



UNIVERSITY OF NORTH BENGAL
B.A./B.Sc. Honours 1st Semester Examination, 2020

CC2-ECONOMICS

MATHEMATICAL METHODS FOR ECONOMICS-I

Full Marks: 60

ASSIGNMENT

*The figures in the margin indicate full marks.
All symbols are of usual significance.*

GROUP-A

Answer any two questions from the following

20×2 = 40

1. (a) What do you mean by input-output analysis? 3+5+12
(b) What are the assumptions of Leontief's input-output model?
(c) State the Hawkins-Simon condition in an input-output model.

2. A firm faces a demand curve $p=100-2q$ and has the cost curve $C = q^3 - 3q^2 + 50q + 10$. 15+5 = 20
(i) Determine the profit maximizing output of the firm.
(ii) Estimate the Lerner Index of monopoly power
$$(P - MC)/P$$
in the market concerned.

3. Let the utility function be given by 10+10 =20
$$U = xy$$
 and
The budget constraint be given as
$$100 - p_x \cdot x - p_y \cdot y = 0$$

(i) Find the demand functions for x and y .
(ii) Show that these functions are homogeneous of degree zero in absolute price.

4. (a) Distinguish between ordinary and compensated demand curves. 8+12=20
(b) Derive expansion path from Cobb-Douglas production function.

GROUP-B

Answer any *two* questions from the following

10×2 = 20

5. Mathematically drive the relation between Average productivity (AP) and Marginal productivity (MP) of a factor. 10

6. The production function is $Q = KL$ and the cost equation is 10

$$C = 10K + SL.$$

Find the maximum output that the producer can produce with a total cost of Rs. 500.

7. (a) Define Cobb-Douglas production function. 3+7

(b) State and prove any two properties of Cobb-Douglas production function.

8. Explain Bordered Hessian determinant. 10

—×—