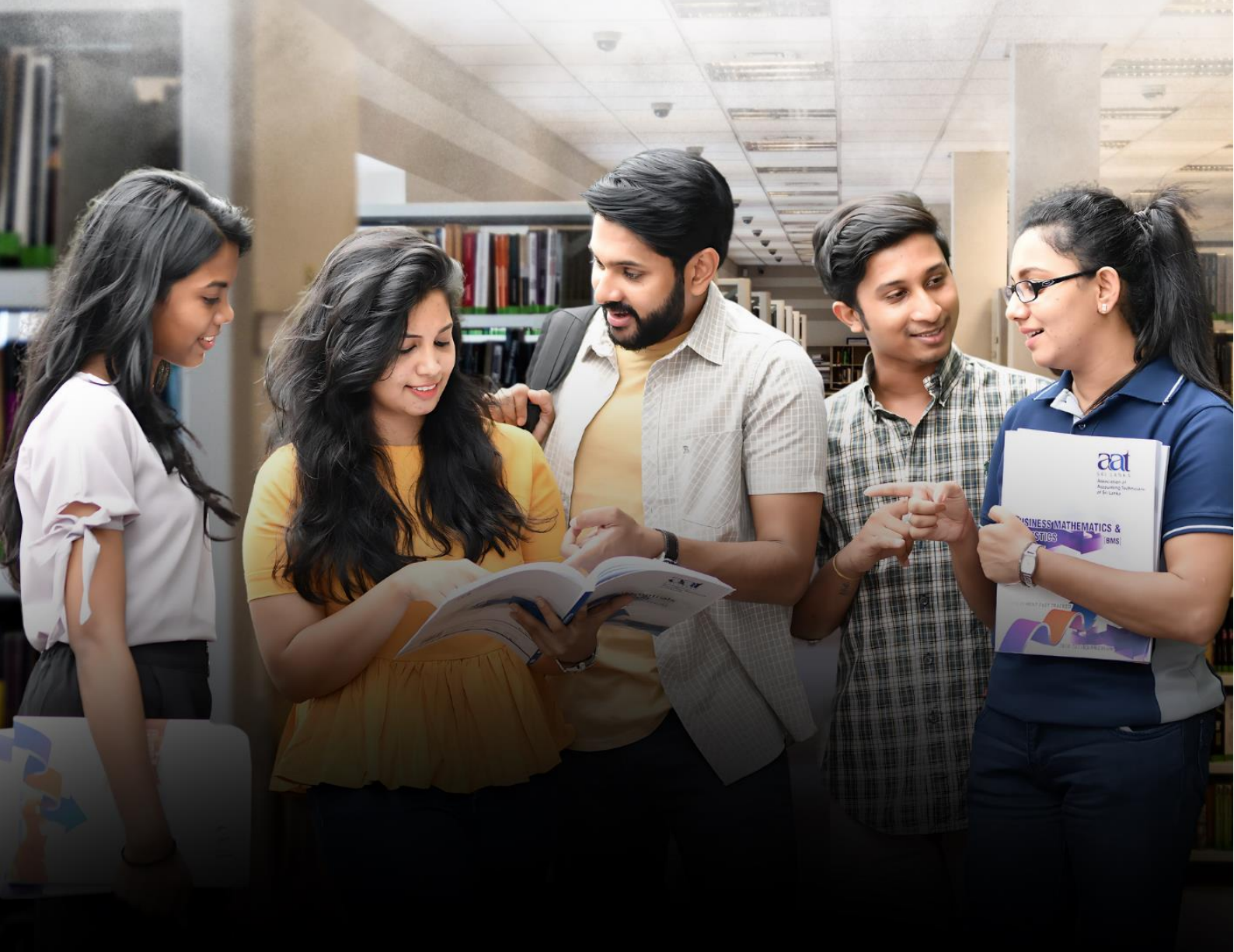
ECOHOLICS
Largest Platform for Economics

Past Year Question Paper

GATE-2022
ECONOMICS



Question – 1	**Suppose that a firm has a technology represented by the following production function:** $$Y(K, L) = K^x L^y$$ **where K denotes capital, L denotes labor, Y denotes the maximum output that is possible to produce using capital K and labor L. x and y are two positive real numbers. It is also known that the production function satisfies constant returns to scale. Then which of the following is true?**
Option A	$x + y = 0.5$
Option B	$x + y = 1$
Option C	$x + y = 1.5$
Option D	$x + y = 2$

Question - 2	**The Human Development Index (HDI), as reported by the United Nations Development Program, is based on three components. Two of these components are per-capita income and a measure of educational attainment of society. The third component is**
Option A	Gini coefficient
Option B	percentage of population who have access to safe drinking water
Option C	percentage of population who work in non-agricultural sector
Option D	life expectancy at birth

Question - 3	**Suppose we estimate the following regression equation:** $$\ln(x_t) = \alpha_0 + \alpha_1 \ln(y_t) + \varepsilon_t, \alpha_0, \alpha_1 > 0$$ **where x_t and y_t are some variables. α_0 and α_1 are the intercept and the slope, respectively. ε_t is the residual term. What is the interpretation of the coefficient α_1?**
Option A	A 1% increase in y_t causes a α_1 % increase in x_t
Option B	A 1% increase in y_t causes a $\alpha_1 \times 0.01$ unit increase in x_t
Option C	A one unit increase in y_t causes a $100 \times \alpha_1$% increase in x_t
Option D	A one unit increase in y_t causes a α_1 unit increase in x_t

Question - 4	**Consider the following system of equations in three variables x, y, z:** $$-x - y - z = 3$$ $$x + y + z = 10$$ $$2x - 3y = 6$$ **This system of equations has**
Option A	no combination of values of (x, y, z) that satisfy this system simultaneously
Option B	only one combination of values of (x, y, z) that satisfy this system simultaneously
Option C	only two combinations of values of (x, y, z) that satisfy this system simultaneously
Option D	infinitely many combinations of values of (x, y, z) that satisfy this system simultaneously

Question - 5	Which of the following models appropriately explains the fluctuations in potential output and long-run aggregate supply by understanding the shocks to productivity or the willingness of the worker?
Option A	Solow growth model
Option B	Real business cycle model
Option C	IS-LM model
Option D	Harrod-Domar Model

Question - 6	The change in equilibrium output for an equal amount of change in government expenditure and tax revenue is linked to which one of the following multipliers?
Option A	Expenditure multiplier
Option B	Balanced Budget multiplier
Option C	Lump-sum tax multiplier
Option D	Trade multiplier

Question - 7	Solaris is a firm that can install solar panels at an airport to generate electricity for the airport's usage. The company claims that in 70 percent of all airports where its solar panels are installed, an airport's electricity bill is reduced by at least 40 percent. The probability that an airport's electricity bill is reduced by at least 40 percent, in seven out of ten airports where the company's solar panels are installed, equals approximately:
Option A	0.082
Option B	0.002
Option C	0.490
Option D	0.267

Question - 8	India Smart is a retail shop that accepts either a Rupay credit card, or a Visa credit card. 31 percent of India Smart's customers carry a Rupay credit card, 44 percent of its customers carry a Visa credit card, while 18 percent of its customers carry a Rupay credit card as well as a Visa credit card. What is the probability that a customer carries at least one of the two, i.e. either a Rupay or a Visa credit card?
Option A	0.75
Option B	0.93
Option C	0.57
Option D	0.49

Question - 9	What is the user cost of capital for a firm when the rate of depreciation of a machine is 20% and the cost of financial capital is 15%?
Option A	37%
Option B	50%
Option C	35%
Option D	31%

Question - 10	Which among the following Gini coefficients exhibits the highest equality?
Option A	0.1
Option B	0.2
Option C	0.5
Option D	0.6

Question - 11	Let $f(x, y)$ be a continuously differentiable homogeneous function of degree 4. Which of the following is necessarily true?
Option A	$x\frac{\partial f(x,y)}{\partial x} + y\frac{\partial f(x,y)}{\partial y} = f(x,y)$
Option B	$x\frac{\partial f(x,y)}{\partial x} + y\frac{\partial f(x,y)}{\partial y} = 2f(x,y)$
Option C	$x\frac{\partial f(x,y)}{\partial x} + y\frac{\partial f(x,y)}{\partial y} = 4f(x,y)$
Option D	$x\frac{\partial f(x,y)}{\partial x} + y\frac{\partial f(x,y)}{\partial y} = 8f(x,y)$

Question - 12	Which of the following committees was set-up to address issues related to capital account convertibility in India?
Option A	Tandon Committee
Option B	Abid Hussain Committee
Option C	Tarapore Committee
Option D	Percy Mistry Committee

Question - 13	The demand curve for tea in Borduria is given by $$D(P) = 40 - 2P$$ and the domestic supply curve of tea in Borduria is given by $$S(P) = \frac{2}{3}P$$ Here $D(P)$ denotes quantity demanded when price is P and $S(P)$ is quantity supplied by domestic producers at price P. Tea is traded in a competitive world market and imported into Borduria at a price of 9 per unit. Initially there was no restriction on trade. However, as a result of lobbying by the domestic suppliers, the Bordurian government imposes a tariff of 3 per unit on each unit imported. As a result of the tariff, import of tea decreased by how many units?
Option A	2
Option B	3
Option C	8
Option D	9

Question - 14	Bretton Woods agreement gave birth to the following organization:
Option A	GATT
Option B	RBI
Option C	NAFTA
Option D	ASEAN

Question - 15	Which one of the following is a test of heteroscedastity?
Option A	White test
Option B	Jarque-Bera test
Option C	Breusch-Godfrey test
Option D	Ljung-box test

Question - 16	The law that explains the relationship between income growth and the size of government expenditure is appropriately linked to:
Option A	Wagner's law
Option B	Okun's law
Option C	Walras law
Option D	Ricardian equivalence

Question - 17	As per a recent Economic Survey, how many states and Union Territories (UTs) are driven by the services sector in India?
Option A	15
Option B	19
Option C	25
Option D	21

Question - 18	An economy is characterized by the following production function: $Y = AK^{0.25} L^{0.75}$ where K denotes capital, L denotes labor, A denotes the total factor productivity and Y denotes output produced. All capital and labor are fully employed. Suppose that the growth rate of labor is 1%, the growth rate of capital is 4%, and the growth rate of output is 4%. The growth rate of total factor productivity A is
Option A	1.5 %
Option B	1.75%
Option C	2.25%
Option D	2.5%

Question - 19	**Suppose a firm has the following production function:** $$f(x_1, x_2, x_3, x_4) = min\{x_1, x_2\} + min\{x_3, x_4\}$$ **The per unit cost of input x_i is given by w_i , where i = 1, 2, 3, 4. Suppose that $w_1 = 1, w_2 = 5, w_3 = 3, and\ w_4 = 6$. If the firm is minimizing cost, which of the following input choices by the firm can be observed?**
Option A	$x_1 > 0, x_2 = 0, x_3 > 0, x_4 = 0$
Option B	$x_1 > 0, x_2 > 0, x_3 = 0, x_4 = 0$
Option C	$x_1 > 0, x_2 = 0, x_3 = 0, x_4 > 0$
Option D	$x_1 = 0, x_2 = 0, x_3 > 0, x_4 > 0$

Question - 20	**Suppose an econometrician had specified the following regression:** $$y_t = \beta_1 + \beta_2 Z_{2t} + \beta_3 Z_{3t} + \beta_4 Z_{4t} + \varepsilon_t$$ **but a researcher estimated the following regression:** $$y_t = \beta_1 + \beta_2 Z_{2t} + \beta_3 Z_{3t} + \beta_4 Z_{4t} + \beta_5 Z_{5t} + \varepsilon_t$$ **What will be the consequence of including the irrelevant variable on the estimated coefficients?**
Option A	Coefficient estimates will be unbiased, consistent but inefficient
Option B	Coefficient estimates will be consistent, asymptotically efficient but biased
Option C	Coefficient estimates will be inconsistent and efficient
Option D	Coefficient estimates will be biased, consistent and efficient

Question - 21	**Okun's law says that a 1% increase in unemployment for one year is associated with a 2% decrease in GDP growth. Suppose an economy has the following expectations augmented Phillips curve:** $$\pi = \pi^e - \beta(U - U^N), \beta > 0$$ **where π and π^e are the inflation and expected inflation rates, respectively. U and U^N are the unemployment and natural rate of unemployment, respectively. β measures sensitivity of inflation to unemployment gap. When β = 2, by what percentage does output fall short of full-employment given that the inflation rate, expected inflation rate and natural rate of unemployment are 8%, 10% and 6%, respectively?**
Option A	2
Option B	4
Option C	6
Option D	8

Question - 22	**Let f(x) be the probability distribution function of a random variable X, where** $$f(x) = \left(\frac{5x^4}{64}\right) if -2 < x < 2 = 0; otherwise$$ **Let |.| denote the modulus function. Then, $P\ (|X| < 1)$ and $P\ (X^2 < 3)$ are given by (respectively):**
Option A	(1/32) and 9(√3/32)

Option B	(5/64) and 5(√3/32)
Option C	(1/64) and (√3/32)
Option D	2(√3/32) and (1/32)

Question - 23	**Liquidity Adjustment Facility (LAF) uses the following instruments:**
Option A	Call Money Rate and Mumbai Inter-bank Offered Rate
Option B	Repo Rate and Reverse Repo Rate
Option C	Bank Rate and Statutory Liquidity Ratio
Option D	Cash Reserve Ratio and Prime Lending Rate

Question - 24	**What is the weightage of the manufacturing sector in the Index of Industrial Production (IIP) during 2020-2021?** **Note: numbers are in approximate values**
Option A	78%
Option B	81%
Option C	65%
Option D	71%

Question - 25	**The curve that explains the relationship between tax rate and tax revenue is known as:**
Option A	Laffer curve
Option B	Engle curve
Option C	Beveridge curve
Option D	Phillips curve

Question – 26	**Suppose the estimated consumption equation of an economy is:** $C = 40 + \beta Y_d$ **where Y_d is the personal disposable income, β is the marginal propensity to consume (MPC). Government expenditure (G) is given as 90. Total tax (T_x) received is δY, where Y is aggregate output or real income and δ is tax to real income proportionality factor. Autonomous investment (I_A) is given as 80. What are the tax revenue and budget surplus of the government when β = 0.75 and δ = 0.20? All units are measured in constant rupees.**
Option A	Tax revenue = Rs. 105 and surplus = Rs. 15
Option B	Tax revenue = Rs. 118 and surplus = Rs. 28
Option C	Tax revenue = Rs. 110 and surplus = Rs. 20
Option D	Tax revenue = Rs. 125 and surplus = Rs. 35

Question – 27	Consider a two-period consumption model in which a representative household lives for two periods only. In period 1, he earns income y_1 and consumes c_1. In period 2, he earns y_2 and consumes c_2. He can borrow and lend at the same rate of interest (r). His lifetime utility function is as follows: $$U(c_1, c_2) = ln(c_1) + \beta ln(c_2)$$ where $\beta > 0$ measures the sensitivity of future period's consumption. What will be the marginal propensity to consume of current consumption, i.e. $\frac{\partial C1}{\partial Y1}$
Option A	$1/1 + \beta$
Option B	$1/1 + \beta^2$
Option C	$y1/1 + \beta$
Option D	$y1/1 + \beta^2$

Question – 28	Suppose an investigator has specified the following simultaneous equation model: $$y_{1,t} = \alpha_{1,0} + \alpha_{1,2}y_{2,t} + \alpha_2 M_t + \alpha_3 K_t + u_t \dots (1)$$ $$y_{2,t} = \alpha_{2,0} + \alpha_{2,1}y_{1,t} + \alpha_3 I_t + v_t \dots (2)$$ where $y_{1,t}$ and $y_{2,t}$ are endogenous variables. M_t, K_t and I_t are predetermined variables. u_t and v_t are residual terms. Based on the order condition of identification, which one of the following statements are correct?
Option A	Equations (1) and (2) are exactly identified
Option B	Equation (1) is exactly identified and equation (2) is over-identified
Option C	Equation (1) is over-identified and equation (2) is exactly identified
Option D	Both the equations are under-identified

Question – 29	There are two regions in a country. The demand for chocolates in region 1 is given by $$Q_1(P) = 100 - P$$ and the demand for chocolates in region 2 is given by $$Q_2(P) = 200 - P$$ where $Q_1(P)$ and $Q_2(P)$ denote the demand for chocolates in region 1 and 2 respectively at a price P. There is only one seller who is licensed to sell chocolates in the country. Suppose the seller sets a price of P = 125. The total demand for chocolates in the country at this price is
Option A	50
Option B	75
Option C	100
Option D	125

Question – 30	**A producer manufactures batteries by using techniques I and II. The capacities (in ampere hours) of 12 randomly selected batteries manufactured by using technique I are: 140, 132, 136, 142, 138, 150, 154, 150, 152, 136, 144 and 142. Moreover, the capacities (in ampere hours) of 14 randomly selected batteries manufactured by using technique II are: 144, 134, 132, 130, 136, 146, 140, 128, 131, 128, 150, 137, 130 and 135.** **Suppose that battery capacities manufactured by using techniques I and II are normally distributed, with unknown means, μI and μII respectively, and an unknown common variance σ^2. Consider the null hypothesis H0: (μI − μII) = γ ampere hours.** **For which of the following values of γ should the null hypothesis H0 be accepted, against the alternative hypothesis H1: (μI − μII) ≠ γ ampere hours, at 10% level of significance?** **Note that if Z is a standard normal variate, then: P (Z ≤ 1.282) = 0.900, P (Z ≤ 1.645) = 0.950, P (Z ≤ 1.960) = 0.975 and P (Z ≤ 2.326) = 0.990** **Further, if a random variable T follows the student's *t*-distribution, with degrees of freedom *r*, then the α-percentile values tα, r for various values of *α* and *r* are given by (where P (T ≤ tα, r) = α):** **t0.90,24 = 1.318, t0.90,25 = 1.316, t0.90,26 = 1.315, t0.95,24 = 1.711, t0.95,25 = 1.708, t0.95,26 = 1.706, t0.975,24 = 2.064, t0.975,25 = 2.060, t0.975,26 = 2.056.**
Option A	γ =4
Option B	γ = 7
Option C	γ = 10
Option D	γ = 13

Question – 31	**Tom and Jerry both arrive at a petrol pump. Without worrying about price, Tom says, "I want 10 litres of petrol." Also, without worrying about price, Jerry says, "I want petrol worth 1000 rupees." The own price elasticities of demand for Tom (denoted by ε_T) and Jerry (denoted by ε_J) are:**
Option A	$\varepsilon_T = 0, \varepsilon_J = -\infty$
Option B	$\varepsilon_T = 0, \varepsilon_J = -1$
Option C	$\varepsilon_T = -\infty, \varepsilon_J = 0$
Option D	$\varepsilon_T = -1, \varepsilon_J = 0$

Question – 32	**Which of the following variables are pushed upwards by 'Seigniorage'?**
Option A	Money supply
Option B	Inflation
Option C	Tax rate
Option D	Interest rate

Question – 33	**Suppose Raju enters the job market at age 25 and earns annual income of Rs. 6000. He retires at age 65 and his life expectancy is 75 years. He does not own any assets. Assume that Raju consumes annual income uniformly over his lifetime. What will be his average propensity to consume during employment years?**
Option A	0.90
Option B	0.80
Option C	0.50
Option D	0.40

Question – 34	**A monopolist faces the following inverse demand function:** $$P = 40 - Q,$$ **where P denotes price and Q denotes quantity. The monopolist has zero fixed cost and a marginal cost of 5 per unit of output produced. The monopolist aims to maximize profit. Suppose the government imposes a tax of 5 per unit of output on the monopolist. As a result, the price charged by the profit-maximizing monopolist to the consumer increases by:**
Option A	0
Option B	2.5
Option C	5
Option D	10

Question – 35	**In the flexible exchange rate environment with perfect capital mobility, a fiscal stimulus will be linked to which of the following statements?**
Option A	Fiscal policy increases the domestic outcome
Option B	Fiscal policy does not increase the domestic output
Option C	Fiscal policy leads domestic exports to fall
Option D	Fiscal policy appreciates the domestic currency

Question – 36	**Consider a lottery with two possible outcomes:** • **Rupees 100 with probability 0.6** • **Rupees 50 with probability 0.4** **The maximum amount that a risk-neutral person would be willing to pay to play the above lottery equals Rupees_____(in integer).**

Question – 37	**Mr. Sharma's consumption preference for tea (denoted by x) and sugar (denoted by y) is given by the utility function** $$U(x, y) = \min\{x, 2y\}$$ **The price per unit of tea is 10 and the price per unit of sugar is 10. Mr. Sharma's total income is 900.**

	The optimum quantity of tea purchased by Mr. Sharma equals_____ (in integer).

Question – 38	**Suppose α is a real number between 0 and 1. Rohit is choosing x and y to maximize the following utility function:** $$U(x, y) = x^2 + 2xy + y^2 + 4\alpha^2 + 8\alpha + 10$$ **subject to the following constraints:** $$2x + y = 10,$$ $$x, y \geq 0$$ **Then the optimal value of y chosen by Rohit is_____ (in integer).**

Question – 39	**In a competitive market for dry-cleaning, the inverse market demand function is given by** $$P = 100 - Q$$ **where P denotes price and Q denotes quantity. The (private) marginal cost (MC) of production for all the dry-cleaning firms together is given by** $$MC = 20 + 2Q$$ **The market pollution generated by the dry-cleaning processes of all firms creates external damages given by the marginal external cost (MEC):** $$MEC = 2Q$$ **The socially efficient output of dry-cleaning is _____(in integer).**