2024

ECONOMICS — HONOURS

Paper : DSCC-1

(Microeconomics - I)

Full Marks : 75

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Group - A

1. Answer ***any ten*** questions : 2×10

(a) Higher taxes discourage work effort. Is this statement positive or normative? Explain.

(b) Suppose you win ₹ 1,000 as prize money and you have a choice of spending the money now or keeping it in a bank for a year that pays 5% interest. What is the opportunity cost of spending the prize money now?

(c) Give two reasons as to why a production possibility curve might shift outward.

(d) Explain the utility-maximizing condition using cardinal approach.

(e) Give two examples where the demand curve is upward sloping.

(f) The demand and supply equations of a product is given below : $Q^D = 286 - 20P$, $Q^S = 88 + 40P$, respectively. Determine the equation level of output.

(g) Explain why two indifference curves cannot intersect each other.

(h) Justify whether the following statement is true or false :

"If both supply and demand increase, the price of the good will always increase."

(i) Draw a demand curve with unit elasticity and explain its shape.

(j) What is natural monopoly?

(k) Give two reasons why governments intervene in a market economy.

(l) If quantity demanded of rice increased by 5% when the price of wheat increases by 20%, then what is the cross-price elasticity of demand for rice?

(m) What do the sign of income elasticity imply about the nature of the good?

(n) If a straight line demand curve is tangent to a curvilinear demand curve, then what can you infer about the elasticity of the two demand curves at the point of tangency?

(o) Explain two factors that affect elasticity of supply.

Group - B

2. Answer *any five* questions : 5×5

(a) What is the relationship between average product and marginal product in short-run production by a firm?

(b) How is demand for a commodity affected by change in the price of related good?

(c) Use the law of diminishing marginal utility to explain why demand curves slope downward.

(d) How is cardinal utility approach different from ordinal utility approach?

(e) Explain the assumptions that make indifference curves negatively sloped and convex to the origin.

(f) Explain the statement that two countries can achieve gains from trade even if one of the countries has an absolute advantage in the production of all goods.

(g) Identify similarity and difference between common resources and public goods. Explain with an example of each type of good.

(h) Do you agree that a linear demand curve will always have different elasticity at every point on the curve? Justify your answer.

Group - C

Answer *any three* questions.

3. (a) Consider the following data showing Shruti's total utility from consumption of two goods movie DVD and music CD. Assume that the price of each DVD is ₹ 100 and the price of each CD is ₹ 50 and Shruti has ₹ 300 to spend on the two goods.

No. of DVD	Utility from DVD	No. of CD	Utility from DVD
1	1000	1	1000
2	1800	2	1800
3	2500	3	2500
4	3000	4	3000
5	3200	5	3200

(i) Draw the budget line of Shruti.

(ii) Assuming that Shruti desires to maximize utility, what combination of movie DVD and music CD will she purchase?

(iii) Will she exhaust her budget?

(b) Suppose Bihan considers red pencil to be as good as blue pencil. If price of red pencil is ₹ 2 and that of blue pencil is ₹ 1 and if he has ₹ 100 to purchase pencils, then how many red pencil or blue pencil will he purchase to maximize his utility? Illustrate your answer with the help of a diagram. (2+3+1)+(2+2)

4. (a) Sumedha has decided always to spend one-third of her income on clothing.

(i) What is her income elasticity of clothing demand?

(ii) What is her price elasticity of clothing demand?

(iii) If Sumedha's tastes change and she decides to spend only one fourth of her income on clothing, how does her demand curve change? What is her income elasticity and price elasticity now?

(b) Explain why the following might be true :

A drought around the world raises the total revenue that farmers receive from the sale of grain, but a drought only in the state of Punjab reduces the total revenue that Punjab farmers receive.

1½+1½+(1+1+1)+4

5. (a) The shortage of fish caused an increase in demand for protein-rich substitutes, notably soybeans. As soybeans are used in animal feed, higher soybean prices eventually were translated to higher cattle prices.

Use demand and supply diagrams to show what happened in the (i) fish (ii) soybean and (iii) cattle markets. Indicate which curve is shifted in each instance and show the effects on equilibrium price and quantity in the relevant market.

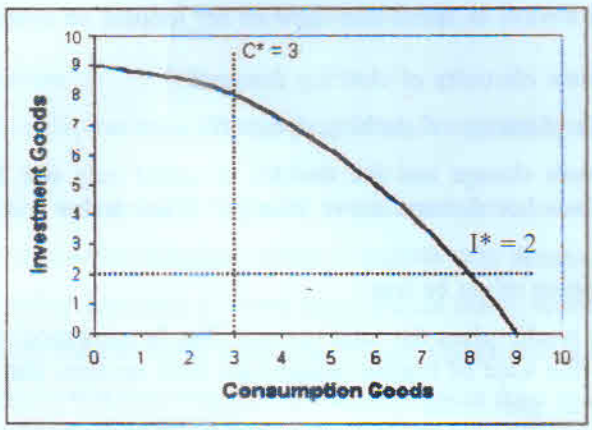
(b) The following table shows the demand and supply of a vegetable fibre at different prices in the domestic market of India.

Price (₹)	Supply (kg)	Demand (kg)
300	2	34
600	4	28
900	6	22
1,200	8	16
1,500	10	10
1,800	12	4

(i) What is the equation for demand?

(ii) What is the equation for supply? (2+2+2)+(2+2)

6. (a) Consider the PPF below. C* represents the economy's subsistence level of consumption; if consumption drops below C* then some people will starve. I* represents the level of investment necessary to replace worn out equipment and keep the PPF in its present position. With less investment PPF will shrink next year. With more investment PPF will grow.



Redraw the above diagram on your answer sheet. Label your graph completely. Indicate the point the economy will produce for each of the following goals :

(i) Grow as rapidly as possible without starving its citizen.

(ii) Enjoy as much consumption as without allowing its PPF to shrink in future.

(iii) Suppose that a severe disaster forces the country's PPF to shift until it is barely possible to produce the combination of I* and C*. Draw the country's new PPF and answer the questions for part (i) and (ii) again.

(b) Assume that Japan and Korea can produce both car and aeroplanes. Also assume that each country has 2400 labour hours available to produce cars and planes.

Country	Labour Hours Needed to Make One	
	Car	Aeroplane
Japan	30	100
Korea	50	150

(i) Which country has absolute advantage in production of car?

(ii) Which country has absolute advantage in production of aeroplane?

(iii) Which country has comparative advantage in production of car?

(iv) Which country has comparative advantage in production of aeroplane?

(v) If they trade among themselves, which country will export car?

[1+1+(1+1+1)]+[(1+1+1+1+1)]

7. (a) Drinking a glass of orange juice gives you MU (Marginal Utility) of 30 utils and its price is ₹ 25. On the other hand, drinking a glass of lime soda gives you a MU of 40 utils and its price is ₹ 50. If you buy one unit of each good,

(i) Are you maximizing your utility? Justify your answer.

(ii) If not, how can greater total utility be obtained?

(b) Suppose Vikram spends his entire income of ₹ 5,000 on two goods namely Pizza and Burger. The price of Pizza is ₹ 100 and that of Burger is ₹ 200.

(i) Draw Vikram's budget line indicating the values of its slope and intercept.

(ii) In which situation is he better-off?

(A) If his income doubles.

(B) If price of both the goods he buys fall by half.

(C) What is the economic logic behind your answer? [(1+2)+2]+[2+(1+1+1)]

2024

ECONOMICS — HONOURS

Paper : SEC-1

[Introductory Statistics and Application (I)]

Full Marks : 75

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Group - A

1. Answer ***any ten*** questions :

(a) What is Frequency Polygon? 2

(b) For a positively skewed distribution, what is the relation between mean, median and mode? 2

(c) The first two moments of a distribution about the value 3 are 5 and 41 respectively. Then find the coefficient of variation. 2

(d) Let, $2x - 5y = 10$, and quartile deviation of x is 5. Find the quartile deviation of y. 2

(e) The lower and the upper quartiles of a distribution are 14.6 and 25.2 respectively and the coefficient of skewness is 0.5. Find the median of the distribution. 2

(f) What is Cost of Living Index number? 2

(g) What is a questionnaire? 2

(h) What is Ratio Chart? 2

(i) What do you mean by Base shifting in the context of Index number? 2

(j) What is Gini Coefficient? 2

(k) Find the first moment about the point 5 for the set of numbers 4, 6, 8, 10. 2

(l) How can you differentiate between Primary data and Secondary data? 2

(m) If $\sum x_i^2 = 300$, $\sum x_i = 60$, then what is the possible value of number of observations? 2

(n) What is the value of mean deviation about mean for the first 5 Natural Numbers? 2

(o) If $AM = 10$, and $CV = 50\%$, find $\text{Var}(5 - 2x)$. 2

Group - B

Answer ***any five*** questions.

2. What are the points to be kept in mind while framing a questionnaire? 5

3. Calculate median from the following data. 5

Class	5 – 14	15 – 19	20 – 29	30 – 39	40 – 44	45 – 49
Frequency	4	6	10	15	8	2

4. What is the variance of first n Odd Natural Numbers? 5

5. Calculate price index number using Fisher's Formula, and show that it satisfies time reversal test. 5

Commodity	2019		2020	
	Quantity	Price(₹)	Quantity	Price(₹)
A	50	32	50	30
B	35	30	40	25
C	55	16	50	18

6. The scores of two batters A and B are given below. Who is a more consistent player? 3+2

A	32	28	47	63	71	39	10	60	96	14
B	19	31	48	53	67	90	10	62	40	80

7. If two variables x and y are related as $y = a + bx$, a and b being constants, show that correlation coefficient between x and y is (+1) or (–1) according as b is positive or negative. 5

8. If regression coefficient of y on x (b_{yx}) is $\left(-\frac{3}{2}\right)$, and regression coefficient of x on y (b_{xy}) is $\left(-\frac{1}{5}\right)$, then find the Ratio of variance of x and variance of y. 5

9. Show that odd central moments of a symmetrical frequency distribution of a discrete variable are all zero. 3+2

Group - C

Answer ***any three*** questions.

10. (a) For two positive values X_1, X_2 of a variable X, prove that

A.M. × H.M. = G.M.^{2}.

Is this result true for any number of observations?

(b) A student's grades in laboratory, lecture and examination parts of a physics course were 71, 78 and 89 respectively.

(i) If the weights accorded to these grades are 2, 4 and 5 respectively, what is an appropriate average grade?

(ii) What is the average grade if equal weights are used? (4+1)+(3+2)

11. (a) For a distribution the mean, variance, third order central moment and β_2 are 10, 16, 64 and 4 respectively.

(i) Find the first three moments about origin,

(ii) Compute Y_1 and Y_2 coefficients, and comment on the nature of skewness and kurtosis of the distribution.

(b) If the incomes of five persons are ₹ 1,000, ₹ 2,500, ₹ 1,500, ₹ 5,000 and ₹ 3,000, then compute the Gini coefficient of inequality. (4+2)+4

12. (a) Find the angle between the two regression lines in a bi-variate model and interpret the cases when (i) $r = \mp 1$ and (ii) $r = 0$.

(b) Consider the following data :

$n = 10 \quad \Sigma Y = 96 \quad \Sigma X = 80 \quad \Sigma Y^2 = 952 \quad \Sigma X^2 = 668 \quad \Sigma XY = 789$

Find the regression equation of Y on X. (4+2)+4

13. (a) What are the shortcomings of correlation coefficient as a measure of association between two variables?

(b) On the basis of 25 pairs of values of two variables X and Y, the following results were obtained :

$\Sigma X = 125 \quad \Sigma Y = 100 \quad \Sigma X^2 = 650 \quad \Sigma Y^2 = 460 \quad \Sigma XY = 508.$

It was, however, later detected at the time of checking that two pairs of values (X, Y), (6, 14) and (8, 6) were copied wrongly in computing the above results. Find the correct value of correlation coefficient between X and Y after replacing the incorrect pairs by the correct pairs (8, 12) and (6, 8). 4+6

14. (a) What do you mean by fixed-base and chain-base indices? What are their relative merits and demerits?

(b) Find Price Index Numbers using

(i) simple average of price relatives and

(ii) weighted average of price relatives for the following data using 2012 as the base period :

Item	Price in 2012	Price in 2023	Weight
A	16	20	40
B	40	60	25
C	5	6	5
D	6	8	20
E	2	4	10

(2+3)+(2+3)

(0977)