

B.A. (Honours) Examination, 2018
Semester-IV
Economics
Paper-H-8 (Core)
(Mathematical Economics-I)

Time: Three Hours

Full Marks: 40

Questions are of value as indicated in the margin.

Answer **any four** from the following questions.

1. (a) Explain Walrasian and Marshallian stability conditions with the help of equations of demand-supply curve.
 (b) Show that $Z = xy; (x, y \geq 0)$ is not quasi-concave.
 (c) Find the point elasticity of demand for the demand function $q = 100P^{-2}$; where q = Quantity demanded and P =Price. 6+5+4=15

2. (a) Mathematically derive the effect of change in Government purchases on income and interest rate in an IS-LM model. Compare that with the results of Simple Keynesian Model.
 (b) Prove that facing the same budget line the original utility function $U = f(x, y)$ and its monotonic transformation $V = g(f(x, y))$ will have same equilibrium value of x and y . 8+7=15

3. Show that diminishing marginal utility is neither necessary nor sufficient condition for regular strictly quasi-concavity of the utility function or convexity of indifference curve. 15

4. Derive and interpret the Slutsky equations for a consumer with utility function $U = f(x, y)$. 15

5. (a) Define concavity and quasi-concavity of a function.
 (b) Show that quasi-concavity is weaker condition than concavity. 7+8=15

6. A consumer has the utility function $U = X^2Y^2$, and the budget constraint $M = P_X X + P_Y Y$.
 a. Set up the constrained maximization problem and derive first-order conditions.
 b. Derive the consumer's demand for X and Y in terms of the parameters.
 c. Derive the indirect utility function for the consumer. 5+5+5=15

7. (a) Show that Cobb-Douglas production function is a limiting case of CES production function.
 (b) Derive the degree of elasticity of substitution in case of Cobb-Douglas production function. 8+7=15

8. (a) What is the difference between Pure Strategy and Mixed Strategy?
 (b) Find the equilibrium of the following two person zero-sum game where the numbers in the box represent the payoffs of player A.

Player B

		Player B	
		B_1	B_2
Player A	A_1	1	-1
	A_2	-1	1

8+7=15