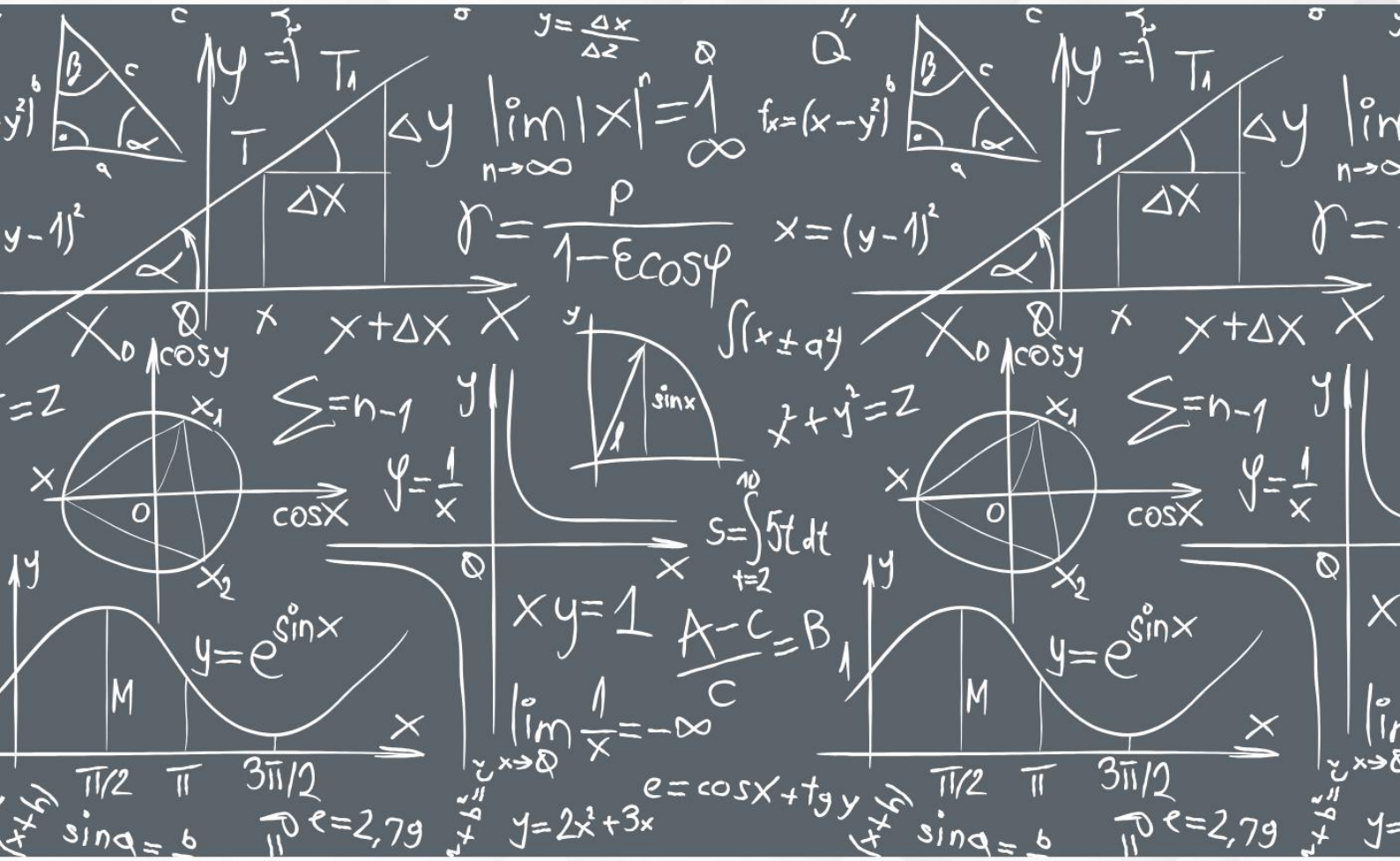
ECOHOLICS

GATE 2025 ECONOMICS

Past year question paper



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GATE 2025

Q.1– Q.18 Carry ONE mark Each

Q. 1	**In the context of a perfectly competitive market, identify the statement that is NOT CORRECT.**
(A)	Producing less than the competitive output lowers welfare.
(B)	Producing more than the competitive output lowers welfare.
(C)	The welfare is dependent on both price and the competitive output.
(D)	If a consumer values the last unit more than its marginal cost of production, producing an additional unit shall lower welfare.

Q. 2	**The demand function is given as $\log Q = \log A + 0.5 \log P$, where Q is quantity, P is the unit price of the good and A is a positive real number. The own price elasticity of demand is**
(A)	Perfectly elastic
(B)	Perfectly inelastic
(C)	Elastic
(D)	Inelastic

Q. 3	**Which one of the following is part of the unconventional monetary policy?**
(A)	Repo rate
(B)	Quantitative easing
(C)	Fractional banking
(D)	Reverse Repo rate

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Q. 4	**Which one of the following statements is NOT CORRECT in the context of Keynesian Absolute Income Hypothesis?**
(A)	Average Propensity to Consume (APC) plus Average Propensity to Save (APS) is equal to one.
(B)	Marginal Propensity to Consume (MPC) is constant.
(C)	Average Propensity to Consume (APC) increases as income increases.
(D)	Marginal Propensity to Consume (MPC) plus Marginal Propensity to Save (MPS) is equal to one.

Q. 5	**Let $f(x, y, z) = x^2y^3z$.** **Then,** $x\frac{\partial f}{\partial x}(x, y, z) + y\frac{\partial f}{\partial y}(x, y, z) + z\frac{\partial f}{\partial z}(x, y, z) =$
(A)	$f(x, y, z)$
(B)	$2f(x, y, z)$
(C)	$3f(x, y, z)$
(D)	$6f(x, y, z)$

Q. 6	**Let $f(x) = -3x^2(1 - x) - 3x(1 - x)^2 - (1 - x)^3$.** **Then, $\frac{df(x)}{dx}$=**
(A)	$3x^2$
(B)	$3(1 - x)^2$
(C)	$3x(1 - x)$
(D)	x

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Q. 7	**In the context of environmental cost-benefit analysis, which of the following statements is/are NOT CORRECT?**
(A)	The discount rates do not impact the fixed and variable costs of the project but does impact the perceived benefits in monetary terms.
(B)	The analysis does not incorporate people's preferences for a policy.
(C)	The analysis is dependent on the choice of the discount rates.
(D)	The discount rates are not easily observable and choice is often subject to value judgements.

Q. 8	**Which of the following statements is/are CORRECT in the context of National Income Accounting?**
(A)	Gross Domestic Product (GDP) is the sum of all factor payments.
(B)	Net Domestic Product (NDP) is equal to Gross Domestic Product (GDP) minus depreciation.
(C)	Gross National Product (GNP) is equal to Gross Domestic Product (GDP) plus net income from abroad.
(D)	Net National Product (NNP) is equal to Gross National Product (GNP) minus Gross Domestic Product (GDP).

Q. 9	**Consider the following system of linear equations:** $x + 2y + 3z = 0$ $2x + py = 0$ $3x + 2y + pz = 0$ **The value(s) of p for which the system of equations have infinitely many solutions is/are**
(A)	$p = 1$
(B)	$p = 2$
(C)	$p = 6$
(D)	$p = 12$

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Q. 10	**Which of the following statements is/are CORRECT?**
(A)	The difference between Human Poverty Index and the Human Development Index is that the former measure focuses on deprivations.
(B)	The Human Development Index is insensitive to inequalities in the distribution of human development in the population.
(C)	Income-based poverty lines are sufficient to capture the well-being of a country's citizens.
(D)	Multi-dimensional Poverty Index considers differences in intra-household distribution of resources.

Q. 11	**Which of the following statements is/are the key feature(s) of India's New Economic Reforms (1991)?**
(A)	Liberalization of the economy
(B)	Privatization of public sector enterprises
(C)	Complete nationalization of all industries
(D)	Globalization and increased foreign direct investment

Q. 12	**A Constant Elasticity of Substitution (CES) utility function is given as:** $U_{CES}(Z_1, Z_2) = \frac{1}{\delta}(z_1^{\delta} + z_2^{\delta})$ **where $z1$ and $z2$ are two goods, and $\delta \leq 1$, $\delta \neq 0$.** **A Quasi-linear (QL) utility function is given as:** $U_{QL}(Z_1, Z_2) = 2z_1 + log\ z_2$ **where $z1$ and $z2$ are two goods.** **Which of the following statements is/are NOT CORRECT?**
(A)	The CES utility function is homothetic but the QL utility function is non-homothetic.
(B)	For δ = 1, the CES utility function is not strictly convex.

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(C)	The Marginal Rate of Substitution (MRS_{z1z2}) for the CES utility function and the QL utility function are dependent on both z_1 and z_2.
(D)	If $z_1 = z_2$, the Marginal Rate of Substitution ($MRS_{z_1z_2}$) is 2 for both the CES and the QL utility functions.

Q. 13 **Consider a lottery with three possible outcomes:**

Outcomes	Probability	Reward/Win (in INR)
I	0.2	25
II	0.3	50
III	0.5	100

The maximum amount that a risk-neutral person would be willing to pay to play the above lottery is INR _____(in integer)

Q. 14

For a closed economy with no government expenditure and taxes, the aggregate consumption function (C) is given by:

$$C = 100 + 0.75\, Y_d$$

where Y_d is the disposable income.
If the total investment is 80, the equilibrium output is ___(*in integer*)

Q 15

If X is a continuous random variable whose probability density function is given by

$$f_X(x) = \begin{cases} \frac{1}{x^2} \; for \; 1 < x < \infty \\ 0 \qquad elsewhere \end{cases}$$

Then the median of X is _____ (in integer)

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Q 16	**The inverse demand function for a monopolist is given by** $P = 100 - kQ$ **where P is the unit price of the good, Q is the quantity and k is a constant. The cost function facing the monopolist is given as $C(Q) = 50 + 2Q(1 + Q)$. If the profit maximizing output is 7, the maximum profit is _____ (in integer)**

Q 17	**Consider a simple Keynesian closed economy model with the following information:** **The Marginal Propensity to Consume (MPC) is 0.9 and the initial level of saving is INR 120. When income rises by INR 100, then the new level of saving will be INR _____ (in integer)**

Q 18	**If X is a continuous random variable whose probability density function is given by** $f_X(x) = \begin{cases} cx^3 + 0.25 \; for \; 0 \le x \le 1, c \in \mathbb{R} \\ 0 \qquad\qquad elsewhere \end{cases}$ **Then the value of c is _____ (in integer)**

Q.19 – Q.39 Carry TWO marks Each

Q 19	**Consider a three-firms oligopoly market with a linear demand function given by** $P = 25 - Q$ **where P is the unit price and Q is the total quantity supplied.** **The total quantity $Q = (q1 + q2 + q3)$, where qi is the output from the i^{th} firm with $i = 1,2,3$.** **The total cost (TC) curve of firm i is given by $TCi = (\alpha i + 5qi)$, where αi 's are positive real numbers.**

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	Assuming a Cournot solution exists, the value of Q is
(A)	9
(B)	15
(C)	12
(D)	21

Q 20	**Transfer payments by governments are viewed as**
(A)	Negative taxes
(B)	Indirect taxes
(C)	Non-tax revenues
(D)	Transfer of wealth

Q 21 **Match Column I with Column II.**

Column I	**Column II**
P. Phillips Curve	**1. Describes the relationship between devaluation and trade deficit**
Q. Kuznets Curve	**2. Describes the relationship between tax revenue and tax rate**
R. Laffer Curve	**3. Describes the relationship between rate of unemployment and inflation**
S. J-Curve	**4. Describes the relationship between degree of income inequality and level of per-capita income**

(A)	(P → 3), (Q → 4), (R → 2), (S → 1)
(B)	(P → 3), (Q → 1), (R → 2), (S → 4)
(C)	(P → 2), (Q → 1), (R → 3), (S → 4)
(D)	(P → 2), (Q → 3), (R → 4), (S → 1)

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Q 22	**Consider the following statements:** **Statement 1: The new classical policy ineffectiveness proposition asserts that, systematic monetary policy and fiscal policy actions that change aggregate demand will not affect output and employment even in short run.** **Statement 2: According to Real Business Cycle (RBC) model, the aggregate economic variables are the outcomes of the decisions made by many individual agents acting to maximize their utility subject to production possibilities and resource constraints.** **Which one of the following options is CORRECT?**
(A)	ONLY Statement 1 is TRUE
(B)	ONLY Statement 2 is TRUE
(C)	BOTH Statements are TRUE
(D)	BOTH Statements are FALSE

Q 23	**Consider a two-variables (x, y) linear regression model** **$y = \alpha + \beta x + \varepsilon$** **where α and β are the parameters, and ε is the error term.** **The parameters are estimated using the Ordinary Least Squares (OLS) method.** **Let b denote the estimated value of β. If $b = 0$, then which one of the following statements is CORRECT?**
(A)	R^2 can be any real number in (0, 0.5]
(B)	R^2 can be any real number in (0.5, 1)
(C)	R^2 is any positive real number greater than 1
(D)	$R^2 = 0$

Q 24	**Let $X_1, X_2, X_3, \ldots$, be independent and identically distributed random variables with $E[X_1] = \mu$.** **Let N be a positive integer valued random variable with $E[N] = n$.** **If $S_N = X_1 + X_2 + \cdots + X_N$, then $E[S_N] =$**
(A)	μ

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(B)	$N\mu$
(C)	$n\mu$
(D)	μ^n

Q 25	**A Cobb-Douglas type short-run production function is given by** $q = 2\sqrt{(LK)}$ **where q, L and K are the output, labour and capital, respectively. K is fixed at $\bar{K}$.** **The unit price of L is w and the unit price of K is r. It is given that w is 12.** **Considering the above information, which of the following statements is/are CORRECT?**
(A)	**The short-run marginal cost is $\frac{6q}{\bar{K}}$**
(B)	**The short-run average variable cost is $\frac{3q}{\bar{K}}$**
(C)	**To produce 10 units of the output, required L is $\frac{25}{\bar{K}}$**
(D)	**For $\bar{K}$= 3 and r = 4, the total cost is 12 + 3q^2**

Q 26	**A simple Keynesian open economy model is given by** $S + T + M = G + I + X$ **where S, I, G, T, X, and M stands for saving, investment, government expenditure, taxes, exports and imports, respectively.** **If the country has trade surplus, which strategy/strategies among the following will reduce the trade imbalance?**
(A)	Everything else being constant, decrease in private saving would reduce trade surplus
(B)	Everything else being constant, increase in investment would reduce trade surplus
(C)	Everything else being constant, increase in government taxes would reduce trade surplus

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(D)	Everything else being constant, decrease in government spending would reduce trade surplus.

Q 27	**Consider the two scenarios for a small open economy based on the Mundell-Fleming IS-LM model with floating exchange rate and perfect capital mobility**

Scenario I	**Scenario II**
$Y = C(Y - T) + I(r^*) + G + NX(e, Y)$ $\frac{M}{\overline{P}} = L(r^*, Y)$	$Y = C(Y - T) + I(r^*) + G + NX(e)$ $\frac{M}{\overline{P}} = L(r^*, Y - T)$

where Y is aggregate income, C is aggregate consumption, I is investment, r^* is world interest rate, G is government expenditure, T is taxes, NX is net exports, e is exchange rate, M is money supply, and $\overline{P}$ is general price level.

I has a negative relationship with r^*, NX depends negatively on both e and Y, and $\overline{P}$ is fixed.

Given the above information, which of the following statements is/are CORRECT?

(A)	Increase in G has no effect on income in Scenario I.
(B)	Decrease in T lowers income in Scenario II
(C)	Expansionary fiscal policy raises income in Scenario I and Scenario II.
(D)	Expansionary fiscal policy raises exchange rate in Scenario I and Scenario II.

Q 28	**Which of the following statements is/are CORRECT in the context of Foreign Exchange Market?**
(A)	When the value of domestic currency increases vis-à-vis the value of foreign currency, the domestic currency experiences appreciation.
(B)	When the value of domestic currency increases vis-à-vis the value of foreign currency, the domestic currency experiences depreciation.
(C)	When the value of domestic currency decreases vis-à-vis the value of foreign currency, the domestic currency experiences depreciation.

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(D)	When the value of domestic currency decreases vis-à-vis the value of foreign currency, the domestic currency experiences appreciation.

Q 29	**Which of the following statements characterize(s) the Indian labour market?**
(A)	High workforce participation in agriculture
(B)	A predominant formal sector employment
(C)	Increasing Gig and contractual employment
(D)	A dual structure comprising organised and unorganised sector

Q 30	**Which of the following statements is/are NOT CORRECT?**
(A)	According to the "Pollution Haven hypothesis", trade liberalisation may lead to reallocation of production to countries where either environmental regulation are ineffective or altogether absent.
(B)	According to the "Porter hypothesis", stringency in ensuring environmental standards often induces firms to become more efficient and prevent technological advancement and innovation.
(C)	According to the "Race to the Bottom hypothesis", the environmental regulation are progressively made stringent so that economies gain in competition for inward investments.
(D)	According to the "Environmental Kuznets curve hypothesis", there is an inverted U-shape relationship between per-capita income and environmental quality

Q 31	**There are two firms in an industry producing a homogeneous product. The market demand function is given by $P = 1 - (q1 + q2)$, where $q1$ and $q2$ are the output levels of Firm 1 and Firm 2, respectively.** **Firm 1's cost function is common knowledge and equals zero. Firm 2's cost function is private information. Firm 1 believes that Firm 2's cost function is $0.5q_2$ with probability 0.5 and that Firm 2's cost function is $0.25q2$ with probability 0.5. The firms choose their quantities simultaneously.** **Let q_1^* denote the quantity produced by Firm 1 in the Bayesian Nash equilibrium of this game. Then, the value of $24q_1^*$ is _____ (*round off to one decimal place*)**

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Q 32	Consider a two-person exchange economy where two goods, x and y are available in limited quantities of 50 and 100, respectively. The preferences of the two persons, Anil and Binod are given by the utility functions $$U_{Anil}(x_{ANil}, y_{ANil}) = x_{ANil}^{0.4} y_{Anil}^{0.6}$$ And $$U_{Binod}(x_{Binod}, y_{Binod}) = x_{Binod}^{0.6}\, y_{Binod}^{0.4}$$ If they decide to share good y equally among themselves, the amount of good x Anil receives is _____ (in integer)

Q 33	Let Y be income, r be interest rate, G be government expenditure and M^s be money supply. Consider the following closed economy IS-LM equations with fixed general price level $(\bar{P})$ IS equation: $Y = 490 + 0.6\,Y - 4\,r + G$ LM equation: $\frac{M^s}{\bar{P}} = 20 + 0.25\,Y - 10r$ If G is 330 and $\frac{M^s}{\bar{P}}$ is 500, then the equilibrium Y is _____ *(round off to one decimal place)*

Q 34	Consider the following Harrod-Domar growth equation $$\frac{s}{\theta} = g + \delta$$ where s = saving rate, θ = capital-output ratio, g = overall growth rate, and δ = capital depreciation rate. If δ = 0 and s = 20%, then to achieve g = 10%, the capital-output ratio will be _____ (in integer)

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Q 35	**A coin has a true probability μ of turning up Heads. This coin is tossed 100 times and shows up Heads 60 times. The following hypothesis is tested:** **$H0$: μ = 0.5 (Null Hypothesis)** **$H1$: μ > 0.5 (Alternative Hypothesis)** **Using the Central Limit Theorem, the p-value of the above test is _____ (round off to three decimal places)** **(Hint: If Z is a random variable that follows a standard normal distribution, then $P(Z \leq 2) = 0.977$)**

Q 36	**The installation cost (IC) of a solar power plant is INR 89,000. The plant shall be operational for 5 years. The recurring costs for maintenance of the solar plant per year is INR 5,000 but the benefits it creates including reduction in emissions amounts to INR 25,000 per year. These are the only costs and benefits associated with this project. The social discount rate (r) considered is 4% per year. The yearwise information is presented below**

Year (t)	Discount Factor $(1+r)^{-t}$	Benefits (in '000)	Costs (in '000)
0	1		IC
1	0.96	25	5
2	0.92	25	5
3	0.89	25	5
4	0.85	25	5
5	0.82	25	5

The net present value of the plant is _____(*in integer*)

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Q 37	**Let $f(x, y) = -x^2 - y^2 + 2x + 4y + 5$.** **Let (x^*, y^*) denote the solution to the following optimization problem:** **Maximize $f(x, y)$** **subject to $x \geq 0$, $y \geq 0$, $2x + y \leq 6$** **Then the value of $f(x^*, y^*)$ is _____(*in integer*)**

Q 38	**Two players A and B are playing a game. Player A has two available actions a_1 and a_2. Player B has two available actions b_1 and b_2. The payoff matrix arising from their actions is presented below.** **Let p be the probability that player A plays action $a_1$in the mixed strategy Nash equilibrium of the game.** **Then the value of p is _____(*round off to one decimal place*)**

	b_1	b_2
a_1	–1, 3	4, –1
a_2	3, –4	–2, 2

Q 39	**If the Marginal Propensity to Consume (MPC) of an economy is 0.75, then the value of expenditure multiplier will be ___(*in integer*).**

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