**B.A. (Honours) Examination 2024**
**Semester—III (CBCS)**
**Economics**
**Course CC-6**
**(Intermediate Macroeconomics-I)**

**Time: 3 hours** **Full Marks: 60**

**Questions are of value as indicated in the margin**

*Answer any four questions*

1. State the assumptions of income determination in Simple Keynesian Model. How is income determined in this model? 5+10=15

2. Derive autonomous government expenditure multiplier in IS-LM model. What is the difference between this multiplier and that of Simple Keynesian Model? 10+5=15

3. (a) What is meant by Regressive Expectations by Keynes?
(b) How did Keynes define critical rate of interest?
(c) Derive the individual asset holder's money demand function.
(d) How do you derive the aggregate money demand function from individual money demand functions? 2+4+4+5=15

4 (a) In Tobin's model of portfolio balance, how is the technical budget constraint derived for an individual asset holder?
(b) Discuss the equilibrium portfolio balance for the risk averters. 6+9=15

5. Discuss in detail the effectiveness of fiscal policy in Classical macroeconomic model. 15

6. Using the IS-LM framework, discuss in detail the impacts of expansionary monetary and government expenditure policies under a usual situation of excess capacity and unemployment. 7.5+7.5=15

7. Discuss in detail the derivation of an underemployment equilibrium in Complete Keynesian Model. 15

8. Write short notes on the following (any two): 7.5+7.5=15
(a) Say's law of markets
(b) Effective demand problem
(c) Liquidity trap and policy implications
(d) Quantity theory of money

**B.A. (Honours) Examination, 2024**

**Semester-III**

**Economics**

**Course: CC-05**

**(Intermediate Microeconomics I)**

**Time: 3 Hours** **Full marks: 60**

Questions are of value as indicated in the margin.

Answer **Question no 1** and **any three** from the rest of the following questions

1. (i) Given $U = (x + 2)(y + 1)$ and $P_x = 5$, $P_y = 6$ and $B = 130$ being prices per unit of good x, good y and income, respectively.

a. Write the Lagrangian function assuming $\lambda$ as the Lagrangian multiplier.

b. Find the optimum values of $x^*$, $y^*$ , and $\lambda^*$.

c. Check the second-order sufficient condition for maximum.

d. Does the answer in (b) give any comparative static information?

(ii) "An inflextion point must be a stationary point."- True or False? Explain your answer.

(1+4+4+2)+4

2. A firm has the following total-cost and demand function as follows:

$C = \frac{1}{3}Q^3 - 7Q^2 + 111Q + 50$

$Q = 100 - P$

(i) Does the total-cost function satisfy the coefficient restrictions in the short run context?

(ii) Write out the total-revenue function R in terms of Q.

(iii) Formulate the total-profit function $\pi$ in terms of Q.

(iv) Find the profit-maximizing level of output, $Q^*$.

(v) What is the maximum profit?

4+2+5+4

3. (i) 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.

(ii) Show that demand function is homogenous of degree zero in prices and income.

(iii) Show that the sum of own price elasticity, income elasticity ad cross price elasticity is zero.

6+5+4

4. (i) Show that demand for goods do not change if there is monotonic transformation of utility function.

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

6+9

5. (i) Explain the Walrasian and Marshalian stability conditions with the help of demand and supply curves.

(ii) Give an example of equilibrium which is stable according to Walrasian condition but unstable according to Marshallian condition.

(iii) (a) Verify that a cubic function $z = aX^3 + bX^2 + cX + d$ is in general neither quasiconcave nor quasiconvex.

(b) Is it possible to impose restrictions on the parameters such that the function becomes quasiconcave and quasiconvex simultaneously for$X \geq 0$?Explain.

4+4+(4+3)

6. (i) Proof that for the CES production function, the sum of output elasticities is one.

(ii) Show that for Cobb-Douglas production function the expansion path is a straight line through the origin.

(iii) Proof that for CES production function elastic of substitution is constant.

4+4+7

7. (i) State and explain the Weak Axiom of Revealed Preference.

(ii) Consider the following dataset of consumer in a world with only two goods.

when prices $p_1 = 1$ and $p_2 = 2$ the chosen bundle $(x_1, x_2)$ was (10, 1);

when $(p_1, p_2)$ = (2, 1), $(x_1, x_2)$ = (5, 5).

Check whether the above date set satisfies the Weak Axiom of Revealed Preference.

4+11

# B.A. (Honours in Economics) Examination, 2024

**Semester–III** **[CBCS: For back candidates]**

## Course: CC-7

**(Statistical Methods for Economics)**

**Time: Three Hours** **Full Marks: 60**

*Questions are of value as indicated in the margin*

Answer ***any four*** questions

1. Consider the following age distribution of a group of individuals:

| Age group | 10 - 19 | 20 - 29 | 30 - 49 | 50 - 79 | 80 - 89 |
|---|---|---|---|---|---|
| No. of persons | 15 | 20 | 30 | 25 | 10 |

(i) Compute the class boundaries, class widths, frequency densities and less-than type cumulative frequencies for the age groups

(ii) Calculate the arithmetic mean of age of the individuals. 8+7

2 (a). Under what circumstances the median is preferred to the A.M. as a measure of central tendency? Give an example when you cannot measure A.M. for a grouped frequency distribution.

(b) Construct a simple frequency distribution with the help of tally marks from the following raw data. Hence find the median value of the observations.

7, 4, 3, 5, 6, 3, 3, 2, 4, 3, 4, 3, 3, 4, 4,
3, 2, 2, 4, 3, 5, 4, 3, 4, 3, 4, 3, 1, 2, 4

(c) A variable has values $x_i$ with corresponding frequencies $f_i$ $(i = 1,2, \dots n)$. If $y_i = 100 + 5x_i$ then show that $\bar{x} = (\bar{y} - 100)/5$ 5+5+5

3.(a) What do you mean by a 'measure of dispersion'? Discuss different alternative measures of dispersion along with their merits and demerits. In this context, point out the difference between absolute measures and relative measures of dispersion.

(b) Out of 400 observations, 100 observations have a value 1 and the rest have a value 0. Find the mean and standard deviation of all 400 observations taken together. 10+5

4.(a) Prove that standard deviation is not affected by change in origin, but is affected by change in scale.

(b) For a variable with values $x_i$ and corresponding frequencies $f_i$ $(i = 1,2, \dots n)$, define the r-th raw moment and the r-th central moment.

(c) The first three moments about the value 3 for a frequency distribution are 2, 10 and 30 respectively. Obtain the first three moments about zero. 6+4+5

5. (a) What is scatter diagram for bivariate data? Explain its use with example.

(b) Define correlation coefficient between two variables $x$ *and* $y$. Calculate the correlation coefficient for the following data

| x | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| y | 7 | 6 | 5 | 4 | 3 |

(c) If the regression equation of $x$ *on* $y$ is $20x - 9y - 107 = 0$ and that of $y$ *on* $x$ *is* $4x - 5y + 33 = 0$. Find the mean values of $x$ and $y$ and the also the value of the correlation coefficient between $x$ *and* $y$. 5+5+5

*[.....Continued in page 2]*

6. (a) Four digits 1,2,3 and 4 are arranged in random order to form a four digit number. What is the probability that 3 and 4 will appear as neighbours in the order mentioned.

(b) When two events are said to be (i) mutually exclusive and (ii) mutually independent?

(c) Prove that two events (none of which are impossible events) are *not* independent if they are mutually exclusive and they are *not* mutually exclusive if they are independent. 5+4+6

7. (a) Suppose $x$ is the number of heads appeared when two coins are tossed. Find $E(x) and\ Var(x)$.

(b) A continuous random variable $\boldsymbol{x}$ has the following probability density function:

$f(x) = cx^2$, for $0 \leq x \leq 1$

$= 0$ otherwise

Find the value of '$c$' and hence find the cumulative distribution function of $\boldsymbol{x}$. 8+7

8. (a) An experiment succeeds twice as often as it fails. What is the probability that there will be at least one success in six trials?

(b) For a random variable $x$ following Poisson distribution, it is known that $P(x = 0) = P(x = 1)$. What is the probability that $x$ will be greater than zero? [given $e^{-1} = 0.368$]

(c) An unbiased coin is tossed 400 times. What is the probability that the number of heads appeared will be between 180 and 220? [Given that the area under the standard normal curve between 0 and 2 is 0.477].

5+5+5

**B.A. (Honours) Examination-2024**

**Semester-III (CBCS)**

**Political Science**

**Generic Elective Course: GEC-III**

**(Indian Government and Politics-I)**

**Time: 3 Hours** **Full Marks: 60**

Questions are of value as indicated in the margin

**Answer any four questions**

**(15x4=60)**

1) Discuss in detail the legislative relations between the Union and the states in India. (15)

2) Discuss in detail the development of the Constitution of India with special emphasis on the Round Table Conferences. (15)

3) Discuss in brief the salient features of Fundamental Rights as enshrined in the Constitution of India. (15)

4) State the liberal-intellectual and the Gandhian principles of the Directive Principles of State Policy. What are the new Directive Principles of State Policy? (10+5)

5) Write a detailed note on the philosophy and features of the Indian Constitution. (15)

6) Discuss the administrative relations between the Union and the states in India. (15)

**B.A. (Honours) Examination, 2024**

**Semester-III**

**Economics**

**Course: SECC-I** (CBCS)

**(Mathematical Methods III)**

**Time: 2 Hours** **Full marks: 25**

Questions are of value as indicated in the margin.

Answer **any five** from the of the following questions

1. Evaluate:

$$\int \frac{dx}{\sqrt{3x+2}}$$

5

2. A function $f(x)$ is defined as $f(x) = 4 - x$. Find the area under $f(x)$ between the values $x = 0$ *and* $x = 4$

5

3. Five letters A,B,C,D and E are arranged in a row randomly. What is the probability that 'CE' will appear side by side in that order?

5

4. Person A can solve a problem with probability 0.6 and person B can solve the same problem with probability 0.5. If both of them try independently, what is the probability that the problem will be solved?

5

5. An urn contains 6 white and 4 red balls. Two balls are drawn at random from it without replacement. Find the probability that (i) both are white (ii) both are of same colour.

2.5+2.5

6. Solve the following equations and ensure that the initial conditions are satisfied

   $\dot{y} + 3y = 12$ and $y(0) = 10$.

   $\dot{y} = 5$ and $y(0) = 1$.

3+2

7. Find the steady-state points and determine their stability properties for the following $\dot{y} = 3y^2 - 2y$ .

5

8. Suppose the energy consumption 'E' grows at the rate of 2% and was equal to 2 units of time $t_0$. Solve for energy consumption as function of time.

5

**B.A. (Honours) Examination, 2022**

**Semester-III**

**Economics**

**Course: CC-5**

**(Intermediate Microeconomics I)**

**Time: 3 Hours** **Full marks: 60**

Questions are of value as indicated in the margin.

Answer **Question no 1** and **any three** from the rest of the following questions

1. Consider the following utility function.

   $U(x, y) = \sqrt{x} + \sqrt{y}$.

   The price of good x is $P_x$ and the price of good y is $P_y$. We denote income by M, as usual, with $M > 0$. Also $x > 0$ and $y > 0$.

   (i) Is the utility function increasing in x? Is the utility function concave in x?

   (ii) The consumer maximizes utility subject to a budget constraint. Write down the utility maximization problem of the consumer with respect to x and y.

   (iii) Solve explicitly for $x^*$and $y^*$ as a function of $P_x$, $P_y$, and M.

   (iv) Check the second order condition.

   (v) Can you guess the solutions for $x^*$and $y^*$for the following utility function?

   $U(x, y) = \left(\sqrt{x} + \sqrt{y}\right)^2$.

   (1+1)+1+5+4+3

2. A firm has the following total-cost and demand functions:

   $C = \frac{1}{3}Q^3 - 7Q^2 + 111Q + 50$

   $Q = 100 - P$

   (i) Does the total-cost function satisfy the coefficient restrictions in the short run context?

   (ii) Write out the total-revenue function R in terms of Q.

   (iii) Formulate the total-profit function $\pi$ in terms of Q.

(iv) Find the profit-maximizing level of output, $Q^*$.

(v) What is the maximum profit?

4+2+4+5

3. (i) 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.

(ii) Interpret the Lagrange Multiplier in an optimization problem with equality constraint.

(iii) Show that the sum of own price elasticity, income elasticity ad cross price elasticity is zero.

7+5+3

4. (i) "An inflection point must be a stationary point."- True or False? Explain your answer.

(ii) Derive and interpret the Slutsky equation for a consumer with utility function $U = xy$.

5+10

5. (i) Explain Walrasian and Marshalian stability conditions with the help of demand and supply curves.

(ii) Give an example of equilibrium which is stable according to Walrasian condition but not according to Marshallian condition.

(iii) (a) Verify that a cubic function $z = aX^3 + bX^2 + cX + d$ is in general neither quasiconcave nor quasiconvex.

(b) Is it possible to impose restrictions on the parameters such that the function becomes quasiconcave and quasiconvex simultaneously for$X \geq 0$?Explain.

4+4+(4+3)

6. (i) Proof that for the CES production function, the sum of output elasticities is one.

(ii) Show that for Cobb-Douglas production function the expansion path is a straight line through the origin.

(iii) Show that Cobb-Douglas production function is a limiting case of CES production function.

4+5+6

7. (i) State and explain the Weak Axiom of Revealed Preference.

(ii) Consider the following dataset of consumer in a world with only two goods.

when prices $p_1 = 1$ and $p_2 = 2$ the chosen bundle $(x_1, x_2)$ was (10, 1);

when $(p_1, p_2)$ = (2, 1), $(x_1, x_2)$ = (5, 5);

when $(p_1, p_2)$ = (1, 2), $(x_1, x_2)$ = (5, 4).

Check whether the above date set satisfies the Weak Axiom of Revealed Preference.

4+11

**B.A. (Honours) Examination 2022**
**Semester—III (CBCS)**
**Economics**
**Course CC-6**
**(Intermediate Macroeconomics-I)**

**Time: 3 hours** **Full Marks: 60**

**Questions are of value as indicated in the margin**

*Answer any four questions*

1. Derive the aggregate supply and aggregate demand curves in a Classical macroeconomic framework.

7.5+7.5

2. What are the reasons for the persistence of the effective demand problem in an advanced capitalist economy? What is stagnation thesis? Discuss in detail the multiplier in SKM.

5+3+7

3. Contextualize and discuss, in brief, the three zones of the LM curve. Using both diagram and economic logic, explain the implications of fiscal policy across the three zones.

(2+2+2)+(3+3+3)

4. What do you mean by a double crowding out effect in a Complete Keynesian system? Discuss in detail using both the AD-AS and IS-LM frameworks.

15

5. Why cannot a mainstream prescription of a money wage cut induce employment in times of deep depression? Discuss using a relevant four-quadrant diagram.

15

6. Present a Complete Keynesian Model. Explain mathematically the effects of an increase in government expenditure on the equilibrium income and interest rate in the Complete Keynesian Model.

5+10

7. What are the basic differences between the Classical and the Keynesian macroeconomic systems? Point out one of the most crucial differences. Give reasons for your answer.

5+10

8. Write short notes (any two) 2x7.5
   (a) Derivation of the aggregate demand curve in the IS-LM framework
   (b) Crowding out effect and the contradiction of capitalism
   (c) Implications of policy mix in the context of IS-LM model
   (d) Discuss the different methods of avoiding the problem of double counting in the context of national income accounting

# B.A. (Honours) Examination, 2022

**Semester–III (CBCS)**

**Economics**

## Course: CC-7 (Core)

**(Statistical Methods for Economics)**

**Time: Three Hours** **Full Marks: 60**

*Questions are of value as indicated in the margin*

Answer ***any four*** questions

1. (a) The following table shows the 'less than' type cumulative frequencies for a grouped frequency distribution of age of 700 people.

| Age (years) | 1-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 |
|---|---|---|---|---|---|---|---|---|---|
| No. of persons in the age group or below | 20 | 50 | 110 | 220 | 340 | 490 | 590 | 660 | 700 |

(i) Calculate the number of persons belonging to each age group.
(ii) Estimate the number of persons aged 45 years or below.
(iii) Calculate the mean age of the people.

(b) Under what circumstances the median is preferred to the A.M. as a measure of central tendency? Find the median marks of the students from the following distribution

| Marks | 0 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80 |
|---|---|---|---|---|---|---|---|
| No. of students | 19 | 21 | 60 | 42 | 24 | 18 | 16 |

(2+4+3)+(2+4)=15

2. (a) Out of 400 observations, 100 observations have a value 1 and the rest are 0. Find the mean and standard deviation of all 400 observations taken together.

(b) The A.M. and S.D. of 25 observations are calculated as 30 and 2 respectively. After the calculations are done, it was noticed that two observations with values 29 and 31 are wrongly included in the calculation. What will be the correct values of A.M. and S.D. if these two observations are excluded?

(c) What is coefficient of variation? When it is used? Explain with an example. 5+6+4=15

3. (a) Let $x_1, x_2, \ldots, x_n$ be a set of $n$ observations. Suppose $y_i = a + bx_i$ $(i = 1,2, \ldots, n)$ where $a$ and $b$ are constants. Express the standard deviation of $y$ in terms of the standard deviation of $x$ and comment on the relationship between the two.

(b) The first three moments about the value 3 for a frequency distribution are 2, 10 and 30 respectively. Obtain the first three moments about zero.

(c) Define skewness of a frequency distribution. What are its alternative measures? Suppose for a grouped frequency distribution the first and the last class are open-ended. What measure will you use to estimate its skewness? 5+5+5=15

4. (a) For a bivariate data $(x_i, y_i)$ of size 10, the following information is provided:

$\sum x = 12;\quad \sum y = 4;\quad \sum x^2 = 16.2;\quad \sum y^2 = 1.96;\quad \sum xy = 5.2$

Calculate the covariance between $x$ and $y$ and variance of $x$. Also estimate the regression equation of $y$ on $x$.

(b) Two regression equations are given as $6x + 5y = 105$ and $3x + 10y = 75$. Find the mean values of $x$ and $y$ and the value of the correlation coefficient between them.

(c) Ten students have the following scores out of 100 in their two subjects. Calculate the rank correlation coefficient.

| Roll No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Marks in Subject A | 78 | 36 | 98 | 25 | 75 | 82 | 90 | 62 | 65 | 39 |
| Marks in Subject B | 84 | 51 | 91 | 60 | 68 | 62 | 86 | 58 | 53 | 47 |

5+5+5=15

5. (a) From the following information, estimate the probable crop yield per acre when rainfall is 30 cm. It is known that the correlation between rainfall and crop yield per acre is 0.65.

| | Mean value | Standard Deviation |
|---|---|---|
| Rainfall (cm) | 25 | 3 |
| Crop yield per acre (quintal) | 40 | 6 |

(b) A scatter diagram is produced from a dataset $(x_i, y_i)$ $(i = 1,2, \ldots, n)$ and a regression equation $\hat{y}_i = a + bx_i$ is estimated by the method of least squares. Assuming the relationship between the two variables is linear and positive (i) draw a diagram showing the scatter and the regression line (ii) distinguish between $y_i$ and $\hat{y}_i$ (iii) Define Explained Sum of Squares (ESS) and Total Sum of Squares (TSS).

(c) For two positively and linearly related variables $x$ and $y$, a linear regression equation is estimated by the method of least squares. The TSS is calculated as 500 and the ESS is found to be 450. What can you say regarding the correlation coefficient between $x$ and $y$?

5+6+4=15

6. (a) For two mutually exclusive events $A$ and $B$ (neither of them are impossible events) check whether the following statements are true or false. Justify your answers.

(i) $P(A \cup B) < P(A) + P(B)$

(ii) $P(A) + P(B) = 1$

(iii) $P(A \cap B) = P(A)P(B/A)$

(iv) $P(A \cap B^c) = P(A)$

(b) State and prove Bayes' Theorem. 8+7=15

7. (a) A bag contains 50 tickets numbered 1,2,3 .....50. Five tickets are drawn at random and then arranged in ascending order of their numbers. What is the probability that after the arrangement, the third ticket bears number 30?

(b) There are 3 Red and 4 Black balls in an urn. Two balls are drawn one after another without replacement. What is the probability of (a) getting 1 Red and 1 Black ball (b) the first ball is Red and second ball is Black?

(c) A number is chosen at random from the set of numbers 1,2,3, ....,100. Another number is chosen randomly from another set of numbers 1,2,3, ....,50. What is the expected value of their product? 5+5+5=15

8. (a) A student appeared in a test consisting of 10 multiple choice questions. Each question has 4 choices out of which only one is correct. The student was completely unprepared and randomly ticked one choice for each of the questions. What is the probability that he ticked none of the correct answers?

(b) If 5% of the electrical bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs (i) none is defective (ii) number of defective bulbs is 3 or less.

(c) An unbiased coin is tossed 400 times. What is the probability that the number of heads appeared will be between 180 and 220? [Given that the area under the standard normal curve between 0 and 2 is 0.4772 ]. 5+5+5=15

# B.A. (Honours) Examination-2022

## Semester-III (CBCS)

## Political Science

## Generic Elective Course: GEC-~~IV~~ III

## (Indian Government and Politics-I)

**Time: 3 Hours**

**Full Marks: 60**

Questions are of value as indicated in the margin

**Answer any four questions**

**(15*4=60)**

1) Explain Fundamental Rights as enshrined in the Indian Constitution. Is Right to Property a Fundamental Right?

(12+3)

2) State the Gandhian and Socialist principles as mentioned in the Directive Principles of State Policy.

(7.5+7.5)

3) Write a note on Public Interest Litigation (PIL), with special emphasis on three major PIL cases in India in establishing the rights of the people of India.

(15)

4) Write a short note on Morley-Minto Reforms. Explain the significance of Poona Pact.

(7.5+7.5)

5) What is the significance of the Preamble? What are the federal and unitary features of Union of India?

(5+10)

6) What are the main features of the 73rd and the 74th Constitutional Amendment Acts?

(7.5+7.5))

**B.A (Honours) Examination, 2022**
**Semester- III (CBCS)**
**Economics**
**Course - GEC-3**
**(Indian Economy-I)**

**Time: 3 Hours** **Full Marks: 60**

*Questions are of value as indicated in the margin*

**Answer any four questions**

1. Discuss briefly the scenario of Indian Economy on the eve of Independence. 15

2. Discuss the main features of Nehru-Mahalanobis strategy of development. Narrate its achievements and failures. 8+7

3. Briefly analyze the changing scenario of education in India after independence 15

4. Discuss the different stages of demographic transition? What do you mean by demographic dividend in India? Has India reaped the benefits of demographic dividend? 9+2+4

5. Write a note on the condition of employment situation in India. What are the impacts of recent pandemic on employment in India? 10+5

6. Discuss the evolution of the concept of poverty line in India. Will it be correct to say that poverty has been declining steadily in recent years? 12+3

7. Write short notes on any two of the following: 2 x 7.5=15

   (i). Income inequality in India
   (ii). Poverty alleviation programmes in India
   (iii). New Economic Policy 1991

**B.A. (Honours) Examination, 2023**

**Semester-III**

**Economics**

**Course: CC-5**

**(Intermediate Microeconomics I)**

**Time: 3 Hours** **Full marks: 60**

*Questions are of value as indicated in the margin.*

Answer **Question no 1** and **any three** from the rest of the following questions

1. a. Assume that there are two sources of pollution into a lake. The local water authority can clean up the discharges and reduce pollution levels from these sources but there are, of course, costs involved. The damage effects of each pollution source are measured on a 'pollution scale'. To achieve the lower the pollution level, higher cost need to be incurred, as is shown by the cost schedules for cleaning up the two pollution sources:

$Z_1 = 478 - 2C_1^{0.5}$

and

$Z_2 = 600 - 3C_2^{0.5}$

where $Z_1$ and $Z_2$ are pollution levels and $C_1$and $C_2$ are expenditure levels (in Rs) on reducing pollution.

To secure an acceptable level of water purity in the lake, the water authority's objective is to reduce the total pollution level to 1,000 by the cheapest method. How can it do this?

b. "An inflection point must be a stationary point."- True or False? Explain your answer.

10+5

2. a. A quadratic profit function $\pi(Q) = hQ^2 + jQ + k$ is to be used to reflect the following assumptions:

(i) If nothing is produced, the profit will be negative (because of fixed costs).

(ii) The profit function is strictly concave.

(iii) The maximum profit occurs at a positive output level Q* .

What parameter restrictions needed for the above?

b. Given the function

$y = a - \frac{b}{c+x}$ (a, b, c > 0 0; x ≥ 0)

determine the general shape of its graph by examining (i) its first and second derivatives, (ii) its vertical intercept, and (iii) the limit of y as x tends to infinity. If this function is to be used as a consumption function, how should the parameters be restricted in order to make it economically sensible?

(1+2+3)+(3+2+2+2)

3. a. Proof that for the CES production function, the sum of output elasticities is one.

b. Show that for Cobb-Douglas production function, the expansion path is a straight line through the origin.

c. A consumer's demand curve for a good is given by $P = 100 - \sqrt{x}$. Calculate the price elasticity of demand when the price of the good is 40.

5+4+6

4. a. Explain Walrasian and Marshalian stability conditions with the help of demand-supply curves.

b. Give an example of equilibrium which is stable according to Marshallian condition but unstable with Walrasian condition.

c. State whether the following function is (strictly) qausiconcave or (strictly) quasiconvex. Then comment whether the function is concave, convex or neither.

$Z = -(x+1)^2 - (y+1)^2$

4+4+(4+3)

5. a. A consumer has the utility function $U = X^2Y^2$, and the budget constraint $M = P_X X + P_Y Y$.

(i) Set up the constrained maximization problem and derive the first-order conditions.

(ii) Derive the consumer's demand for X and Y in terms of the parameters.

b. Proof 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.

(3+7)+5

6. a. 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.

b. Derive and interpret the Slutsky equation for a consumer with utility function $U = xy$.

7+8

7. a. State and explain the Weak Axiom of Revealed Preference.

b. Consider the following dataset of consumer in a world with only two goods.

when prices $p_1 = 1, p_2 = 2$ and $p_3 = 1$ the chosen bundle $(x_1, x_2, x_3)$ was (1,0, 0);

when $(p_1, p_2, p_3)$ = (1,1, 2), $(x_1, x_2, x_3)$ = (0, 1,0);

when $(p_1, p_2, p_3)$ = (2, 1,1), $(x_1, x_2, x_3)$ = (0, 0,1).

Check whether the above date set satisfies the Weak Axiom of Revealed Preference.

4+11

VB/EXAM/REG/02/UG/ECO./Sem-III/31802/2023 Date-21-11-2023

**B.A. (Honours) Examination 2023**
**Semester—III (CBCS)**
**Economics**
**Course CC-6**
**(Intermediate Macroeconomics-I)**

**Time: 3 hours** **Full Marks: 60**

**Questions are of value as indicated in the margin**

*Answer any four questions*

1. If a macroeconomic equilibrium is disturbed, how is it regained in a Classical system? How does this process differ in the Keynesian system? Discuss using the macroeconomic accounting framework. 7.5+7.5=15

2. Discuss the concept of a Simple Keynesian Multiplier. What is the source of the operation of this multiplier process, and how? Why is such a multiplier absent in the Classical framework? 5+5+5=15

3. Discuss the policy debate in macroeconomics considering the Classical and Keynesian schools of thought. Discuss using the AD-AS framework. 7.5+7.5=15

4. (a) How do you derive the aggregate demand curve under the IS-LM framework? Explain with diagrams. (b) What are the sources of wage rigidity in a Keynesian labour market? How is equilibrium employment determined in a Keynesian labour market? 8+(3+4)=15

5. (a) Derive aggregate supply curve in CKM with fixed money wage and variable price.
(b) Explain the effects of monetary and fiscal policy on output, employment, and interest rates under CKM with fixed money wages and variable prices. 7+(4+4)=15

6. Explain mathematically the effects of an increase in tax rate on equilibrium income and rate of interest in the IS-LM model. 15

7. Present a Complete Keynesian Model. How do you determine equilibrium values of real national income, real interest rate, money price level and aggregate employment in this model? 5+10=15

8. Write short notes on the following (any two): 7.5+7.5=15
(a) Implications of the policy mix in the context of IS-LM model
(b) Difference between Classical and Keynesian unemployment theory
(c) Life Cycle Hypothesis
(d) Transaction and Speculative Demand for Money

# B.A. (Honours) Examination, 2023

**Semester–III (CBCS)**

**Economics**

## Course: CC-7 (Core)

**(Statistical Methods for Economics)**

**Time: Three Hours** **Full Marks: 60**

*Questions are of value as indicated in the margin*

Answer ***any four*** questions

1. (a) Consider the following frequency distribution.

| Class | 10 - 19 | 20 - 29 | 30 - 49 | 50 - 79 | 80 - 89 |
|---|---|---|---|---|---|
| Frequency | 15 | 20 | 30 | 23 | 12 |

(i) Calculate the class boundaries, frequency densities and less than type cumulative frequencies corresponding to the five classes.

(ii) Draw a histogram for the given frequency distribution.

(b) Obtain the first quartile and the median for the frequency distribution (6+3)+6=15

2. (a) The following distribution shows quantities of rice production (quintal) of 100 farmers:

| Production (quintal) | 61 - 70 | 71 - 80 | 81 - 90 | 91 - 100 | 101 - 110 | 111 - 120 |
|---|---|---|---|---|---|---|
| Number of farmers | 12 | 18 | $f_1$ | $f_2$ | 8 | 7 |

It is known that the average production of all farmers is 86.5 quintal and the median production is 85.5 quintal. Find out the missing number of farmers for the two classes (prudent use of change in scale/origin is expected).

(b) A group of 60 men has a mean weight of 53 kg with a standard deviation of 3 kg. Another group of 90 women has a mean weight of 48 kg and a standard deviation of 2 kg. What is the mean and standard deviation of men and women together?

(c) Define Mean Absolute Deviation. For the set of observations 31, 33, 34, 36, 37, 39, 40, calculate the mean deviation about the median. 5+6+4=15

3. (a) If $x_1, x_2 \ldots . x_n$ is a set of observations with frequencies $f_1, f_2 \ldots . f_n$, and $y_i = x_i - 10$, then show that standard deviations of $x$ *and* $y$ are the same.

(b) Why Quartile deviation is a better measure of dispersion compared to Range?

(c) For a frequency distribution with open ended classes, which measure of dispersion can you use?

(c) Identify the following statements as true or false:

A. Coefficient of variation is only used to compare datasets measured in different units
B. The coefficient of variation is a measure of heterogeneity in observations
C. The coefficient of variation will be approximately twice the measure of the mean
D. The coefficient of variation is measured in the same unit of the variable

5+3+3+4=15

**B.A (Honours) Examination, 2023**
**Semester- III (CBCS)**
**Economics**
**General Elective Course: GEC-3**
**(Indian Economy-I)**

**Time: 3 Hours** **Full Marks: 60**

*Questions are of value as indicated in the margin*
*Answer any **four** questions*

1. Explain briefly the main features of Indian economy on the eve of independence? 15

2. State the salient aspects of Nehru-Mahalanobis strategy of development planning and point out its limitations. 10+5

3. Explain with reasons the different phases of population growth in India. What do you mean by demographic dividend in India? 12+3

4. Do you think that the Indian Government has been successful in improving health status of the people? Give reasons for your answers. 15

5. Write a note on the present condition of employment in India. What are the impacts of recent pandemic on employment in India? 10+5

6. Critically analyse how the New Economic Reforms of 1991 have transformed Indian economy during the last 30 years. 15

7. Write short notes on any two of the following: 2 x 7.5=15
   a) Inequality in India
   b) Poverty alleviation programmes in India
   c) State of education in India

**B.A. (Honours) Examination-2023**

**Semester-III (CBCS)**

**Political Science**

**Generic Elective Course: GEC-III**

**(Indian Government and Politics-I)**

**Time: 3 Hours** **Full Marks: 60**

Questions are of value as indicated in the margin

**Question 1 is compulsory and choose any three from the rest** **(15x4=60)**

1) Examine the administrative relation between the Union and the States. (15)
2) Write a note on the Government of India Act, 1919. Examine the three reasons of Dyarchy being a failure. (12+3=15)
3) Discuss in detail the Socialist, Gandhian, Liberal and General principles of the Directive Principles of State Policy. (15)
4) Examine the prominent features of the Government of India Act, 1935. Write a brief note on the Communal Award. (10+5=15)
5) Mention the differences between Directive Principles of State Policy and Fundamental Rights. Write a note on Right to Equality. (5+10=15)
6) Discuss in detail the methods of Amendment of the Indian Constitution. (15)

**B.A. (Honours) Examination, 2023**
**Semester–III (CBCS)**
**Economics**
**Skill Enhancing Compulsory Course – SECC-1**
**(Mathematical Methods-III)**

**Time: 2 Hours** **Full Marks: 25**

*Questions are of values as indicated in the margin*
Answer ***any five*** questions

1. Find the value of $\int_0^4 f(x)dx$, where

$$f(x) = x \quad for \quad 1 \leq x \leq 2$$
$$f(x) = x^2 \quad for \quad 2 < x \leq 4$$
$$f(x) = 0 \quad Otherwise$$

5

2. Prove that the solution to a linear, autonomous, first-order differential equation $\dot{y} + ay = b$ converges to the steady-state equilibrium $\bar{y} = \frac{b}{a}$, irrespective of the initial value $y_0$, if and only if the coefficient in the differential equation is positive (i.e., $a > 0$.)

5

3. If per-capita income is growing at a rate of 3% per year, how long will it take to double? 5

4. Find the steady-state points and determine their stability properties for the following
$\dot{y} = 2y - 6y^2$ .

5

5. Solve the following equations and ensure that the initial conditions are satisfied
(i) $\dot{y} + 3y = 12$ and $y(0) = 10$.
(ii) $\dot{y} = 5$ and $y(0) = 1$.

3+2

6. Suppose demand for a commodity in any period is a function of its current price while the supply depends on the price in the previous period. The demand and supply equations are given as:

$$Q_t^d = 86 - 0.8\,P_t \quad \text{and} \quad Q_t^s = -10 + 0.2\,P_{t-1}$$

The commodity is perishable and whatever quantity is brought to the market in any period has to be sold in that period only. It is also known that the price in the initial period is 100. What should be the time path of price for the commodity? Comment on its nature.

5

7. A subcommittee of 6 members is to be formed randomly out of a group of 7 men and 4 women. Find the probability that the subcommittee will consist of (i) exactly 2 women (ii) at least two women.

2+3

8. There are 5 black and 2 white balls in a box. Two balls are drawn from it successively without replacement. What is the probability of the following events?
(i) One is black and the other is white
(ii) First one is black and the second one is white

2+3