

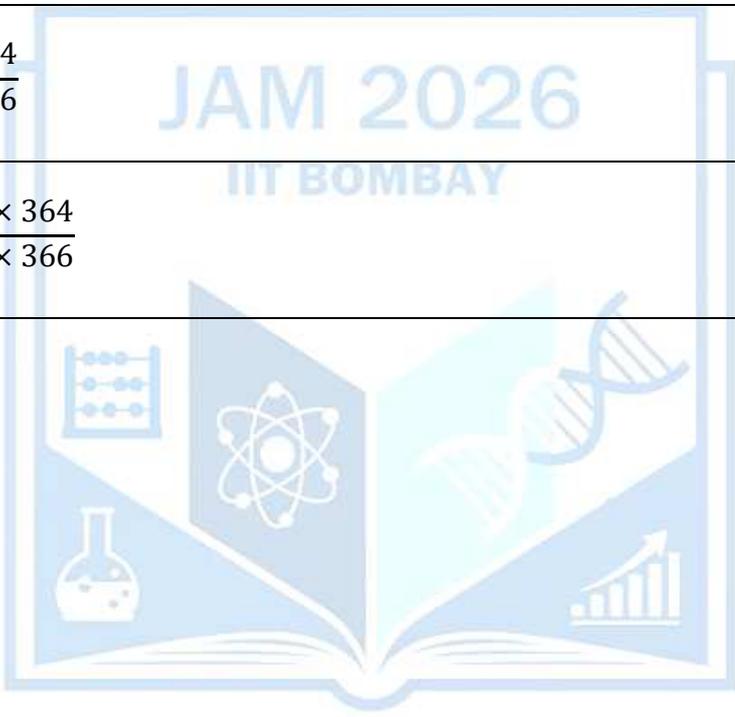
<b>Section A: Q.1 – Q.10 Carry ONE mark each.</b>	
Q.1	If kurtosis is defined as $\left(\frac{m_4}{\sigma^4} - 3\right)$ , where $m_4$ is the 4 <sup>th</sup> order central moment and $\sigma$ is the standard deviation, then its value is positive for
(A)	a leptokurtic distribution
(B)	a mesokurtic distribution
(C)	a platykurtic distribution
(D)	a normal distribution
Q.2	Which one of the followings is a relative measure of dispersion?
(A)	Range
(B)	Mean Absolute Deviation about Mean
(C)	Coefficient of Variation
(D)	Quartile Deviation

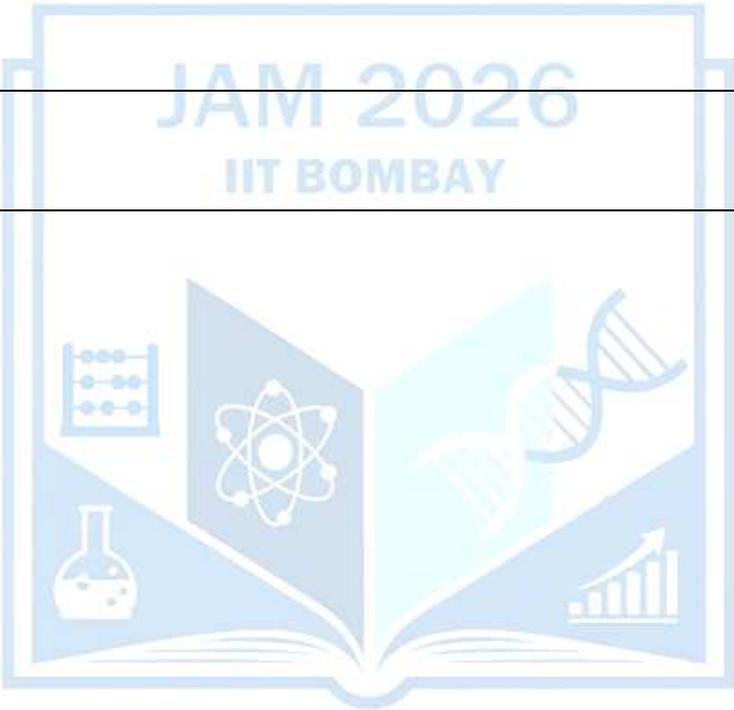
Q.3	Which one of the followings was NOT part of India's economic reforms in 1991?
(A)	Abolition of 'License Raj'
(B)	Encouragement of foreign investment
(C)	Devaluation of Rupee
(D)	Nationalisation of banks
Q.4	India's Second Five-Year Plan (1956-61) was developed based on
(A)	Harrod-Domar Model
(B)	Mahalanobis Model
(C)	Gadgil Formula
(D)	Solow Model

Q.5	Let $e$ , $R$ , and $p$ represent own price elasticity of demand, total revenue, and price, respectively for a good. If $\frac{\partial R}{\partial p} < 0$ , then
(A)	$ e  > 1$
(B)	$ e  = 1$
(C)	$ e  < 1$
(D)	$ e  = 0$
Q.6	Which one of the following statements is CORRECT for the general equilibrium analysis for a two-person and two-good pure exchange economy?
(A)	Some points on the <i>contract curve</i> may not be Pareto optimal.
(B)	Endowment point cannot be on the boundary of the Edgeworth Box.
(C)	Equilibrium prices are endogenously determined.
(D)	In equilibrium, net demand for a good is either positive or negative but cannot be zero.

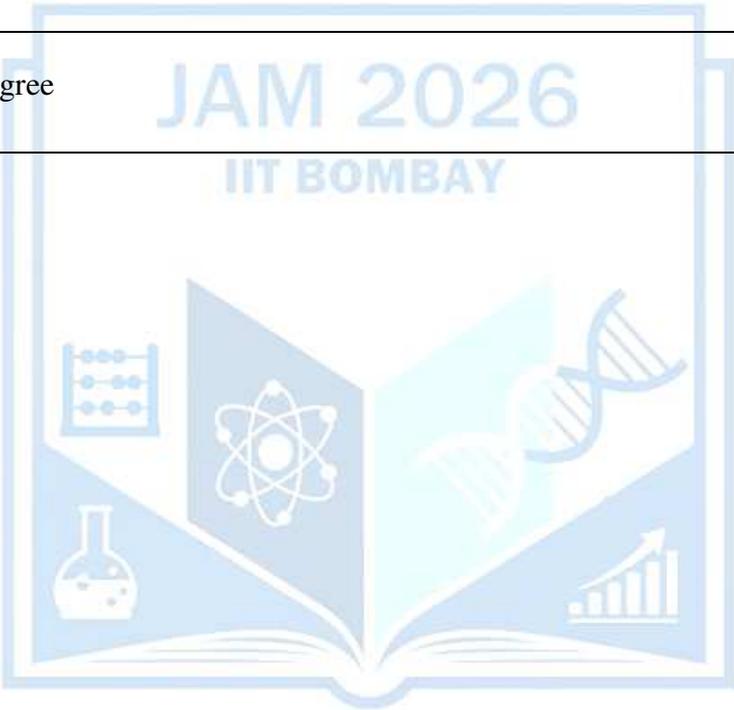
Q.7	Which one of the following statements is CORRECT in the context of Gross Domestic Product (GDP) calculation?
(A)	GDP includes unpaid domestic work.
(B)	GDP includes government consumption expenditure.
(C)	GDP excludes rent on owner-occupied houses.
(D)	GDP excludes self-consumption of production by the producer.
Q.8	The relationship between tax revenue and tax rate is represented by _____.
(A)	J-Curve
(B)	Laffer Curve
(C)	Phillips Curve
(D)	IS Curve

Q.9	The Permanent Settlement Act of 1793 primarily aimed at
(A)	abolition of the ryotwari system
(B)	establishment of peasant ownership of land
(C)	securing land revenue for British Government
(D)	abolition of the zamindari system
Q.10	The area under the curve $f(x) = x^5 e^{x^3}$ between $x = 1$ and $x = 2$ is
(A)	$\frac{1}{3}e^8$
(B)	$\frac{4}{3}e^8$
(C)	$\frac{5}{3}e^8$
(D)	$\frac{7}{3}e^8$

<b>Section A: Q.11 – Q.30 Carry TWO marks each.</b>	
Q.11	In a year of 366 days, what is the chance that three persons have different birthdays?
(A)	$\frac{1}{366 \times 366 \times 366}$
(B)	$\frac{1}{366 \times 365 \times 364}$
(C)	$\frac{365 \times 364}{366 \times 366}$
(D)	$1 - \frac{365 \times 364}{366 \times 366}$
	

Q.12	Let $Y_t$ be the value of $Y$ in year $t$ . The natural logarithmic value of $Y_t$ is regressed on $t$ . A simple linear regression yields the statistically significant estimates of intercept and slope coefficient as 12 and 0.1512, respectively. The calculated compound annual growth rate of $Y$ is
(A)	15.12%
(B)	1.16%
(C)	16.32%
(D)	116%
	

Q.13	<p>For a sample of employees participating in an annual appraisal, the effect of the participants' performance on their wages is studied. Information are collected, and variables of interest are defined below:</p> <p><math>Wage_i =</math> wage of the employee <math>i</math></p> <p><math>Pass_i = \begin{cases} 1, &amp; \text{if the employee } i \text{ passes in the annual appraisal} \\ 0, &amp; \text{if the employee } i \text{ fails in the annual appraisal} \end{cases}</math></p> <p><math>Fail_i = \begin{cases} 1, &amp; \text{if the employee } i \text{ fails in the annual appraisal} \\ 0, &amp; \text{if the employee } i \text{ passes in the annual appraisal} \end{cases}</math></p> <p>Based on the above information, which one of the following regression models cannot be estimated?</p>
(A)	<p><math>Wage_i = \alpha + \beta Pass_i + \gamma Fail_i + u_{1i} ;</math></p> <p>where, <math>\alpha</math>, <math>\beta</math>, and <math>\gamma</math> are the model parameters and <math>u_{1i}</math> is the error term</p>
(B)	<p><math>Wage_i = \beta Pass_i + \gamma Fail_i + u_{2i} ;</math></p> <p>where, <math>\beta</math> and <math>\gamma</math> are the model parameters and <math>u_{2i}</math> is the error term</p>
(C)	<p><math>Wage_i = \alpha + \gamma Fail_i + u_{3i} ;</math></p> <p>where, <math>\alpha</math> and <math>\gamma</math> are the model parameters and <math>u_{3i}</math> is the error term</p>
(D)	<p><math>Wage_i = \alpha + \beta Pass_i + u_{4i} ;</math></p> <p>where, <math>\alpha</math> and <math>\beta</math> are the model parameters and <math>u_{4i}</math> is the error term</p>

Q.14	A monopolist sells different units of output for different prices, but every individual who buys the same quantity of the good pays the same price. It is known as _____ price discrimination.
(A)	<i>first degree</i>
(B)	<i>third degree</i>
(C)	<i>perfect</i>
(D)	<i>second degree</i>
	

Q.15	Consider a <i>social welfare function</i> (SWF) defined as $SWF = f(U_1, U_2, \dots, U_m)$ , where $U_i$ is the utility function of the $i^{th}$ person, given that there are $m$ people in the society. Identify which one of the following statements is CORRECT.
(A)	Jeremy Bentham and John Stuart Mill proposed $SWF = \sum_{i=1}^m w_i U_i$ , where $w_i$ is the weight assigned to individual $i$ for their unique characteristics and $w_1 \neq w_2 \neq \dots \neq w_m$ .
(B)	Since SWF reflects value judgements, interpersonal comparisons can be made on scientific grounds.
(C)	John Rawls proposed $SWF = \text{maximum}\{U_1, U_2, \dots, U_m\}$ .
(D)	If $SWF = \sum_{i=1}^m U_i$ , it is referred as the utilitarian function.
Q.16	The Taylor rule is used by the Central Banks mainly
(A)	to set exchange rate based on inflation gap and output gap
(B)	to set nominal interest rate based on inflation gap and output gap
(C)	to set nominal interest rate based on exchange rate and inflation gap
(D)	to forecast future economic growth

Q.17	Which one of the following statements regarding Romer's Endogenous Growth model and Solow's Growth model is CORRECT?
(A)	Romer's Endogenous Growth model assumes constant returns to scale whereas Solow's Growth model assumes increasing returns to scale.
(B)	Capital accumulation is exogenous in Solow's Growth model and endogenous in Romer's Endogenous Growth model.
(C)	Romer's Endogenous Growth model explains technological progress but Solow's Growth model does not.
(D)	Capital accumulation is exogenous in both models.
Q.18	In the context of Reserve Bank of India's monetary policy, which one of the following options represents the CORRECT order of magnitude?
(A)	Marginal Standing Facility rate > Repo rate > Reverse Repo rate
(B)	Marginal Standing Facility rate > Reverse Repo rate > Repo rate
(C)	Repo rate > Reverse Repo rate > Marginal Standing Facility rate
(D)	Repo rate > Marginal Standing Facility rate > Reverse Repo rate

Q.19	Which one of the following statements is CORRECT in the context of positive consumption externality?
(A)	Marginal private benefit is higher than marginal social benefit.
(B)	Marginal social cost is lower than marginal private cost.
(C)	Marginal private cost is lower than marginal social cost.
(D)	Marginal social benefit is higher than marginal private benefit.
Q.20	Consider a case of negative production externality, where $MSC$ is marginal social cost, $MPC$ is marginal private cost, and $MPB$ is marginal private benefit. Assume that the property rights belong to the polluter. As per the Coase theorem, payment ( $p$ ) will be acceptable to both parties (i.e., polluter and the affected party) when
(A)	$(MSC - MPC) > p > (MPB - MPC)$
(B)	$(MPB - MPC) > p > (MSC - MPC)$
(C)	$(MPC - MSC) > p > (MPB - MPC)$
(D)	$(MPC - MPB) > p > (MSC - MPC)$

Q.21	Which one of the following statements is CORRECT in the context of price indices?
(A)	A weighted average of prices of raw materials and semifinished goods, relative to a base-year is known as the Consumer Price Index.
(B)	A weighted average of prices of consumer goods, relative to a base-year is known as the Producer Price Index.
(C)	The price index that considers the quantity of goods in the base-year as weight is known as the Laspeyres Index.
(D)	The price index that considers the quantity of goods in the base-year as weight is known as the Paasche Index.
Q.22	Which one of the following statements is CORRECT in the context of the Keynesian Absolute Income Hypothesis?
(A)	The marginal propensity to consume increases as the income increases.
(B)	The average propensity to consume increases as the income increases.
(C)	The average propensity to save decreases as the income increases.
(D)	The average propensity to consume approaches the marginal propensity to consume as the income increases.

Q.23	Consider a closed economy IS-LM model with downward sloping IS curve. If there is an <i>increase in government spending</i> , then which one of the following statements is CORRECT?
(A)	If LM curve is horizontal, then <i>the equilibrium level of income remains unchanged.</i>
(B)	If LM curve is horizontal, then <i>the equilibrium interest rate increases.</i>
(C)	If LM curve is vertical, then <i>the equilibrium level of income remains unchanged.</i>
(D)	If LM curve is vertical, then <i>the equilibrium interest rate decreases.</i>
Q.24	Consider the Mundell-Fleming model with flexible exchange rate for a small open economy characterised by a downward sloping IS curve and a vertical LM curve. If the risk premium of the country increases, then which one of the following options is CORRECT?
(A)	income increases
(B)	exchange rate appreciates
(C)	domestic interest rate declines
(D)	both IS and LM curve shift to the left

Q.25	In India, plan-holiday was declared between
(A)	Second and Third Five-Year Plan
(B)	Third and Fourth Five-Year Plan
(C)	Sixth and Seventh Five-Year Plan
(D)	Ninth and Tenth Five-Year Plan
	

Q.26

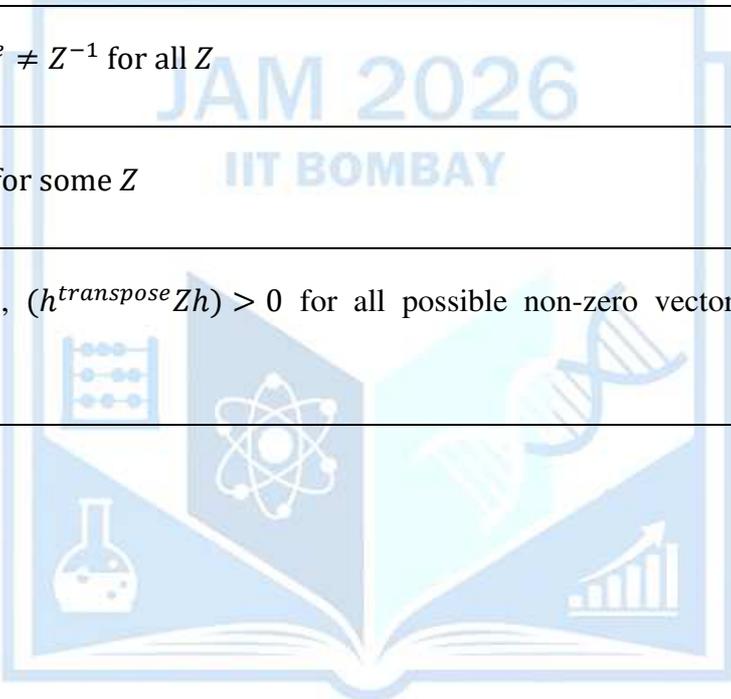
Let us consider a simultaneous game involving two players  $X$  and  $Y$ .  $X$  has two strategies, namely ‘Top’ and ‘Bottom’, and  $Y$  has two strategies, namely ‘Left’ and ‘Right’. The payoff matrix is as given below:

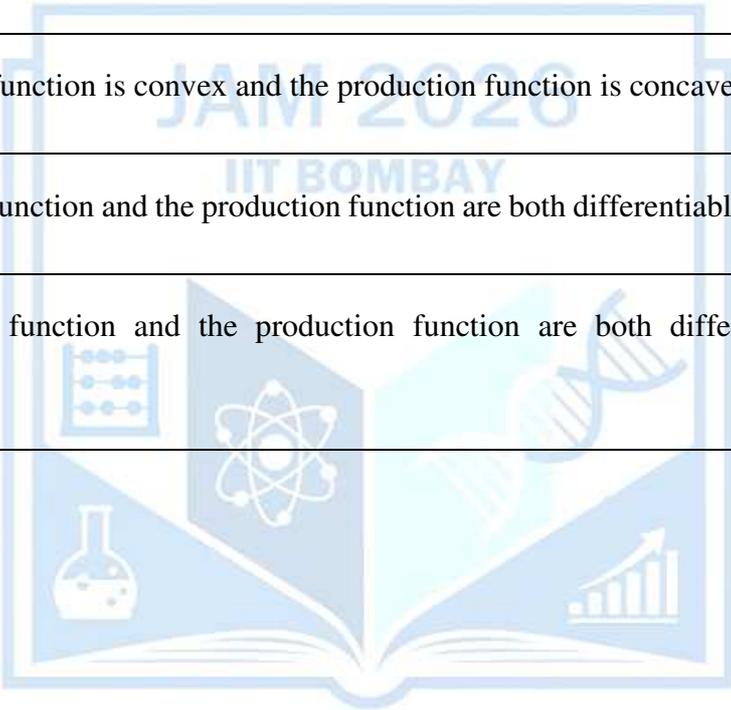
		$Y$	
		Left	Right
$X$	Top	(1, 2)	(4, 1)
	Bottom	(2, 3)	(3, 4)

In payoff  $(i, j)$ ,  $i$  and  $j$  refer to payoffs of  $X$  and  $Y$ , respectively.

Then, which one of the following statements is CORRECT?

- (A) Pure strategy Nash equilibria are hidden here.
- (B) Nash equilibrium is reached when each of them purely randomises their behavior.
- (C) The game is similar to a Matching Pennies game.
- (D) The game is similar to a Battle of Sexes game.

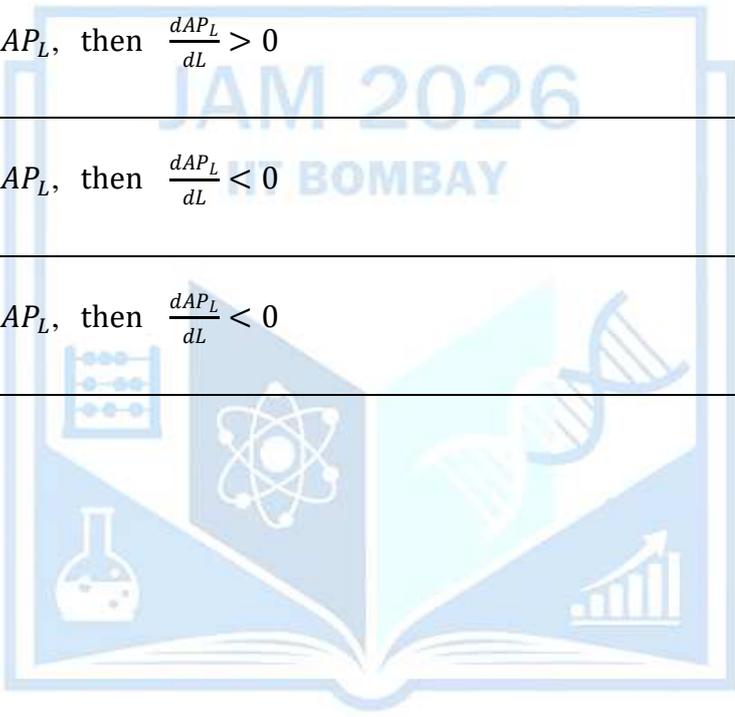
Q.27	<p>A <math>2 \times 2</math> matrix <math>Z = \begin{bmatrix} Z_1 &amp; Z_2 \\ Z_3 &amp; Z_4 \end{bmatrix}</math> has the following properties:</p> <ul style="list-style-type: none"><li>(i) <math>Z_i \in R</math> for all <math>i = 1, 2, 3, 4</math>;</li><li>(ii) <math>Z_i \neq 0</math> for some <math>i = 1, 2, 3, 4</math>; and</li><li>(iii) <math>Z = Z^2 = Z^3 = \dots</math></li></ul> <p>Which one of the following options is CORRECT?</p>
(A)	$Z^{-1}$ does not exist for all $Z$
(B)	$Z^{transpose} \neq Z^{-1}$ for all $Z$
(C)	$Z = Z^{-1}$ for some $Z$
(D)	For all $Z$ , $(h^{transpose} Zh) > 0$ for all possible non-zero vector $h$ with real elements
	

Q.28	<p>A single-input production function is given by</p> $Q = L^{0.25}$ <p>where, <math>Q (&gt; 0)</math> and <math>L (&gt; 0)</math> denote output and the single input, respectively.</p> <p>The unit price of <math>L</math> is <math>w (&gt; 0)</math>. The cost is <math>C_1</math> when no output is produced.</p> <p>Which one of the following statements is CORRECT?</p>
(A)	The cost function is concave and the production function is convex.
(B)	The cost function is convex and the production function is concave.
(C)	The cost function and the production function are both differentiable and convex.
(D)	The cost function and the production function are both differentiable and concave.
	

Q.29	<p>Consider the statements I, II, and III:</p> <p>I. Income elasticity of demand for a normal good is positive.</p> <p>II. Income elasticity of demand for an inferior good is negative.</p> <p>III. Income elasticity of demand for a luxury good is less than 1.</p> <p>Which one of the following options is CORRECT?</p>
(A)	Both II and III are NOT CORRECT, but I is CORRECT
(B)	Both II and III are CORRECT, but I is NOT CORRECT
(C)	Both I and III are CORRECT, but II is NOT CORRECT
(D)	Both I and II are CORRECT, but III is NOT CORRECT
Q.30	<p>Consider a demand curve represented as <math>q^a p^b = c</math>, where <math>q</math> is the quantity demanded, <math>p</math> is the per unit price, and <math>a, b</math>, and <math>c</math> are all positive constants. The absolute value of the own price elasticity of demand is</p>
(A)	$b/a$
(B)	$a/b$
(C)	$b$
(D)	$a$

**Section B: Q.31 – Q.40 Carry TWO marks each.**

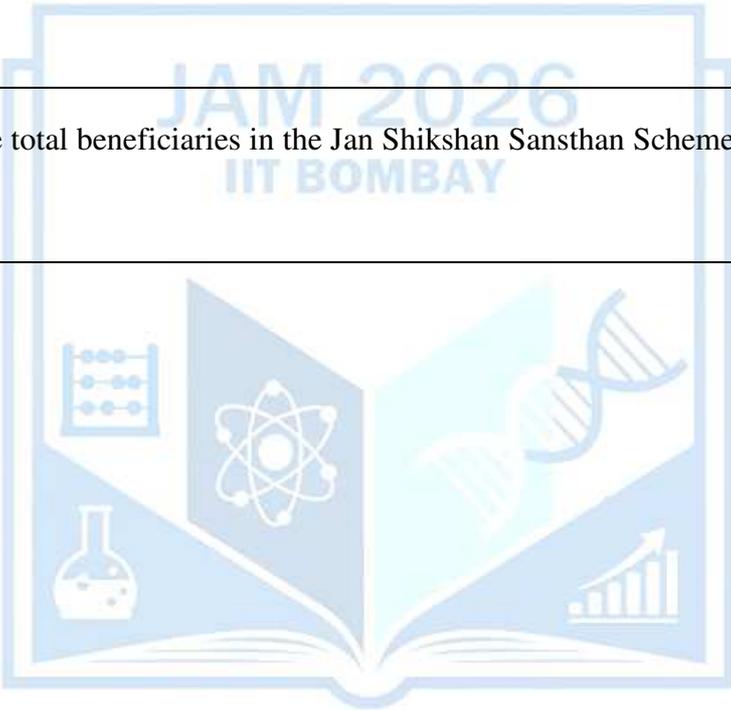
Q.31	Identify the CORRECT relationship(s) between the average product of labour ( $AP_L$ ) and marginal product of labour ( $MP_L$ ) in the short-run.
(A)	If $MP_L > AP_L$ , then $\frac{dAP_L}{dL} > 0$
(B)	If $MP_L < AP_L$ , then $\frac{dAP_L}{dL} > 0$
(C)	If $MP_L > AP_L$ , then $\frac{dAP_L}{dL} < 0$
(D)	If $MP_L < AP_L$ , then $\frac{dAP_L}{dL} < 0$



Q.32	<p>Consider the following demand and supply functions:</p> <table border="1" data-bbox="497 322 1142 564"> <tr> <td data-bbox="497 322 874 443">Demand Function:</td> <td data-bbox="874 322 1142 443"><math>D(p) = 400 - 8p</math></td> </tr> <tr> <td data-bbox="497 443 874 564">Supply Function:</td> <td data-bbox="874 443 1142 564"><math>S(p) = 2p</math></td> </tr> </table> <p>where, <math>D(p)</math>, <math>S(p)</math>, and <math>p</math> represent quantity demanded, quantity supplied, and unit price, respectively; and the choke price is Rupees 50.</p> <p>Identify which of the following statement(s) is/are CORRECT.</p>	Demand Function:	$D(p) = 400 - 8p$	Supply Function:	$S(p) = 2p$
Demand Function:	$D(p) = 400 - 8p$				
Supply Function:	$S(p) = 2p$				
(A)	The choke price is equal to the market clearing price.				
(B)	If a 25% <i>ad valorem</i> tax is imposed by the government, then the new market clearing price is equal to the choke price.				
(C)	If a 100% <i>ad valorem</i> tax is imposed by the government, then the choke price still exists.				
(D)	If a flat-rate tax of Rupees 10 per unit is imposed by the government, then the new market clearing price is equal to the choke price.				

<p>Q.33</p>	<p>Consider the following goods and money market equations:</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 50%;"> <p>Goods market</p> <math display="block">Y = C + I + G</math> <math display="block">C = 20 + 0.75(Y - T)</math> <math display="block">T = -40 + 0.2Y</math> <math display="block">I = 240 - 8i</math> <math display="block">G = 300</math> </td> <td style="text-align: center; width: 50%;"> <p>Money market</p> <math display="block">M^s = M^d</math> <math display="block">M^d = 0.2Y - 15i</math> <math display="block">M^s = 200</math> </td> </tr> </table> <p>where <math>Y</math> is output, <math>C</math> is consumption expenditure, <math>I</math> is investment expenditure, <math>G</math> is government expenditure, <math>T</math> is tax, <math>i</math> is interest rate, <math>M^s</math> is money supply, and <math>M^d</math> is money demand.</p> <p>Identify the CORRECT option(s).</p>	<p>Goods market</p> $Y = C + I + G$ $C = 20 + 0.75(Y - T)$ $T = -40 + 0.2Y$ $I = 240 - 8i$ $G = 300$	<p>Money market</p> $M^s = M^d$ $M^d = 0.2Y - 15i$ $M^s = 200$
<p>Goods market</p> $Y = C + I + G$ $C = 20 + 0.75(Y - T)$ $T = -40 + 0.2Y$ $I = 240 - 8i$ $G = 300$	<p>Money market</p> $M^s = M^d$ $M^d = 0.2Y - 15i$ $M^s = 200$		
(A)	The IS equation is $i = 73.75 - 0.05Y$		
(B)	The LM equation is $i = 0.0133Y - 13.33$		
(C)	The equilibrium $i = 7$ and $Y = 1400$		
(D)	If $G$ decreases to 200, then new equilibrium $i = 4$ and $Y = 1200$		

Q.34	Identify the CORRECT statement(s) in the context of an open economy.
(A)	When domestic currency appreciates, foreign goods become more expensive to domestic buyers.
(B)	When domestic currency appreciates, domestic goods become more expensive to foreign buyers.
(C)	When domestic currency depreciates, foreign goods become less expensive to domestic buyers.
(D)	When domestic currency depreciates, domestic goods become more expensive to foreign buyers.
Q.35	In the context of Keynesian money demand, <i>ceteris paribus</i> , the real demand for money increases when
(A)	interest rate decreases
(B)	income increases
(C)	price level decreases
(D)	interest rate increases

Q.36	Which of the following statement(s) is/are CORRECT regarding Skill Development in India as highlighted in the Economic Survey 2024-25?
(A)	Between 2018-19 and 2023-24, there is a significant improvement in the proportion of skilled people across all socio-economic classifications.
(B)	The Union Budget of 2024-25 announced the PM Internship Scheme.
(C)	Out of the total beneficiaries in the Jan Shikshan Sansthan Scheme, majority are male.
(D)	Out of the total beneficiaries in the Jan Shikshan Sansthan Scheme, majority are female.
	

Q.37	<p>Consider the following Cobb-Douglas production function:</p> $Q(K, L) = AK^{0.5}L^{0.5}; \quad A > 0$ <p>where, <math>Q</math> is the quantity produced using two inputs, capital (<math>K</math>) and labour (<math>L</math>). Assuming that <math>K</math> is a positive constant, identify the CORRECT statement(s).</p>
(A)	$\frac{\partial Q}{\partial L}$ increases as $L$ increases.
(B)	$\frac{\partial Q}{\partial L}$ decreases as $L$ increases.
(C)	As $L$ increases, $Q$ increases but at a slower rate.
(D)	As $L$ increases, $Q$ decreases but at a slower rate.
Q.38	Identify the CORRECT feature(s) of the Indian labour market since the year 2000.
(A)	A shift in employment from low-productive agriculture sector to relatively high-productive non-agriculture sector.
(B)	The construction sector has high employment elasticity.
(C)	The production process has become more labour-intensive.
(D)	The service sector has been the primary driver of India's growth.

Q.39	Which of the following indicator(s) is/are used by the NITI Aayog's Sustainable Development Goal (SDG) India Index 2023-24 report to measure India's performance towards SDG 10 ( <i>Reduced Inequalities</i> )?
(A)	Percentage of seats held by women in Panchayati Raj Institutions (PRIs)
(B)	Income inequality using Gini coefficient
(C)	Unemployment rate in the age group of 15-59 years
(D)	Annual growth rate of GDP per-capita at constant prices
Q.40	Identify the regulatory institution(s) in India.
(A)	Securities and Exchange Board of India (SEBI)
(B)	Insurance Regulatory and Development Authority of India (IRDAI)
(C)	Small Industries Development Bank of India (SIDBI)
(D)	Central Electricity Regulatory Commission (CERC)

Section C: Q.41 – Q.50 Carry ONE mark each.	
Q.41	Harmonic mean of the following twelve observations: 15, 20, 20, 5, 20, 20, 15, 20, 15, 20, 20, and 20 is _____ ( <i>rounded off to one decimal place</i> ).
Q.42	It is given that the $\text{Prob}(-1 \leq z \leq 1) = 0.683$ , $\text{Prob}(-2 \leq z \leq 2) = 0.954$ , and $\text{Prob}(-3 \leq z \leq 3) = 0.997$ , when $z$ follows a standard normal distribution. If $X$ follows a normal distribution with mean and variance as 5 and 4, respectively, then $\text{Prob}(1 \leq X \leq 7) = \underline{\hspace{2cm}}$ ( <i>rounded off to three decimal places</i> ).
Q.43	The arithmetic mean of consumption expenditures for 5 members is Rupees 40, with standard deviation of Rupees 7. Three new members are added in the group, and their consumption expenditures (in Rupees) are 30, 35, and 40. Then, the standard deviation of consumption expenditures of these 8 members is _____ ( <i>rounded off to two decimal places</i> ).

Q.44

Consider a game of coexistence where everyone exhibits two kinds of behaviour: 'Hawk' and 'Dove'. The possible set of payoffs is given as follows:

	Hawk	Dove
Hawk	(-2, -2)	(4, 0)
Dove	(0, 4)	(2, 2)

Suppose that the population fraction exhibiting 'Hawkish' behaviour is  $p$ , then the value of  $p$  at the Nash equilibrium is \_\_\_\_\_ (rounded off to one decimal place).

Q.45

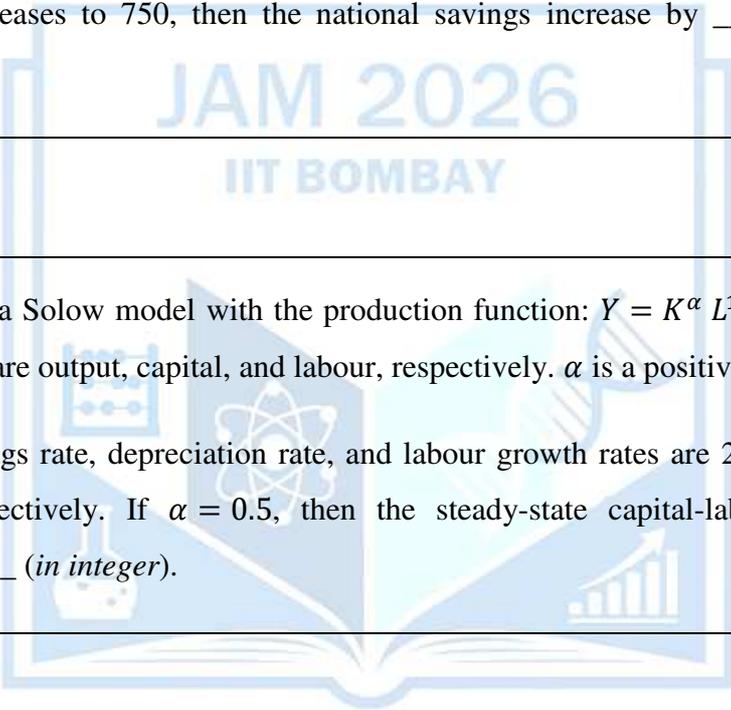
The utility function of a consumer in a two-good world is given by  $u(x_1, x_2) = \text{minimum}\{x_1, x_2\}$ , where  $x_1$  and  $x_2$  are the quantities consumed of the two goods  $X_1$  and  $X_2$ , respectively. The market prices of  $X_1$  and  $X_2$  are Rupee 1 and Rupees 2 per unit, respectively. Assuming income is measured on the vertical axis, the slope of the Engel curve for  $X_2$  is \_\_\_\_\_ (in integer).

Q.46	<p>Consider the following information for a country:</p> <table border="1" data-bbox="387 324 1254 607"> <thead> <tr> <th>Category</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>Gross Domestic Product (GDP)</td> <td>7500</td> </tr> <tr> <td>Receipts of factor income from the rest of the world</td> <td>200</td> </tr> <tr> <td>Payments of factor income to the rest of the world</td> <td>220</td> </tr> <tr> <td>Depreciation</td> <td>800</td> </tr> </tbody> </table> <p>The Net National Product (NNP) of the country is _____ (<i>in integer</i>).</p>	Category	Amount	Gross Domestic Product (GDP)	7500	Receipts of factor income from the rest of the world	200	Payments of factor income to the rest of the world	220	Depreciation	800
Category	Amount										
Gross Domestic Product (GDP)	7500										
Receipts of factor income from the rest of the world	200										
Payments of factor income to the rest of the world	220										
Depreciation	800										
Q.47	<p>Let us consider an AK growth model where the growth rate of per-capita output, population growth rate, and depreciation rate are 4%, 2%, and 4%, respectively. If productivity parameter (A) is 0.5, then savings rate (in %) is _____ (<i>in integer</i>).</p>										
Q.48	<p>In an expectations-augmented Phillips curve equation, expected inflation rate and natural rate of unemployment are 5% and 4%, respectively. The responsiveness of inflation to unemployment gap is 0.5. If actual unemployment rate is 5%, then the actual inflation rate (in %) is _____ (<i>rounded off to one decimal place</i>).</p>										
Q.49	<p>The maximum value of the objective function <math>(x + y)</math> subject to the constraint <math>(x^2 + y^2) = 2</math> is _____ (<i>in integer</i>).</p>										

Q.50	The value of the first derivative of $f(x) = (3x^3 + 2x^2 + x + 1)^2$ evaluated at $x = 2$ is _____ (in integer).
<b>Section C: Q.51 – Q.60 Carry TWO marks each.</b>	
Q.51	<p>It is given that the variance of a population is 4, but its mean (<math>\mu</math>) is unknown. A sample of size 25 is drawn randomly from this population to test the null hypothesis <math>H_0: \mu = 4.8</math>. The sample elements are <math>x_1, x_2, \dots, x_{25}</math> such that <math>\sum_{i=1}^{25} x_i = 150</math> and <math>\sum_{i=1}^{25} x_i^2 = 1116</math>.</p> <p>Based on the above information, the calculated value of <math>t</math>-statistic is _____ (in integer).</p>
Q.52	<p>Consider a firm is having monopoly in production of two goods <math>X</math> and <math>Y</math>. The markets for the two goods do not interact. The profit function is given by</p> $\pi(x, y) = 25x + 13y - 2.5x^2 - y^2 + xy - 10$ <p>where, <math>x</math> and <math>y</math> are quantities of goods <math>X</math> and <math>Y</math>, respectively.</p> <p>The maximum profit is _____ (rounded off to one decimal place).</p>

Q.53	<p>The chance of rain on a day when an outdoor picnic is arranged is 40%. If it rains, the chance that the picnic will be ‘good and enjoyable’ is 30%. However, if it does not rain, the chance that the picnic will be ‘good and enjoyable’ is 80%. The chance (in %) that it was raining on the day of picnic, given that the picnic was indeed ‘good and enjoyable’ is _____ (in integer).</p>
Q.54	<p>Consider the following information in the context of negative production externality:</p> <p style="text-align: center;">Supply curve: <math>P = 15 + 0.08Q</math></p> <p style="text-align: center;">Demand curve: <math>P = 40 - 0.15Q</math></p> <p>where, <math>P</math> is price per unit and <math>Q</math> is quantity.</p> <p>If marginal external cost is <math>0.06Q</math>, then the socially efficient equilibrium price is _____ (rounded off to two decimal places).</p>
Q.55	<p>In a two-good world, the utility function of a consumer is given by <math>u(x_1, x_2) = x_1x_2</math>, where <math>x_1</math> and <math>x_2</math> are the quantities consumed of the two goods <math>X_1</math> and <math>X_2</math>, respectively. The market price of each of the goods is Rupee 1 and consumer’s disposable income is Rupees 100. If the price of <math>X_2</math> is doubled keeping the price of <math>X_1</math> unchanged, then the associated Compensating Variation is Rupees _____ (rounded off to one decimal place).</p>

Q.56	<p>Let us consider a duopoly market with the following market demand and firm-specific cost functions:</p> $P = 120 - 0.6Q, \text{ where } Q = Q_1 + Q_2$ $C_1 = 6Q_1 \text{ and } C_2 = 0.5Q_2^2$ <p>where, <math>P</math> is unit price of the product. <math>C_i</math> is the cost function and <math>Q_i</math> is the output of firm <math>i</math> (<math>i = 1, 2</math>).</p> <p>The total output (<math>Q</math>) produced by the duopolists ignoring their interdependence is _____ (rounded off to two decimal places).</p>
	<p style="text-align: center;">JAM 2026 IIT BOMBAY</p>
Q.57	<p>Consider the following equations for a closed economy:</p> $S_t = aY_t$ $I_t = g(Y_t - Y_{t-1})$ <p>where <math>S_t</math>, <math>Y_t</math>, and <math>I_t</math> represent savings, income, and investment, respectively in period <math>t</math>; and <math>a</math> and <math>g</math> are two positive constants.</p> <p>For <math>Y_0 = 100</math>, <math>a = 0.5</math> and <math>g = 0.6</math>, the value of <math>Y_2</math> is _____ (in integer).</p>

Q.58	<p>Consider the following equation:</p> $Y = C(Y_d) + I(r) + G + NX(\epsilon); Y_d = Y - T$ <p>where <math>Y</math> is income, <math>C</math> is consumption expenditure, <math>Y_d</math> is disposable income, <math>T</math> is tax amount, <math>I</math> is investment expenditure, <math>r</math> is real interest rate, <math>G</math> is government expenditure, <math>NX</math> is net export, and <math>\epsilon</math> is real exchange rate.</p> <p>It is given that <math>Y = 5000</math>, <math>G = 1000</math>, <math>T = 1000</math>, <math>C = 250 + 0.75Y_d</math>, <math>I = 1000 - 50r</math>, <math>NX = 500 - 500\epsilon</math>, and <math>r = 5</math>.</p> <p>If <math>G</math> decreases to 750, then the national savings increase by _____ (in integer).</p>
	<p style="text-align: center;">JAM 2026 IIT BOMBAY</p>
Q.59	<p>Consider a Solow model with the production function: <math>Y = K^\alpha L^{1-\alpha}</math>, where <math>Y</math>, <math>K</math>, and <math>L</math> are output, capital, and labour, respectively. <math>\alpha</math> is a positive constant.</p> <p>The savings rate, depreciation rate, and labour growth rates are 20%, 7%, and 3%, respectively. If <math>\alpha = 0.5</math>, then the steady-state capital-labour ratio is _____ (in integer).</p>
	

Q.60

Consider the following population regression equation:

$$Y_i = \alpha + \beta X_i + u_i$$

where,  $Y$  and  $X$  are dependent and independent variables, respectively; and  $u$  is the error term. The parameters  $\alpha$  and  $\beta$  are estimated using the ordinary least squares method.

It is given that, the sample size is 100,  $\sum_{i=1}^{100} X_i^2 = 4,60,000$ ,  $\sum_{i=1}^{100} Y_i^2 = 3,20,000$ ,  $\sum_{i=1}^{100} X_i = 6,000$ ,  $\sum_{i=1}^{100} Y_i = 500$ , and  $\sum_{i=1}^{100} X_i Y_i = 40,000$ .

Then the estimated value of  $\alpha$  is \_\_\_\_\_ (*in integer*).

**END OF THE QUESTION PAPER**

