

2021

ECONOMICS

PAPER-I

Time Allowed — 3 Hours *Full Marks — 200*

If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.

*Answers may be given either in **English** or in **Bengali** but all answers must be in one and the same language.*

Answer 5 questions, taking at least 2 from each group.

Group-A

1. (a) "If more of a commodity is demanded when income alone increases, less of the commodity must be demanded when its price alone rises." Consider a consumer in a two-commodity framework and establish the statement using the concepts of income and substitution effects.

   (b) (i) What is the 'Weak Axiom of Revealed Preference' (WARP)?

   (ii) In a 2-commodity framework, a consumer purchased 10 units of X & 10 units of Y, when the prices were Rs. 10/ unit of X and Rs. 10/ unit of Y. The consumer is found to have purchased 8 units of X and 12 units of Y, when the prices changed to Rs. 12/ unit of X and Rs. 9/ unit of Y. Has the consumer violated the WARP? 20+(8+12)=40

2. (a) Distinguish between the long-run equilibrium of a firm under perfect competition and that of a firm under monopolistic competition. Explain your answer with appropriate diagram(s).

   (b) Explain the relation between the short-run and long-run marginal cost curves. Posit an appropriate diagram. 20+20=40

3. (a) Assume a 2-person economy with a given endowment vector of 2 private goods — X and Y. Intuitively explain the Pareto optimality condition for the economy. Hence derive the 'Utility Possibility Frontier' (UPF) of the economy.

   (b) Define 'Economic Rent' and prove that the amount of economic rent earned by a factor varies inversely with the elasticity of factor-supply. Posit an appropriate diagram. (12+8)+(8+12)=40

4. (a) Distinguish between 'planned or ex-ante investment' and 'realised or ex-post investment' and relate the distinction to the difference between 'saving-investment equality' and 'saving-investment identity'.

   (b) What is the 'paradox of thrift'? Does the amount of private savings necessarily decrease if everybody in the economy try to save more. (8+12)+(8+12)=40

5. (a) State and explain the Law of Walras in the Hicks-Hansen IS-LM model of simultaneous determination of the national income and the rate of interest.

(b) Analyse the counter-recessionary impacts additional government expenditure in the IS-LM model under the following two scenario:

(i) the Central Bank keeps the stock of money supply unchanged;

(ii) the Central Bank raises the money stock to keep the interest rate unchanged.

20+20=40

Group-B

6. (a) "As an economy moves from autarchy to free trade, the distribution of national income must move in favour of the factor used relatively intensively in the export sector." Use the standard Heckscher - Ohlin model to evaluate the proposition.

(b) Consider the following two production functions:

(i) $Y = L^3 . K^2$ and

(ii) $Y = L^{2/3} . K^{1/3}$, where L = labour, K = capital and Y = real national income.

Which of the two production functions would you recommend for analysing the 'Solow Steady state' and why? Explain your answer. 20+20=40

7. (a) Consider an economy with one private good X and one public good G. Given the endowments of labour and capital, the production functions for X and G and the utility functions of two persons — A and B how would you find out the Pareto - optimal amounts of X and G for the economy? Explain your answer.

(b) Use the partial equilibrium approach to distinguish between a positive externality and a negative externality. Hence analyse the significance of the Pigou tax-subsidy paradigm.

20+(12+8)=40

8. (a) Explain the difference between the 'Covered Interest Parity' and the 'Uncovered Interest Parity' conditions and spell out their significance in the analysis of inter-country capital movements.

(b) "Public debt has no burden." Do you agree? Explain your answer. (10+10)+20=40

9. (a) (i) If a variable x takes the values 1, 2, ____, r with $F_1, F_2, ____, F_r (= n)$ as the corresponding less than type cumulative frequencies, then prove that

$$\bar{\chi} = (r+1) - \frac{1}{n}\sum_{i=1}^{r} F_i$$

(ii) For two values, say 'a' and 'b', $a < b$, of a variable x, the mean and standard deviation are 25 and 4 respectively. Find 'a' and 'b'.

(b) (i) Posit and explain the 'classical definition of probability' and identify its limitations.

(ii) Distinguish between 'simple random sampling with replacement' (SRSWR) and 'simple random sampling without replacement' (SRSWOR). Give appropriate examples.

(10+10)+(4+6)+10=40

10. (a) Briefly explain the method of 'Point Estimation' in statistical inference and identify the properties of a 'minimum-variance unbiased estimator' (MVUE).

(b) If $4U = 2x + 7$ and $6V = 2y - 15$, and the regression coefficient of y on x is 3, then find out the regression coefficient of V on U.

(10+10)+20=40
