.5+7.5=15)