2019/TDC/ODD/SEM/ECOHCC–101T/061

TDC (CBCS) Odd Semester Exam., 2019

ECONOMICS

(1st Semester)

Course No. : ECOHCC–101T

(Introductory Microeconomics)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **two** short questions (*2* marks) and **one** broad question (*10* marks) from each Unit

UNIT—I

1. Answer any *two* of the following : 2×2=4

(a) How does scarcity govern economic choices?

(b) Devine economic efficiency.

(c) What are the main economic systems?

2. *(a)* *(i)* What is economics? Why it is important to study economics? Give three reasons. 2+3=5

(ii) Who introduced economics as a real science? Explain briefly how economics is related to science. 1+4=5

Or

(b) Why are graphs used in economics? Explain with example, the use of line graphs and pie graphs in microeconomic analysis. 2+4+4=10

UNIT—II

3. Answer any *two* of the following : 2×2=4

(a) Define supply function.

(b) What is arc elasticity?

(c) How does competition affect the market?

4. *(a)* *(i)* Define cross elasticity of demand. How do we measure it? 2+2=4

(ii) Show the nature of cross elasticity of demand for substitutes and complementary goods. 3+3=6

Or

(b) *(i)* What is price control? Why does control of prices of some commodities by the government become inevitable? 2+2=4

(ii) Explain in brief the effects of price control or demand and supply of commodities with the help of a diagram. 6

UNIT—III

5. Answer any *two* of the following : 2×2=4

(a) Define slope of indifference curve.

(b) Distinguish between normal good and inferior good.

(c) What is price consumption curve (PCC)?

6. *(a)* Distinguish between budget line and budget space. Explain briefly consumer's equilibrium though scale of preferences. 4+6=10

Or

(b) Illustrate the difference between the Hicksian and Slutsky methods of separating income and substitution effects of price change of a normal good. Which method gives, in your opinion, a better measure of the two effects and why? 7+3=10

UNIT—IV

7. Answer any *two* of the following : 2×2=4

(a) Define opportunity cost.

(b) Mention two features of imperfect competition.

(c) What is shutdown point of the firm?

8. *(a)* Show graphically the determination of profit maximizing equilibrium of discriminating monopolist. Is price discrimination socially desirable? 7+3=10

Or

(b) *(i)* Distinguish between plant curve and envelope curve. 3

(ii) Illustrate graphically the relationship between AFC, AVC, AC and MC. Why does AFC take the form of a hyperbola? 5+2=7

UNIT—V

9. Answer any *two* of the following : 2×2=4

(a) Mention two factors that affect the demand for demand for labour.

(b) Point out two characteristics of efficient land markets.

(c) How are output and input related to productivity?

10. *(a)* What is MRP? What role does it play in the derivation of demand curve for a factor of production? Explain diagrammatically. 3+7=10

Or

(b) Write short notes on the following : 5+5=10

(i) Labour market equilibrium in a competitive market

(ii) Derivation of labour demand curve with factor demand inter-dependence.

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TDC (CBCS) Odd Semester Exam., 2019

ECONOMICS

(1st Semester)

Course No. : ECOHCC-102T

(Mathematical Methods in Economics—I)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *two* of the following : 2×2=4

(a) State De Morgan's law.

(b) Define range of a function.

(c) Show that $(ab)^{-1} = a^{-1}b^{-1}$ (if $a \neq 0, b \neq 0$).

2. *(a)* If

$A = \{1, 2, 3, 4, 5\}$
$B = \{3, 4, 5, 6, 7\}$
$C = \{0, 1, 8, 9\}$

find the following : 6

(i) $A \cap B$

(ii) $A \cup B$

(iii) $A - B$

(iv) $A \cup (B \cap C)$

(v) $(A \cup B) - C$

(vi) $A \cup B - C'$

(b) In a class of 50 students, 30 students take Economics, 25 students take Mathematics and 10 take both. Find the number of students taking neither of the two subjects. 4

OR

3. *(a)* Define limit of a function. 2

(b) Show that

$$\lim_{x \to \infty} \frac{5x^2 + 4x^4}{5x^2 - 4x^4} = 1$$ 3

(c) State the conditions for continuity of a function. Determine whether the following function is continuous or not at $x = 2$: 2+3=5

$$f(x) = x^2 - 4x + 3$$

UNIT—II

4. Answer any *two* of the following : 2×2=4

(a) Define constant function with example.

(b) Give one example each of finite sequence and infinite sequence.

(c) Define domain and range of a function.

5. Explain with diagram *(a)* linear function, *(b)* quadratic function, *(c)* exponential function, *(d)* polynomial function and *(e)* logarithmic function. 10

OR

6. *(a)* *(i)* State necessary and sufficient conditions for convergency.

(ii) Test the convergency of the series

$$1 - 1 + \frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \cdots$$ 2+3=5

(b) Formulate the model for the sum of the series, $\{1^2+3^2+5^2+7^2+9^2+\cdots+n^2\}$ and determine the sum up to the 7th term. 5

UNIT—III

7. Answer any *two* of the following : 2×2=4

(a) Define differentiable function.

(b) Find the differential coefficients of e^{-x} and 2^x.

(c) Find the second-order differential coefficient w.r.t. x, when $y=3x^3-9x$.

8. (a) Find $\frac{dy}{dx}$, when—

(i) $y=x^{ex}$;

(ii) $y=\frac{1}{\sqrt{5x^3-9x^2+7}}$. 3+4=7

(b) If the demand law is $x=\frac{20}{p+1}$, find e_d with respect to price at the point where $p=3$. 3

OR

9. (a) If the utility function is $u=\log(ax_1+bx_2+c\sqrt{x_1x_2})$, obtain the ratio of marginal utilities. 4

(b) The total cost function of a firm is $C=\frac{1}{3}x^3-5x^2+28x+10$, where C is the total cost and x is the output. A tax at the rate of ₹2 per unit of output is imposed and the producer adds it to his cost. If the demand function is given by $p=2530-5x$, find the profit maximizing output and the price at the level. Also find the maximum profit. 6

UNIT—IV

10. Answer any *two* of the following : 2×2=4

(a) Define convex function for a single-variable case.

(b) Determine whether $y=1+2x-x^2$ rises, falls or remains stationary at $x=1$.

(c) Write single-variable optimization conditions for $y=f(x)$.

11. (a) State and explain the geometric characteristics of local and global optima. 6

(b) If the total cost function is $C=\frac{1}{3}Q^3-3Q^2+9Q$, find at what level of output AC be minimum and what level it will be. 4

OR

12. (a) "For the function $y=f(x)$, the first derivative $\frac{dy}{dx}$ refers to the absolute value of function and the second derivative $\frac{d^2y}{dx^2}$ refers to the slope of the curve." Explain the statement with graphical representation. 7

(b) Given the function $y=10x^3-15x^2+10$, determine whether the function rises, falls or remains stationary at $x=2$ and at $x=3$. 3

UNIT—V

13. Answer any *two* of the following : 2×2=4

(a) Define definite integral.

(b) Define first-order difference equation.

(c) Find $\int e^{x/2}dx$.

14. Find the integral of the following :

(a) $y=\frac{4x^7+3x^3-5x^2}{x^4}$ 3

(b) $y=\frac{6x-8}{3x^2-8x+5}$ 3

(c) $y=x\log x$ 4

OR

15. (a) Evaluate :

(i) $\int_1^5\left(x-\frac{2}{x}\right)dx$ 3

(ii) $\int x^2e^{3x}dx$ 3

(b) If the demand function is $P=35-2x-x^2$ and the demand x_0 is 3, find the consumer's surplus. 4

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