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ECONOMICS

(Major)

Paper : 3.1

ACC No. 16.45

(Elementary Mathematics for Economics)

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks
for the questions

1. Answer the following questions : 1×10=10

   (a) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{4, 5, 6, 7\}$,
   find $A \cup B$.

   (b) Give an example of a finite set.

   (c) Define a rational function with example.

   (d) Define a column vector with example.

   (e) Given that $A = \begin{bmatrix} 2 & 3 & 0 \\ 4 & 1 & 2 \end{bmatrix}_{2 \times 3}$. Find the
   transpose of A, i.e., A'.

A13—4200/**18** *(Turn Over)*

(f) Define the rank of a matrix with example.

(g) Given that $y = e^{ax}$. Find $\dfrac{dy}{dx}$.

(h) For the function $z = x + ye^{-x}$, find $\dfrac{\partial z}{\partial y}$.

(i) Find $\int x^5 \, dx$.

(j) What total function will you obtain when you integrate the marginal propensity to consume (MPC) function?

2. Answer the following questions : $2 \times 5 = 10$

(a) Define a homogeneous function.

(b) Evaluate the limit of the function

$$\lim_{x \to 1} \frac{1 - x}{1 - x^2}$$

(c) Can you add $A = \begin{bmatrix} 3 & 2 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 9 & 3 \end{bmatrix}$? Justify your answer.

(d) Apply quotient rule to find the derivative of $y = \dfrac{\sqrt{x}}{x + 1}$.

(e) Find the integral

$$\int \left(2x^2 +\right.$$

3. Answer briefly any *fou*

(a) State when two conformable for that $A = \begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix}$ an

(b) If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$, show

(c) State the conditio function $y = f(x)$ $x = a$. Graphically, out whether a fu or not?

(d) Find the partial function

$$y = f(x_1, x_2) = x$$

(e) Obtain the first- a vative of the followi

$$y = x^3 - 6x^2$$

(f) Find the integral o

4. Answer any *four* of the following : 10×4=40

(a) Solve the following equation system by matrix inversion :

$$2x_1 + x_2 + 3x_3 = 15$$
$$x_1 - 2x_2 + 5x_3 = 13$$
$$4x_1 + 3x_2 - x_3 = 11$$

(b) What is a determinant? Evaluate

$$|A| = \begin{vmatrix} 4 & 0 & 2 \\ 3 & 3 & 1 \\ 1 & 2 & 5 \end{vmatrix}$$

State two properties of determinants with example. 2+4+4=10

(c) State three basic assumptions of input-output analysis. Give the economic meaning of the element $a_{32} = 0 \cdot 35$ in an input coefficient matrix. Write the input coefficient matrix for an n industry economy. 3+2+5=10

(d) In a three-sector economy, the input coefficient matrix and final demand vector are as given below :

$$A = \begin{bmatrix} 0 \cdot 3 & 0 \cdot 2 & 0 \cdot 3 \\ 0 \cdot 1 & 0 \cdot 3 & 0 \cdot 4 \\ 0 \cdot 2 & 0 \cdot 3 & 0 \end{bmatrix} \text{ and } F = \begin{bmatrix} 500 \\ 700 \\ 600 \end{bmatrix}$$

Find the sectorial output X_1, X_2 and X_3.

(Continued)

(e) State and prove t differentiation. If Y using the product ru find $\dfrac{dy}{dx}$.

(f) (i) For the functio

$$y = \log(ax^2 +$$

find $\dfrac{dy}{dx}$.

(ii) If $xy = a$, show

$$x \frac{d^2y}{dx^2} + 2 \frac{d}{a}$$

(g) For the following fu $f_{xy} = f_{yx}$:

(i) $f(x, y) = 6x^3 + 5.$

(ii) $f(x, y) = 5x_1 x_2$

(h) (i) Find the definit

$$\int_2^4 (8 + 7x)^2$$

(ii) Given that the marginal cost function $MC = C'(Q) = 3Q + 1$, where Q is the output and the total fixed cost is 20. Find the total cost function $TC = C(Q)$.   5+5=10

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2012

ECONOMICS

(Major)

Paper : 3.2

(The Monetary System)

Full Marks : 80

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following questions :   1×10=10

(a) What is 'standard money'?

(b) Define near money.

(c) Mention one asset of commercial bank.

(d) Give two examples of capital market regulator.

(e) What do you mean by 'moral suasion' as a method of credit control?

A13—4200**/19**   (*Turn Over*)

(f) Mention any two functions of financial system.

(g) Give two examples of financial intermediary.

(h) When was RBI nationalised?

(i) What do you mean by 'reserve fund' of a commercial bank?

(j) Mention the components of financial market.

2. Answer the following questions : 2×5=10

(a) Distinguish between primary market and secondary market.

(b) Distinguish between an equity and a debt instrument.

(c) Distinguish between full-bodied money and token money.

(d) Distinguish between qualitative credit control and quantitative credit control.

(e) How does credit multiplier differ from cash reserve ratio?

A13—4200/**19** (Continued)

3. Answer any *four* of the fol brief :

(a) Explain briefly functions of the Cen

(b) Point out the featu financial system sho

(c) Bring out the lim creation by commer

(d) How does the stock to capital formation

(e) Explain the role of t the lender of last re

(f) Explain the conflict and 'profitability' commercial bank.

4. Answer any *four* of the foll

(a) Explain the concept Bring out the sign money supply meas

(b) Critically discuss th money.

A13—4200/**19**

(c) Give an outline of the assets and liabilities of a commercial bank. 10

(d) Discuss the principal functions of the Central Bank. 10

(e) Explain the process by which the bank rate policy operates. Discuss the limitations of the policy. 7+3=10

(f) What are the objectives of monetary policy? Can monetary policy alone achieve them? 5+5=10

(g) Explain the constituents of a financial system. Also discuss the importance of the system. 8+2=10

(h) What is a 'financial market'? Discuss the features of a financial market. 2+8=10

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