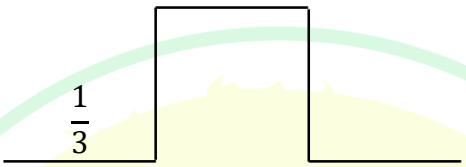
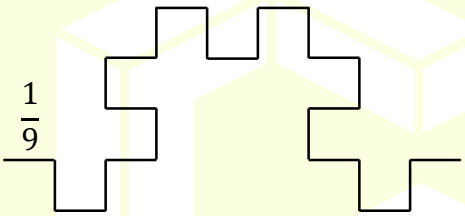
General Aptitude

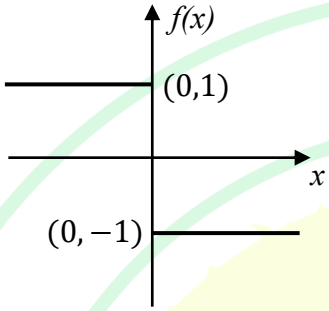
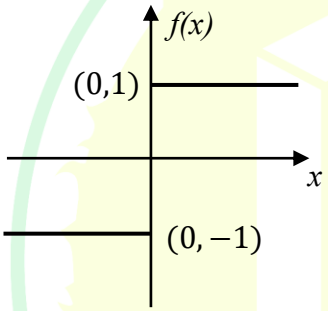
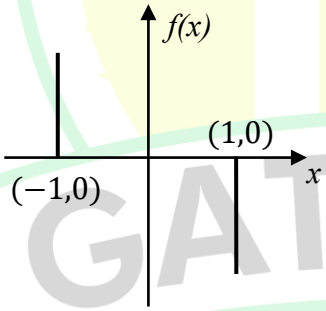
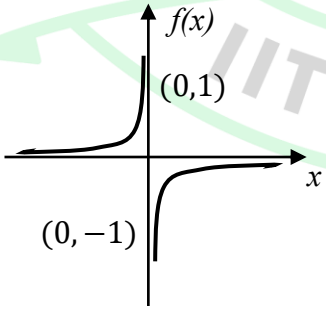
Q.1 – Q.5 Carry ONE mark Each

Q.1	Here are two analogous groups, Group-I and Group-II, that list words in their decreasing order of intensity. Identify the missing word in Group-II. Group-I: Abuse → Insult → Ridicule Group-II: _____ → Praise → Appreciate
(A)	Extol
(B)	Prize
(C)	Appropriate
(D)	Espouse

Q.2	Had I learnt acting as a child, I _____ a famous film star. Select the most appropriate option to complete the above sentence.
(A)	will be
(B)	can be
(C)	am going to be
(D)	could have been

Q.3	The 12 musical notes are given as $C, C^{\#}, D, D^{\#}, E, F, F^{\#}, G, G^{\#}, A, A^{\#}$, and B. Frequency of each note is $\sqrt[12]{2}$ times the frequency of the previous note. If the frequency of the note C is 130.8 Hz, then the ratio of frequencies of notes $F^{\#}$ and C is:
(A)	$\sqrt[6]{2}$
(B)	$\sqrt{2}$
(C)	$\sqrt[4]{2}$
(D)	2

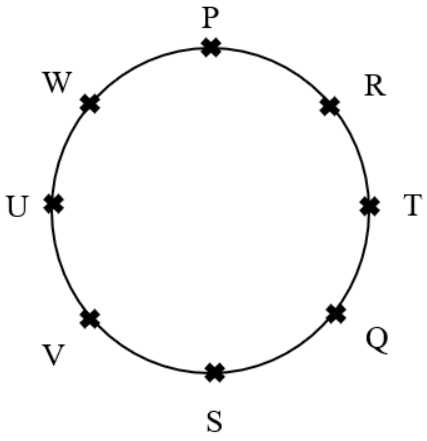
Q.4	The following figures show three curves generated using an iterative algorithm. The total length of the curve generated after 'Iteration n' is: Note: The figures shown are representative.
	Iteration 0:  Iteration 1:  Length of each segment: $\frac{1}{3}$ Iteration 2:  Length of each segment: $\frac{1}{9}$
(A)	$\left(\frac{5}{3}\right)^{\frac{n}{2}}$
(B)	$\left(\frac{5}{3}\right)^{n}$
(C)	$\left(\frac{5}{3}\right)^{2n}$
(D)	$\left(\frac{5}{3}\right)^{n(2n-1)}$

Q.5	Which one of the following plots represents $f(x) = -\frac{\lvert x \rvert}{x}$, where x is a non-zero real number? Note: The figures shown are representative.
(A)	
(B)	
(C)	
(D)	

Q.6 – Q.10 Carry TWO marks Each

Q. 6	Identify the option that has the most appropriate sequence such that a coherent paragraph is formed: P. Over time, such adaptations lead to significant evolutionary changes with the potential to shape the development of new species. Q. In natural world, organisms constantly adapt to their environments in response to challenges and opportunities. R. This process of adaptation is driven by the principle of natural selection, where favorable traits increase an organism's chances of survival and reproduction. S. As environments change, organisms that can adapt their behavior, structure and physiology to such changes are more likely to survive.
(A)	P → Q → R → S
(B)	Q → S → R → P
(C)	R → S → Q → P
(D)	S → P → R → Q

Q.7	A stick of length one meter is broken at two locations at distances of b_1 and b_2 from the origin (0), as shown in the figure. Note that $0 < b_1 < b_2 < 1$. Which one of the following is NOT a necessary condition for forming a triangle using the three pieces? Note: All lengths are in meter. The figure shown is representative.
	
(A)	$b_1 < 0.5$
(B)	$b_2 > 0.5$
(C)	$b_2 < b_1 + 0.5$
(D)	$b_1 + b_2 < 1$

Q.8	Eight students (P, Q, R, S, T, U, V, and W) are playing musical chairs. The figure indicates their order of position at the start of the game. They play the game by moving forward in a circle in the clockwise direction. After the 1st round, 4th student behind P leaves the game. After 2nd round, 5th student behind Q leaves the game. After 3rd round, 3rd student behind V leaves the game. After 4th round, 4th student behind U leaves the game. Who all are left in the game after the 4th round? Note: The figure shown is representative.
	
(A)	P; T; Q; S
(B)	V; P; T; Q
(C)	W; R; Q; V
(D)	Q; T; V; W

Q.9 The table lists the top 5 nations according to the number of gold medals won in a tournament; also included are the number of silver and the bronze medals won by them. Based only on the data provided in the table, which one of the following statements is INCORRECT?

Nation	Gold	Silver	Bronze
USA	40	44	41
Canada	39	27	24
Japan	20	12	13
Australia	17	19	16
France	16	26	22

(A) France will occupy the third place if the list were made on the basis of the total number of medals won.

(B) The order of the top two nations will not change even if the list is made on the basis of the total number of medals won.

(C) USA and Canada together have less than 50% of the medals awarded to the nations in the above table.

(D) Canada has won twice as many total medals as Japan.

Q.10	An organization allows its employees to work independently on consultancy projects but charges an overhead on the consulting fee. The overhead is 20% of the consulting fee, if the fee is up to ₹ 5,00,000. For higher fees, the overhead is ₹ 1,00,000 plus 10% of the amount by which the fee exceeds ₹ 5,00,000. The government charges a Goods and Services Tax of 18% on the total amount (the consulting fee plus the overhead). An employee of the organization charges this entire amount, i.e., the consulting fee, overhead, and tax, to the client. If the client cannot pay more than ₹ 10,00,000, what is the maximum consulting fee that the employee can charge?
(A)	₹ 7,01,438
(B)	₹ 7,24,961
(C)	₹ 7,51,232
(D)	₹ 7,75,784

Q.11– Q.17 Carry ONE mark Each

Q.11	Which one of the following numbers is odd one out? 31541 42651 53791 64871 75981
(A)	31541
(B)	42651
(C)	53791
(D)	75981
Q.12	Ankit, Arun, and Ankur have one apple each. Ankur also has one banana. Alam has one mango and one kiwi. Ankit has just bought one pineapple. Who has the least number of fruit(s)?
(A)	Ankit
(B)	Arun
(C)	Ankur
(D)	Alam

Q.13	If each vowel in the word RESIDE is changed to its previous letter in the English alphabet and each consonant is changed to the next letter in the English alphabet, which one of the following options will be the third from the right?
(A)	T
(B)	D
(C)	S
(D)	H
Q.14	Vipul, Ahmad, Santosh, and David are playing Carrom. Vipul and Ahmad are partners sitting opposite to each other. David faces towards South. If Vipul faces towards West, then who faces towards the North?
(A)	Alam
(B)	Santosh
(C)	David
(D)	Vipul

Q.15	Consider the following sentence. *What the country needs* ____ ____ ____ ____ *accordingly*. First and last parts of the sentence are given. P, Q, R, and S are the remaining parts of the sentence, not necessarily in that order. P: *and change tactics* Q: *who would encourage players* R: *are coaches and officials* S: *to read the game as it progresses* Which one of the following options is correct that gives the most appropriate order and meaning to the sentence?
(A)	QSPR
(B)	RQSP
(C)	RQPS
(D)	SPRQ

Q.16	A car started from city P at 9.40am. The time taken for the car to reach the city Q is 4 hours and 50 minutes. The time of arrival of the car at city Q is
(A)	15:10 Hours
(B)	14:20 Hours
(C)	14:30 Hours
(D)	14:10 Hours
Q.17	P is three years younger than R but one year older than S. S is one year older than Q but 4 years younger than R. R is 15 years old. The age of Q is ____ years (*answer in integer*).

Q.18 – Q26 Carry TWO marks Each

Q.18	In a certain code language, ATTITUDE is written as TAUJUEDU and CHILDREN is written as HCJMENER. How LANGUAGE is written in that code language?
(A)	ALOHVEGA
(B)	ALHOVAGA
(C)	LAVOHEGA
(D)	ALHOVGEA

Q.19 The table shows the data of 450 candidates who appeared in the examination of three subjects – Social Science, Mathematics, and Science.

Particulars	Number of candidates
Passed in all the three subjects	167
Failed in all the three subjects	60
Failed in Social Science subject	175
Failed in Mathematics subject	199
Failed in Science subject	191
Passed in only Social Science subject	62
Passed in only Mathematics subject	48
Passed in only Science subject	52

How many candidates have passed in at least one subject?

(A) 48

(B) 162

(C) 390

(D) 425

Q.20	If $\times$ means $+$, $+$ means $\div$, $-$ means $\times$, and $\div$ means $-$, then $8 \times 7 - 8 + 40 \div 2 =$
(A)	$3\frac{8}{5}$
(B)	$7\frac{2}{5}$
(C)	$2\frac{7}{5}$
(D)	$8\frac{3}{5}$
Q.21	Given a series 5, 8, 11, 14, … If the n^{th} term of the given series is 320, then n (where, $n \geq 1$) is
(A)	104
(B)	105
(C)	106
(D)	107

Q.22 Suppose, your last year taxable income was Rs. 22000. Due to hike in salary, your taxable income this year is Rs. 34200. The details for tax calculation are given in the table below.

Income range (Rs.)	**Tax slab (Rs.)**
0 to 5000	2 % of income
Greater than 5000 to 10000	100 + 3 % of income over 5000
Greater than 10000 to 20000	250 + 5 % of income over 10000
Greater than 20000 to 30000	750 + 8 % of income over 20000
Greater than 30000 to 50000	1550 + 10 % of income over 30000
Greater than 50000 to 100000	3550 + 20 % of income over 50000

Consider the appropriate tax slab corresponding to your income. What is the additional amount of tax you need to pay this year compared to last year?

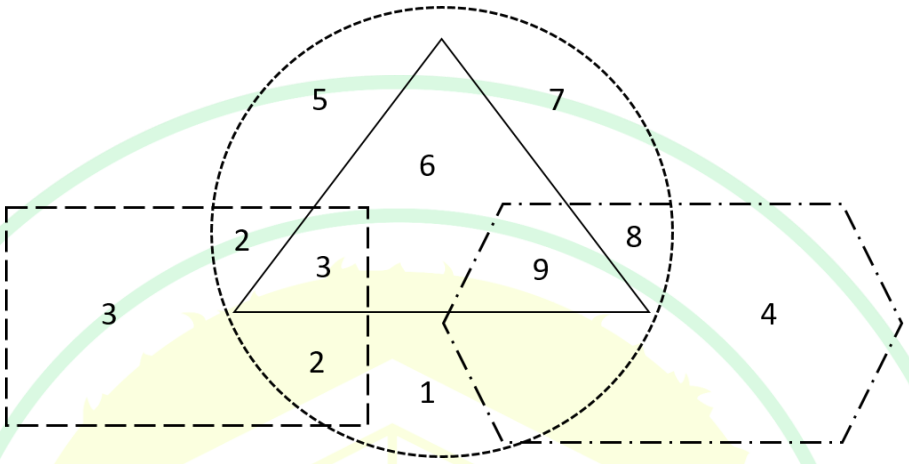
(A) 1970

(B) 1060

(C) 910

(D) 420

Q.23	Anand, Hari, and Chris are engaged in one of the three type of occupations – clerk, teacher, and plumber, not necessarily in that order. Each person is assigned only one type of occupation. No two or more persons can be assigned same type of occupation. Clerk is Chris's cousin. Hari lives next door to the plumber. Anand, who knows more facts than the teacher, has to drive more than 1 hour to reach Hari's home. Identify each of the person's correct type of occupation, and accordingly, which one of the following options is correct?
(A)	Anand is teacher and Chris is clerk.
(B)	Hari is clerk and Anand is plumber.
(C)	Chris is teacher and Hari is clerk.
(D)	Anand is clerk and Chris is plumber.
Q.24	Many countries are facing water shortage crises in the past few years. A report of the United Nation has named India among the worst countries for poor quality of water. The report ranks 122 countries according to the quality of their water as well as their commitment to improve the situation. Some countries in Europe are considered the worst because of the quality of its ground water. Rain failed in some parts of India in the past. The vast areas of Rajasthan, Madhya Pradesh, and Andhra Pradesh were affected by severe drought. People without water turn desperate and violent. Consequently, the food godowns were attacked in some of the states. Based on the details given in the passage, which of the following option(s) is/ are correct statement(s)?
(A)	There is no proof that India is affected by poor quality of water.
(B)	A few European countries are suffering due to occurrence of drought.
(C)	Lack of access to water can lead to social unrest.
(D)	Intense shortage of water is visible in some states of India.

Q.25	In the following figure, four overlapping shapes (rectangle, triangle, circle, and hexagon) are given. The sum of the numbers which belong to **only** two overlapping shapes is_____.
	
Q.26	Consider a square field ABCD. The diagonal AC is 50 meter. The cost of laying grass in the field is Rs. 5 per square-meter. The total cost for laying grass in the field ABCD is Rs. _____ (*rounded off to two decimal places*).

Q.27– Q.44 Carry ONE mark Each

Q.27	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.28	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.29	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
Q.30	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.31	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.32	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

Q.33	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.34	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.35	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)	$p = 12$
Q.36	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.37	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.38	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 z_1 and z_2 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 z_1 and z_2 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 $\delta = 1$, the CES utility function is not strictly convex.
(C)	The Marginal Rate of Substitution ($MRS_{z_1 z_2}$) 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 ($MRS_{z_1 z_2}$) is 2 for both the CES and the QL utility functions.

Q.39 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.40 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.41 If X is a continuous random variable whose probability density function is given by

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

Then the median of X is _____ (*in integer*)

Q.42	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.43	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*)
Q44.	If X is a continuous random variable whose probability density function is given by $$f_X(x) = \begin{cases} cx^3 + 0.25 & \text{for } 0 \le x \le 1, c \in \mathbb{R} \\ 0 & \text{elsewhere} \end{cases}$$ Then the value of c is _____ (*in integer*)

Q.45 – Q.65 Carry TWO marks Each

Q.45	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 $Q = (q_1 + q_2 + q_3)$, where q_i is the output from the i^{th} firm with $i = 1,2,3$. The total cost (TC) curve of firm i is given by $TC_i = (\alpha_i + 5q_i)$, where α_i's are positive real numbers. Assuming a Cournot solution exists, the value of Q is
(A)	9
(B)	15
(C)	12
(D)	21
Q.46	Transfer payments by governments are viewed as
(A)	Negative taxes
(B)	Indirect taxes
(C)	Non-tax revenues
(D)	Transfer of wealth

Q.47 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)

Q.48	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.49	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.50	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
(B)	$N\mu$
(C)	$n\mu$
(D)	μ^n

Q.51	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.52	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.
(D)	Everything else being constant, decrease in government spending would reduce trade surplus.

<table>
<tr><td>Q.53</td><td>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
<table>
<tr><th>Scenario I</th><th>Scenario II</th></tr>
<tr><td>$Y = C(Y-T) + I(r^*) + G + NX(e,Y)$
$\frac{M}{\bar{P}} = L(r^*, Y)$</td><td>$Y = C(Y-T) + I(r^*) + G + NX(e)$
$\frac{M}{\bar{P}} = L(r^*, Y-T)$</td></tr>
</table>
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 $\bar{P}$ is general price level.

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

Given the above information, which of the following statements is/are CORRECT?</td></tr>
<tr><td>(A)</td><td>Increase in G has no effect on income in Scenario I.</td></tr>
<tr><td>(B)</td><td>Decrease in T lowers income in Scenario II.</td></tr>
<tr><td>(C)</td><td>Expansionary fiscal policy raises income in Scenario I and Scenario II.</td></tr>
<tr><td>(D)</td><td>Expansionary fiscal policy raises exchange rate in Scenario I and Scenario II.</td></tr>
<tr><td></td><td></td></tr>
</table>

Q.54	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.
(D)	When the value of domestic currency decreases vis-à-vis the value of foreign currency, the domestic currency experiences appreciation.
Q.55	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.56	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.57	There are two firms in an industry producing a homogeneous product. The market demand function is given by $P = 1 - (q_1 + q_2)$, where q_1 and q_2 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 $0.25q_2$ 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*)

Q.58	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 $$U_{\text{Anil}}(x_{\text{Anil}}, y_{\text{Anil}}) = x_{\text{Anil}}^{0.4} y_{\text{Anil}}^{0.6}$$ and $$U_{\text{Binod}}(x_{\text{Binod}}, y_{\text{Binod}}) = x_{\text{Binod}}^{0.6} y_{\text{Binod}}^{0.4}$$ If they decide to share good y equally among themselves, the amount of good x Anil receives is _____ *(in integer)*
Q.59	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: $$\frac{M^s}{\bar{P}} = 20 + 0.25\,Y - 10\,r$$ If G is 330 and $\frac{M^s}{\bar{P}}$ is 500, then the equilibrium Y is _____ (*round off to one decimal place*)

Q.60	Consider the following Harrod-Domar growth equation $$\frac{s}{\theta} = g + \delta$$ where $s =$ saving rate, $\theta =$ capital-output ratio, $g =$ overall growth rate, and $\delta =$ capital depreciation rate. If $\delta = 0$ and $s = 20\%$, then to achieve $g = 10\%$, the capital-output ratio will be _____ (*in integer*)
Q.61	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: $H_0: \mu = 0.5$ (Null Hypothesis) $H_1: \mu > 0.5$ (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.62

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 year-wise 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*)

Q.63

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*)

<table>
<tr><td>Q.64</td><td>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.

<table><tr><td></td><td>b_1</td><td>b_2</td></tr><tr><td>a_1</td><td>$-1, 3$</td><td>$4, -1$</td></tr><tr><td>a_2</td><td>$3, -4$</td><td>$-2, 2$</td></tr></table>
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)</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Q.65</td><td>If the Marginal Propensity to Consume (MPC) of an economy is 0.75, then the value of expenditure multiplier will be _____ (in integer).</td></tr>
<tr><td></td><td></td></tr>
</table>

Answer Key for Humanities & Social Sciences - Economics (XHC1)

Q. No.	Session	Q. Type	Section	Key/Range	Marks
1	6	MCQ	GA	A	1
2	6	MCQ	GA	D	1
3	6	MCQ	GA	B	1
4	6	MCQ	GA	B	1
5	6	MCQ	GA	A	1
6	6	MCQ	GA	B	2
7	6	MCQ	GA	D	2
8	6	MCQ	GA	MTA*	2
9	6	MCQ	GA	C	2
10	6	MCQ	GA	B	2
11	6	MCQ	XH-B1	C	1
12	6	MCQ	XH-B1	B	1
13	6	MCQ	XH-B1	D	1
14	6	MCQ	XH-B1	B	1
15	6	MCQ	XH-B1	B	1
16	6	MCQ	XH-B1	C	1
17	6	NAT	XH-B1	10 to 10	1
18	6	MCQ	XH-B1	A	2
19	6	MCQ	XH-B1	C	2
20	6	MCQ	XH-B1	B	2
21	6	MCQ	XH-B1	C	2
22	6	MCQ	XH-B1	B	2
23	6	MCQ	XH-B1	D	2
24	6	MSQ	XH-B1	C;D	2
25	6	NAT	XH-B1	18 to 18	2
26	6	NAT	XH-B1	6100.00 to 6350.00	2
27	6	MCQ	XH-C1	D	1
28	6	MCQ	XH-C1	D	1
29	6	MCQ	XH-C1	B	1
30	6	MCQ	XH-C1	C	1

31	6	MCQ	XH-C1	D	1
32	6	MCQ	XH-C1	A	1
33	6	MSQ	XH-C1	B	1
34	6	MSQ	XH-C1	B;C	1
35	6	MSQ	XH-C1	A;D	1
36	6	MSQ	XH-C1	A;B	1
37	6	MSQ	XH-C1	A;B;D	1
38	6	MSQ	XH-C1	C;D	1
39	6	NAT	XH-C1	70 to 70	1
40	6	NAT	XH-C1	720 to 720	1
41	6	NAT	XH-C1	2 to 2	1
42	6	NAT	XH-C1	293 to 293	1
43	6	NAT	XH-C1	130 to 130	1
44	6	NAT	XH-C1	3 to 3	1
45	6	MCQ	XH-C1	B	2
46	6	MCQ	XH-C1	A	2
47	6	MCQ	XH-C1	A	2
48	6	MCQ	XH-C1	C	2
49	6	MCQ	XH-C1	D	2
50	6	MCQ	XH-C1	C	2
51	6	MSQ	XH-C1	A;B;C	2
52	6	MSQ	XH-C1	A;B	2
53	6	MSQ	XH-C1	A;B;D	2
54	6	MSQ	XH-C1	A;C	2
55	6	MSQ	XH-C1	A;C;D	2
56	6	MSQ	XH-C1	B;C	2
57	6	NAT	XH-C1	10.5 to 11.5	2
58	6	NAT	XH-C1	14 to 21	2
59	6	NAT	XH-C1	2023.5 to 2024.5	2
60	6	NAT	XH-C1	2 to 2	2
61	6	NAT	XH-C1	0.02 to 0.025	2
62	6	NAT	XH-C1	-200 to -200	2
63	6	NAT	XH-C1	10 to 10	2
64	6	NAT	XH-C1	0.5 to 0.7	2
65	6	NAT	XH-C1	4 to 4	2

***MTA= Marks To All**