Q1 The Engel curve described the relation between -

(A) Demand and income of a good.
(B) Price and demand of a buyer.
(C) Demand for a good and the income of its buyers.
(D) Demand for a good and the income of its seller.

Q2 Which of the following is correct about collusive market structure?

(A) The rival firms collude to maximize joint profit by reducing the uncertainty arising from rivalry.
(B) The rival firms collude to minimize joint profit by reducing the uncertainty arising from rivalry.
(C) The rival firms enter into collusion to maximize joint profit by reducing the uncertainty due to collusion.
(D) There exists rivalry among the firms as they are interdependent upon each other.

Q3 A batch contains 10 articles, of which 3 are defective. If 2 articles are chosen at random, what is the probability that none of them is defective?

(A) 0.47 (B) 0.55
(C) 1 (D) 0

Q4 Which of the following is correct about non-rivalrous goods?

(A) Non-rivalrous means that one person's consumption of the good does reduce the amount available for others.
(B) Non-rivalrous means that it is difficult or impossible to prevent someone from enjoying the benefits of the good, even if they do not contribute to its production.
(C) Non-rivalrous means that one person's consumption of the good does not reduce the amount available for others.
(D) None of the above.

Q5 The Arithmetic Mean is 25.5, Median is 27.2. What is the value of Mode?

(A) 30 (B) 22.67
(C) 33.9 (D) 30.6

Q6 The demand function for good A is given by $Q_A = 100 - 4P_A + 0.2Y + 0.6P_B$. Find the income elasticities of demand $P_A = 4,\ Y = 500,\ P_B = 20.$

(A) 0.44 (B) 0.67
(C) 0.51 (D) 0.33

Q7 Consider the following equation of demand and supply. Find the equilibrium price.

$D_t = 85 - 0.5P_t$
$S_t = -10 + 0.3P_{t-1}$

(A) 119 (B) 118.75
(C) 122.95 (D) 213.56

Q8 Consider a Cobb-Douglas production function: $q = AK^{\alpha}L^{\beta}$, which is a homogeneous function of degree 7. Of what degree of homogeneity of its marginal products of labour?

(A) 6 (B) 5
(C) 4 (D) 3

Q9 If in a function, if different inputs always give different outputs, the function is called

(A) Onto Function
(B) One-One Function
(C) Bijective Function

(D) Constant Function

Q10 What is the IPR resolution of 1948?

(A) It classified industries into three sectors (public, mixed, and private), emphasising the development of heavy industries and the expansion of the public sector.

(B) Prioritised small-scale industries, aimed at wealth distribution and job creation, introduced a "core sector" for strategic industries such as defence, atomic energy, and rail transport, and promoted decentralisation.

(C) It established India as a mixed economy where both the public and private sectors could coexist, with industries classified into four categories.

(D) All of the above.

Q11 Let $C(Q_1) = RS122,\ C(Q_2) = RS112,,$ $C(Q_{1,}Q_2) = RS\ 123$ calculate economies of scale.

Where

$C(Q_1) = Cost\ of\ production\ of\ good\ 1\ alone$

$C(Q_2) = Cost\ of\ production\ of\ good\ 2\ alone$

$C(Q_{1,}Q_2) = C\,\mathrm{os}\,t\ of\ jointly\ producing\ goods\ 1\ and\ 2.$

(A) 0.44 (B) 0.47

(C) 0.43 (D) 0.49

Q12 Which of the following is/are correct about the identity function?

(A) The identity function is idepotent.

(B) In a topological space, the identity function is always continuous.

(C) The identity function is a linear operator when applied to vector spaces.

(D) All of the above.

Q13 The total revenue and total cost functions of a firm are given by $R = 50Q - Q^2$, C=30+4Q. Where Q is output, find the equilibrium output of the firm.

(A) 21 (B) 22

(C) 23 (D) 24

Q14 Cov (x,y)=2.7, and the variance of x is 16, and the variance of y is 25. Find the correlation coefficient.

(A) 0.4 (B) 0.135

(C) 0.675 (D) 1.35

Q15 Solve the first-order difference equation. $Y_{t+1} - 6Y_t = 0,\ Y_0 = \frac{5}{3}$

(A) $Y_t = \frac{5}{3}(6)^0$ (B) $Y_t = \frac{5}{3}(5)^t$

(C) $Y_t = \frac{5}{3}(6)^t$ (D) $Y_t = \frac{5}{3}(6)^t - \frac{5}{3}$

Q16 Chi-square test used for

(A) Goodness of fit

(B) Test of homogeneity

(C) Test for population variance

(D) All of the above.

Q17 Find the value of the following game

$$\begin{bmatrix} & B_1 & B_2 & B_3 \\ A_1 & 3 & 4 & 3 \\ A_2 & 1 & -5 & -4 \\ A_3 & 3 & 7 & 3 \end{bmatrix}.$$

(A) 3 (B) 4

(C) 5 (D) 6

Q18 According to Bent Hansen's Dynamic Model of Demand Inflation, how inflationary conditions prevalent?

(A) Either due to excess supply for goods, i.e., good gap, or due to excess demand for

factors.

(B) Either due to excess demand for goods, i.e., goods gap, or due to less demand for factors.

(C) Either due to excess demand for goods, i.e., good gap, or due to excess demand for factors.

(D) None of the above.

Q19 Find the composite mean of the following observation.

Characteristics	Group I	Group II	Composite Group
No. of observation	n1=100	n2=60	N=150
Mean salary (Rs)	$\overline{X_1} = 275$	$\overline{X_2} = 225$	$\overline{X}$?

(A) Rs 167.99 (B) Rs 180.76

(C) Rs 273.33 (D) Rs 274.45

Q20 How many items are covered under WPI?

(A) 697 (B) 979

(C) 644 (D) 548

Q21 Let a machine cost Rs 100 crores, and its expected yield is Rs 130 crores after one year. Calculate MEC.

(A) 0.24 (B) 0.30

(C) 0.34 (D) 1.3

Q22 A motor car covered a distance of 60 miles four times. The first time at 25 m.p.h, the second at 20 m.p.h, the third at 15 m.p.h, and the fourth at 50 m.p.h. Calculate the average speed.

(A) 23 m.p.h

(B) 22.64 m.p.h

(C) 24 m.p.h

(D) 14.93 m.p.h

Q23 Who formed the Congress plan?

(A) Jawaharlal Nehru.

(B) Subhash Chandra Bose

(C) Mahatma Gandhi

(D) All of the above.

Q24 A country's potential GDP is Rs 14 trillion. Its actual GDP is Rs 12.40 trillion. Calculate the output gap (in %).

(A) 11.42% (B) -11.42%

(C) 12% (D) 13%

Q25 What were the primary objectives of liberization?

(A) To create a favourable business environment

(B) Privatise public sector enterprises, deregulate interest rates, reduce tariff and non-tariff barriers on imports, and devalue the Indian rupee.

(C) Empower market forces and enhance overall efficiency, marking a significant departure from the earlier License Raj system.

(D) All of the above.

Q26 When was the IDBI bank established?

(A) 1974 (B) 1964

(C) 1954 (D) 1966

Q27 Find the value of

$$\left\{(16)^{-\frac{3}{4}} \times \frac{32^{\frac{1}{5}}}{6^{-2}} \times \left(\frac{1}{27}\right)^{-\frac{4}{3}}\right\}.$$

(A) 8 (B) 7

(C) 3 (D) 9

Q28 Find the value of the following game

$$\begin{bmatrix} & B_1 & B_2 & B_3 \\ A_1 & 5 & 7 & 5 \\ A_2 & 1 & -5 & -2 \\ A_3 & 5 & 6 & -5 \end{bmatrix}.$$

(A) 7 (B) 3

(C) 4 (D) 5

Q29

Which of the following is/are correct for the Y. K. Alag committee?

(A) Poverty lines based on average calorie requirements.

(B) 2400 kcal per capita per day in rural and urban , 2100 kcal per capita per day.

(C) Poverty lines for rural and urban areas were Rs. 49.1 and Rs. 56.7 per capita per month (1973-74 prices) respectively.

(D) All of the above.

Q30 When the maternity benefit act come?

(A) 1965 (B) 1971

(C) 1991 (D) 1961

Q31 Consider a consumer with the utility function $u(x,y) = x^{0.5}y^{0.5}$ .The price of good x is p_x=10, the price of good y is p_y=20, and the consumer's income is M=400. If the price of good x increases to p'_x=20, which of the following statements regarding the decomposition of the price effect are correct?

(A) The total change in the consumption of x is a decrease of 10 units.

(B) The substitution effect accounts for a decrease of 5 units of x.

(C) The income effect accounts for a decrease of 5 units of x.

(D) The compensated budget line for the substitution effect would require an income of approximately M'=565.69.

Q32 Consider the Bertrand duopoly model with homogeneous products and identical constant marginal costs. Which of the following statements are **TRUE**?

(A) The Nash equilibrium price is equal to the marginal cost.

(B) If one firm has a lower marginal cost than the other, it will capture the entire market by pricing just below the rival's cost (assuming limit pricing).

(C) The equilibrium outcome is identical to the Cournot equilibrium.

(D) With capacity constraints (Edgeworth model), a stable pure-strategy Nash equilibrium may not exist.

Q33 In a simple linear regression model $Y_i = \beta_0 + \beta_1 X_i + u_i$, estimated using Ordinary Least Squares (OLS) on 20 observations, the following results were obtained:

$\sum x_i^2 = 100$ (where small letters denote deviation from mean)

$\sum x_i y_i = 80$

$\sum y_i^2 = 100$

$\overline{X} = 10, \overline{Y} = 20$

Which of the following are **CORRECT**?

(A) The estimated slope coefficient β^1 is 0.8.

(B) The estimated intercept β^0 is 12.

(C) The Coefficient of Determination (R2) is 0.64.

(D) The explained sum of squares (ESS) is 64.

(A) The estimated slope coefficient $\widehat{\beta}_1$ is 0.8.

(B) The estimated intercept $\widehat{\beta}_0$ is 12.

(C) The Coefficient of Determination (R^2) is 0.64

(D) The explained sum of squares (ESS) is 64

Q34 In an economy, the IS curve is given by Y=2000–100r and the LM curve is given by Y=500+100r, where r is the interest rate in percent. Which of the following are **CORRECT**?

(A) The equilibrium interest rate is 7.5%.

(B) The equilibrium output is 1250.

(C) If money supply increases such that the LM curve becomes Y=700+100r, the new

equilibrium interest rate is 6.5%.
(D) The increase in equilibrium output due to the shift in (C) is 100 units.

Q35 Regarding the High-Powered Money (Base Money) and Money Multiplier, which of the following are **TRUE**?

(A) High-Powered Money includes currency held by the public and reserves held by banks.
(B) If the Currency-Deposit ratio increases, the Money Multiplier increases.
(C) If the Reserve-Deposit ratio decreases, the Money Multiplier increases.
(D) Broad Money (M3) in India includes Time Deposits with banks.

Q36 In the context of the Mundell-Fleming model for a small open economy with perfect capital mobility, which of the following statements are **CORRECT**?

(A) Under a flexible exchange rate regime, fiscal policy is completely ineffective in changing output.
(B) Under a fixed exchange rate regime, monetary policy is completely ineffective in changing output.
(C) Under a flexible exchange rate regime, an expansionary monetary policy leads to currency depreciation and increased net exports.
(D) Under a fixed exchange rate regime, an expansionary fiscal policy leads to a loss of foreign exchange reserves.

Q37 Let X be a random variable with probability density function $f(x)=3x^2$ for $0<x<1$ and 0 otherwise. Which of the following values are **CORRECT**?

(A) E(X)=0.75
(B) Var(X)=0.0375
(C) P(0.5<X<1)=0.875
(D) The median of X is $(0.5)^{1/3}$

Q38 Let $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$. Which of the following statements about matrix A are CORRECT?

(A) The eigenvalues are $\lambda_1 = 3$ and $\lambda_2 = -1$
(B) The determinant of A is -3
(C) The matrix is positive definite.
(D) The eigenvectors are orthogonal.

Q39 Which of the following committees were constituted by the Government of India for the estimation of poverty?

(A) Lakdawala Committee
(B) Tendulkar Committee
(C) Rangarajan Committee
(D) N.K. Singh Committee

Q40 Let $f(x) = x^3 - 3x + 2$. Which of the following statements are CORRECT?

(A) The function has a local maximum at x = -1.
(B) The function has a local minimum at x = 1 .
(C) The value of the function at the local maximum is 4.
(D) The function is strictly increasing for $x \in (-1, 1)$

Q41 A consumer has utility $u(x_1, x_2) = x_1^{0.5} x_2^{0.5}$. Prices are $p_1 = 4,$ and income $m = 100$. Find the optimal demand for good 1.

Q42 A consumer's utility is $u(x_1, x_2) = x_1 + 2x_2$. Prices are $p_1 = 1, p_2 = 3$ and income $m = 60$. Find the Marshallian demand for good 2.

Q43 If saving rate s=0.2 and capital–output ratio v=4, compute warranted growth rate g.

Q44 A consumer's utility is $u(x_1, x_2) = \min\{2x_1, x_2\}$ (perfect complements). Prices are $p_1 = 2, p_2 = 4$, income $m = 120$. Find the optimal quantity of good 2.

Q45 In Solow model with production $Y = K^{1/3}(AL)^{2/3}$, tech growth $g_A = 2\%$, population growth $n = 1\%$. At steady state, what is growth rate of output per worker Y/L?

Q46 For utility $u(x_1, x_2) = x_1 x_2$, at bundle $(x_1, x_2) = (10, 5)$, find the marginal rate of substitution MRS_{12}.

Q47 A fair die is rolled twice. Let X be the sum. Find $P(5 \le X \le 8)$.

Q48 Suppose Engel curve for good 1 is $x_1(m) = 0.2m$. At income $m = 250$, find the income elasticity of demand for good 1.

Q49 Find the eigenvalues of the matrix:

$$B = \begin{pmatrix} 3 & 1 \\ 1 & 3 \end{pmatrix}$$

(Answer with the larger eigenvalue)

Q50 Short-run production: $q(L) = 10L - 0.5L^2$ with wage $w = 20$. Find the profit-maximizing labour when output price $p = 40$.

Q51 A monopolist faces demand $P = 100 - 2Q$ and has cost $C(Q) = 10Q$. Find profit-maximizing price.

Q52 A sample of size $n = 4$ from a population has observations: 2, 4, 6, 8. Compute the unbiased sample variance.

Q53 In Bertrand duopoly with homogeneous product and identical constant MC = 30, what is the Nash equilibrium price?

Q54 Consumption function $C = 50 + 0.7Y$. At income $Y = 400$, find average propensity to consume (APC).

Q55 The Reserve Bank of India reduces the Cash Reserve Ratio (CRR) from 6% to 5%. A commercial bank holds deposits of Rs. 10,000 crores. How much additional money (In crores) can the bank lend out due to this 1% reduction in CRR?

Q56 Labour force participation rate (LFPR) for a country is 55%. Working-age population is 300 million. Find the size of the labour force (in millions).

Q57 Small open economy, perfect capital mobility, world interest $r^* = 4\%$. Domestic IS implies equilibrium at $r = 6\%$ in autarky. Under perfect capital mobility and fixed exchange rate, what is the domestic interest rate in the long run?

Q58 A researcher tests $H_0 : \mu = 50$ vs. $H_1 : \mu \neq 50$ using a two-tailed test. A sample of size $n = 25$ from a normal population yields $\bar{x} = 52$ and sample standard deviation $s = 10$. Compute the test statistic (t-statistic).

Q59 In IS–LM closed economy, goods market: $Y = 100 + 0.75(Y - T) + I_0 - 50r + G$ with T=50, $I_0 = 200$, G=150. Money market: $(M/P)^d = 0.5Y - 20r$, $M/P = 400$. Find equilibrium interest rate r.

Q60

Find the limit:

$$\lim_{x \to 2} \left(3x^2 - 4x + 5\right)$$

Answer Key

Q1	(C)
Q2	(A)
Q3	(A)
Q4	(C)
Q5	(D)
Q6	(C)
Q7	(B)
Q8	(A)
Q9	(B)
Q10	(C)
Q11	(B)
Q12	(D)
Q13	(C)
Q14	(B)
Q15	(C)
Q16	(D)
Q17	(A)
Q18	(C)
Q19	(C)
Q20	(A)
Q21	(B)
Q22	(B)
Q23	(B)
Q24	(B)
Q25	(D)
Q26	(B)
Q27	(D)
Q28	(D)
Q29	(D)
Q30	(D)
Q31	(A, D)
Q32	(A, B, D)
Q33	(A, B, C, D)
Q34	(A, B, C, D)
Q35	(A, C, D)
Q36	(A, B, C)
Q37	(A, B, C, D)
Q38	(A, B, D)
Q39	(A, B, C)
Q40	(A, B, C)
Q41	12.5~12.5
Q42	0~0
Q43	5~5
Q44	24~24
Q45	2~2
Q46	0.5~0.5
Q47	0.55~0.56
Q48	1~1
Q49	4~4
Q50	9~10
Q51	55~55
Q52	6.55~6.67

Q53	30~30
Q54	0.8~0.9
Q55	100~100
Q56	165~165
Q57	4~4
Q58	1~1
Q59	3~3.6
Q60	9~9

Hints & Solutions

Q1 Text Solution:
The correct option is C.
Explanation,

- The Engel curve, named after the German statistician Ernst Engel (1821-96), is a relation between the demand for a good and the income of its buyer, as D = f(M).
- The Engel curve of an individual consumer can be obtained from his ICC. As every point on the ICC for an individual consumer is a combination of three items- his money income (M), his demand for good X , and that for good Y.

Q2 Text Solution:
The correct option is A.
Explanation,

- The rival firms collude to maximize joint profit by reducing the uncertainty arising from rivalry.
- Cartels, Mergers, Price Leadership, Basin Point Price System are collusive market .

Q3 Text Solution:
The correct option is A.
Explanation,
The total number of ways of selecting 2 articles out of 10 is ${}^{10}C_2 = 45$
If none of the selected articles are defective, they must form a group out of the 7 non-defective articles.
Thus, the number of favorable cases is ${}^{7}C_2 = 21$
$P = \frac{21}{45} = 0.47$

Q4 Text Solution:
The correct option is C.
Explanation,

- Pure public goods are goods that are non-rivalrous and non-excludable.
- Non-rivalrous means that one person's consumption of the good does not reduce the amount available for others, while non-excludable means that it is difficult or impossible to prevent someone from enjoying the benefits of the good, even if they do not contribute to its production.
- The existence of pure public goods can cause market failure because they are not efficiently allocated through the market mechanism of supply and demand.
- Because public goods are non-excludable, there is no way for private firms to charge consumers for their use. As a result, private firms may be unwilling to invest in the production of public goods because they cannot capture the full value of their investment.

Q5 Text Solution:
The correct option is D.
Explanation,
The empirical relation between Mean, Median, and Mode is
Mean - Mode = 3(Mean - Median)
$\Rightarrow 25.5 - Mode = 3\,(25.5 - 27.2)$
$\Rightarrow 25.5 - Mode = -5.1$
$Mode = 25.5 + 5.1 = 30.6$

Q6 Text Solution:
The correct option is C.
Explanation,

$Q_A = 100 - 4P_A + 0.2Y + 0.6P_B$

$\eta_Y = \frac{\%\ change\ in\ demand}{\%\ change\ in\ income}$

$= \frac{\Delta Q_A}{\Delta Y} \times \frac{Y}{Q_A} = 0.2 \times \frac{500}{196} = 0.51$

$Q_A = 100 - 4 \times 4 + 0.2 \times 500 + 0.6 \times 20$

$= 196$

$\frac{\Delta Q_A}{\Delta Y} = 0.2$

$P_A = 4,\ Y = 500,\ P_B = 20$

Q7 **Text Solution:**

The correct option is B.

Explanation,

$D_t = 85 - 0.5P_t$

$S_t = -10 + 0.3P_{t-1}$

At equilibrium $P_t = P_{t-1} = P$

$D_t = S_t$

$85 - 0.5P = -10 + 0.3P$

$95 = 0.8P$

$P = 118.75$

Q8 **Text Solution:**

The correct option is A.

Explanation,

$q = AK^\alpha L^\beta$

$MP_L = \frac{\partial q}{\partial L} = A\beta K^\alpha L^{\beta-1}$

$= A\beta(\lambda K)^\alpha (\lambda L)^{\beta-1}$

$= \lambda^{\alpha+\beta-1} A\beta K^\alpha L^{\beta-1}$

$\alpha + \beta = 7$

$\alpha + \beta - 1 = 7 - 1 = 6$

Q9 **Text Solution:**

The correct option is B.

Explanation,

One to one function basically denotes the mapping of two sets. A function g is one-to-one if every element of the range of g corresponds to exactly one element of the domain of g. One-to-one is also written as 1-1. A function f() is a method that relates elements/values of one variable to the elements/values of another variable, in such a way that the elements of the first variable identically determine the elements of the second variable. Also, learn about the onto here.

Q10 **Text Solution:**

The correct option is C.

Explanation,

Industrial Policy Resolution (IPR) 1948: It established India as a mixed economy where both the public and private sectors could coexist, with industries classified into four categories.

Q11 **Text Solution:**

The correct option is B.

Explanation,

$ES = \frac{C(Q_1)+C(Q_2)-C(Q_1,Q_2)}{C(Q_1)+C(Q_2)}$

$= \frac{122+112-123}{122+112} = \frac{111}{234} = 0.47$

Q12 **Text Solution:**

The correct option is D.

Explanation,

- The identity function is a linear operator when applied to vector spaces.
- In an n-dimensional vector space, the identity function is represented by the identity matrix regardless of the basis chosen for the space.
- The identity function on the positive integers is completely multiplicative (essentially multiplication by 1), considered in number theory.,
- In a metric space, the identity function is trivially an isometry. An object without any symmetry has as its symmetry group the trivial group, which contains only this isometry.

- In a topological space, the identity function is always continuous.
- The identity function is idepotent.

Q13 **Text Solution:**

The correct option is C.

Explanation,

$R = 50Q - Q^2$

$C = 30 + 4Q$

$\pi = \mathrm{R} - \mathrm{C}$

$= 50\mathrm{Q} - \mathrm{Q}^2 - 30 - 4\mathrm{Q}$

$\frac{\partial \pi}{\partial \mathrm{Q}} = 0 \Rightarrow 50 - 2\mathrm{Q} - 4 = 0$

$2\mathrm{Q} = 46$

$\mathrm{Q} = 23$

Q14 **Text Solution:**

The correct option is B.

Explanation,

$r = \frac{cov(x,y)}{\delta_x \delta_y}$

$= \frac{2.7}{\sqrt{16}\sqrt{25}}$

$= \frac{2.7}{4 \times 5}$

$= \frac{2.7}{20}$

$= 0.135$

Q15 **Text Solution:**

The correct option is C.

Explanation,

$Y_{t+1} - 6Y_t = 0,\ Y_0 = \frac{5}{3}$

$Y_t = Ab^t$

$Y_{t+1} = Ab^{t+1}$

$Ab^{t+1} - 6Ab^t = 0$

$Ab^t\ (b - 6) = 0$

$Ab^t \neq 0,\ b - 6 = 0$

$b = 6$

$Y_t = A6^t$

$At\ t = 0,\ Y_0 = A$

$\frac{5}{3} = A$

$Y_t = \frac{5}{3}(6)^t$

Q16 **Text Solution:**

The correct option is D.

Explanation,

Chi-square test used for

- Goodness of fit
- Test of homogeneity
- Test for population variance
- Test of Independence

Q17 **Text Solution:**

The correct option is A.

Explanation,

$$\begin{bmatrix} & B_1 & B_2 & B_3 \\ A_1 & 3 & 4 & 3 \\ A_2 & 1 & -5 & -4 \\ A_3 & 3 & 7 & 3 \end{bmatrix}$$

To minimize row, we get 3

To maximize the column we get 5.

The value of the game 3.

Q18 **Text Solution:**

The correct option is C.

Explanation,

- Bent Hansen's Dynamic Model of Demand Inflation- 1951.
- He has criticized the Keynesian Analysis of inflation, since Keynesian analysis assumed the wage rate to be fixed to prices.
- Hansen argued that inflation can also be due to cost-push inflation, which is due to cost push inflation, which is due to the increase in the cost of factor inputs.
- According to Bent Hansen's Dynamic Model of Demand Inflation inflationary conditions are prevalent either due to excess demand for goods, i.e., goods gap, or due to excess demand for factors.

Q19 **Text Solution:**
The correct option is C.
Explanation,

$N\overline{x} = n_1\overline{x_1} + n_2\overline{x_2}$

$150 \times \overline{x} = 100 \times 275 + 60 \times 225$

$= 41000$

$\overline{x} = \frac{41000}{150}$

$= 273.33\ Rs$

Q20 **Text Solution:**
The correct option is A.
Explanation,

- WPI measures goods only.
- 697 items are covered under this.
- WPI base year is 2011-12.
- WPI released by the Office of the Economic Advisor (Ministry of Commerce and Industry)

Q21 **Text Solution:**
The correct option is B.
Explanation,

$MEC = r = \frac{130}{100} - 1 = 0.30$

Q22 **Text Solution:**
The correct option is B.
Explanation,

Average speed = $\frac{4}{\frac{1}{25}+\frac{1}{20}+\frac{1}{15}+\frac{1}{50}}$

$= \frac{4}{\frac{12+15+20+6}{300}}$

$= \frac{4}{\frac{53}{300}}$

$= \frac{4\times300}{53} = 22.64$ m.p.h

Q23 **Text Solution:**
The correct option is B.
Explanation,
Congress Plan(1938): The National Planning Committee was formed by Subhash Chandra Bose under the chairmanship of Jawaharlal Nehru.

- It aimed to establish an economic plan ensuring a decent standard of living for the public.
- At pre-war prices, the Committee estimated a minimum income of Rs. 15 to Rs. 25 per capita per month.

Q24 **Text Solution:**
The correct option is B.
Explanation,

Output Gap$= \frac{Actual\ GDP - Potential\ GDP}{Potential\ GDP} \times 100$

$= \frac{12.40-14}{14} \times 100$

$= -11.42\%$

Negative output Gap, Recession, Business cycle phase.

Q25 **Text Solution:**
The correct option is D.
Explanation,

- The primary objectives of liberalization were to create a favourable business environment, attract foreign investment, privatise public sector enterprises, deregulate interest rates, reduce tariff and non-tariff barriers on imports, and devalue the Indian rupee.
- These changes aimed to empower market forces and enhance overall efficiency, marking a significant departure from the earlier License Raj system.

Q26 **Text Solution:**

The correct option is B.

Explanation,

IDBI was established on July 1, 1964, specifically on July 1, 1964, under the Industrial Development Bank of India Act, 1964. It was initially created as a wholly owned subsidiary of the RBI before its ownership was transferred to the Government of India in 1976.

Q27 **Text Solution:**

The correct option is D.

Explanation,

$$\left\{(16)^{-\frac{3}{4}} \times \frac{32^{\frac{1}{5}}}{6^{-2}} \times \left(\frac{1}{27}\right)^{-\frac{4}{3}}\right\}^{\frac{1}{3}}$$

$$= \left\{2^{4\times\left(-\frac{3}{4}\right)} \times \frac{2^{5\times\frac{1}{5}}}{2^{-2}\times 3^{-2}} \times 3^{-3\times\left(-\frac{4}{3}\right)}\right\}^{\frac{1}{3}}$$

$$= \left\{2^{-3} \times \frac{2}{2^{-2}\times 3^{-2}} \times 3^{4}\right\}^{\frac{1}{3}}$$

$$= \left\{2^{-3+1+2} \times 3^{4+2}\right\}^{\frac{1}{3}}$$

$$= \left\{2^{0} \times 3^{6}\right\}^{\frac{1}{3}}$$

$$= \left\{1 \times 3^{6}\right\}^{\frac{1}{3}}$$

$$= 9$$

Q28 **Text Solution:**

The correct option is D.

Explanation,

$$\begin{bmatrix} & B_1 & B_2 & B_3 \\ A_1 & 5 & 7 & 5 \\ A_2 & 1 & -5 & -2 \\ A_3 & 5 & 6 & -5 \end{bmatrix}$$

To minimize rows, we get 5

To maximize column, we get 5.

The value of game 5.

Q29 **Text Solution:**

The correct option is D.

Explanation,

Task Force headed by Dr. Y. K. Alagh (1979):

• Poverty lines based on average calorie requirements.

• Rural: 2400 kcal per capita per day; Urban: 2100 kcal per capita per day.

• Poverty lines: Rs. 49.1 (rural) and Rs. 56.7 (urban) per capita per month (1973-74 prices).

Q30 **Text Solution:**

The correct option is D.

Explanation,

- The Maternity Benefit Act, 1961
- The Minimum Wages Act, 1948
- The Payment of Bonus Act, 1965
- The Payment of Gratuity Act, 1972
- The Payment of Wages Act, 1936

Q31 **Text Solution:**

The correct choices are Option (A) and Option (D).

Explanation:

1. Marshallian (uncompensated) demand: before and after

For Cobb–Douglas $u(x,y) = x^{0.5}y^{0.5}$ the consumer spends half income on each good:

$$x = \frac{0.5M}{p_x}, \qquad y = \frac{0.5M}{p_y}.$$

Initial: $p_x = 10,\ p_y = 20,\ M = 400$

$$x_0 = \frac{0.5 \cdot 400}{10} = \frac{200}{10} = 20,$$
$$y_0 = \frac{200}{20} = 10.$$

After price rise $p_x' = 20$:

$$x_1 = \frac{200}{20} = 10, \quad y_1 = \frac{200}{20} = 10.$$

Total change in x: $x_1 - x_0 = 10 - 20 = -10 \rightarrow$ **(A) correct.**

2. Substitution (Hicksian) effect: compensated demand

First find original utility:

$$u_0 = \sqrt{x_0 y_0} = \sqrt{20 \cdot 10} = \sqrt{200} = 14.142135\ldots$$

Expenditure function for this utility (for this Cobb–Douglas):

$e(p,u) = 2u\sqrt{p_x p_y}$

Compensated (Hicksian) demand at new prices $p_x' = 20, p_y = 20$:

Using formula $x_h = u\sqrt{\frac{p_y}{p_x}}$,

$$x_h = u_0\sqrt{\frac{20}{20}} = u_0 \cdot 1 = 14.142135\ldots$$

Substitution effect

$= x_h - x_0 = 14.1421 - 20 = -5.8579$ (≈ -5.86), **not** $-5. \rightarrow$ **(B) false.**

3. Income effect

Income effect

$= x_1 - x_h = 10 - 14.1421 = -4.1421$ (≈ -4.14), **not** $-5. \rightarrow$ **(C) false.**

4. Compensated income required

Minimum income to attain the original utility at new prices:

$$M' = e(p', u_0) = 2u_0\sqrt{20 \cdot 20} = 2u_0 \cdot 20 = 40u_0.$$

With $u_0 = \sqrt{200}$:

$$M' = 40\sqrt{200} = 40 \cdot 14.142135\cdots = 565.6854\cdots \approx 565.69.$$

So **(D) correct.**

Q32 **Text Solution:**

The correct choices are: **(A), (B) and (D) are true; (C) is false.**

Explanations:

(A) **True.** In the standard Bertrand model with homogeneous products and identical constant marginal costs, the unique Nash equilibrium has both firms setting price equal to marginal cost, any higher price can be undercut by the rival, and any lower price yields loss. This is the "Bertrand paradox."

(B) **True (in the usual textbook sense).** If one firm has a strictly lower marginal cost, it can set price just below the rival's marginal cost (but ≥ its own marginal cost) and capture the whole market, earning positive profit equal to (price – its MC) × quantity. This is the usual limit/undercutting argument.

(C) **False.** The Bertrand equilibrium (price = MC) is generally *not* the same as the Cournot equilibrium, Cournot yields positive markups and quantities/prices different from the Bertrand outcome. The two models produce different predictions except in special parameter cases.

(D) **True.** Introducing capacity constraints (Edgeworth/Edgeworth–Bertrand framework) can eliminate a pure-strategy Nash equilibrium: with limited capacities, firms cannot always serve the full market at competitive prices, generating cycles or mixed-strategy equilibria instead of a stable pure-strategy equilibrium.

Q33 **Text Solution:**

The correct choices are: (A), (B), (C), and (D).

Explanation:

(A) $\widehat{\beta}_1 = \frac{\sum xy}{\sum x^2} = \frac{80}{100} = 0.8$. True.

(B) $\widehat{\beta}_0 = \overline{Y} - \widehat{\beta}_1 \overline{X} = 20 - 0.8\left(10\right) = 12.$

True.

(C)

$R^2 = \frac{(\sum xy)^2}{\sum x^2 \sum y^2} = \frac{80^2}{100 \times 100} = \frac{6400}{10000} = 0.64.$

True.

(D)

$ESS = \sum\left(\hat{y}_i - \bar{y}\right)^2 = \widehat{\beta}_1^2 \sum x^2 = \left(0.8\right)^2.$

$\times 100 = 0.64 \times 100 = 64$

True.

Q34 **Text Solution:**

All four statements **(A), (B), (C), and (D)** are **correct**.

Explanation:

Equilibrium requires $IS = LM$.

Original system:

$$2000 - 100r = 500 + 100r$$

$$1500 = 200r \implies r = 7.5\%$$

$$Y = 2000 - 100(7.5) = 2000 - 750 = 1250$$

So (A) and (B) are true.

After LM shifts to $Y = 700 + 100r$

$$2000 - 100r = 700 + 100r$$

$$1300 = 200r \implies r = 6.5\%$$

$$Y = 2000 - 100(6.5) = 2000 - 650 = 1350$$

Output rises from 1250 to 1350, an increase of 100. So (C) and (D) are true.

Q35 **Text Solution:**

The correct choices are (A), (C), and (D).

Explanation:

(A) True

High-Powered Money (also called Reserve Money or Base Money, H) consists of:

- Currency held by the public (C)
- Reserves of banks (R) which include CRR balances and vault cash

Thus,

$$H = C + R$$

(B) False

The money multiplier is:

$$m = \frac{1 + c}{c + r}$$

where

c = Currency–Deposit ratio

r = Reserve–Deposit ratio

If c increases → the denominator increases more → **money multiplier falls**, not rises.

(C) True

If the Reserve–Deposit ratio (r) decreases, the denominator (c+r) becomes smaller →

$$m = \frac{1+c}{c+r} \quad \text{increases}$$

(D) True

In India:

M3=Currency with Public+Demand Deposits+Time Deposits with Banks

Thus Time Deposits are included in M3.

Q36 Text Solution:

(A), (B) and (C) are correct; (D) is false.

Explanation:

- **(A) True.** With perfect capital mobility and a *flexible* exchange rate, fiscal expansion raises domestic interest rates only briefly before exchange-rate movements (appreciation) crowd out net exports, so fiscal policy cannot change output in the long run.
- **(B) True.** With a *fixed* exchange rate, monetary policy is neutral: any autonomous change in money supply is offset by capital flows and central-bank interventions required to keep the peg, so it cannot change output.
- **(C) True.** Under a flexible rate an expansionary monetary policy lowers the domestic interest rate, triggers capital outflows, the currency **depreciates**, and net exports rise, raising output.
- **(D) False.** Under a fixed rate an expansionary **fiscal** policy tends to attract capital inflows (higher interest), so the central bank **buys** foreign currency to prevent appreciation, **reserves rise**, not fall.

Q37 Text Solution:

The correct choices are (A), (B), (C) and (D)

Explanation:

Given,

$f(x) = 3x^2, \ 0 < x < 1$

1. Expectation

$$E(X) = \int_0^1 x f(x)\,dx = \int_0^1 3x^3\,dx$$

$$= 3\left[\frac{x^4}{4}\right]_0^1 = \frac{3}{4} = 0.75$$

(A) Correct

2. Variance

First compute $E(X^2)$

$$E(X^2) = \int_0^1 x^2 f(x)\,dx = \int_0^1 3x^4\,dx$$

$$= 3\left[\frac{x^5}{5}\right]_0^1 = \frac{3}{5} = 0.6$$

Now,

$$\mathrm{Var}(X) = E(X^2) - [E(X)]^2 = 0.6$$

$$- (0.75)^2 = 0.6 - 0.5625 = 0.0375$$

(B) Correct

3. Probability $P(0.5 < X < 1)$

$$P(0.5 < X < 1) = \int_{0.5}^1 3x^2\,dx = \left[x^3\right]_{0.5}^1$$

$$= 1 - (0.5)^3 = 1 - 0.125 = 0.875$$

(C) Correct

4. Median

Median m satisfies:

$$F(m) = \int_0^m 3x^2 dx = m^3 = 0.5$$

Thus,

$$m = (0.5)^{1/3}$$

(D) Correct

All statements **(A), (B), (C), and (D)** are **correct.**

Q38 Text Solution:

The correct choices are (A), (B), and (D).

Explanation:

Given:

$$A = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$$

Characteristic Polynomial and Eigen Values:

$$\det\left(A - \lambda I\right) = \begin{vmatrix} 1-\lambda & 2 \\ 2 & 1-\lambda \end{vmatrix}$$

$$= \left(1-\lambda\right)^2 - 4 = \lambda^2 - 2\lambda - 3$$

$\lambda = \frac{2 \pm 4}{2} \Rightarrow \lambda_1 = 3,\ \lambda_2 = -1$ (A True)

Determinant:

$\det(A) = 1 \cdot 1 - 2 \cdot 2 = -3$

(B True)

Not positive definite because one eigenvalue is negative. (C False).

Symmetric matrices have orthogonal eigenvectors. (D True).

Q39 Text Solution:

The correct choices are (A), (B), and (C)

Explanation:

The Government of India has appointed several expert committees over time to improve the methodology for estimating poverty. The **Lakdawala Committee (1993)** recommended using calorie-based norms - 2400 calories for rural areas and 2100 calories for urban areas - and suggested poverty estimation based on consumption expenditure with state-specific price indices. Later, the **Tendulkar Committee (2009)** introduced significant changes by moving away from calorie norms and instead adopting a uniform poverty line basket for both rural and urban populations. It also emphasized including essential non-food expenditures such as health and education and recommended using the Mixed Reference Period (MRP) method. To further refine poverty estimation, the government set up the **Rangarajan Committee (2014)**, which reviewed the Tendulkar methodology and proposed higher poverty lines by considering a more detailed consumption basket, reflecting modern living requirements. On the other hand, the **N.K. Singh Committee** was not related to poverty estimation; it was constituted for reviewing the Fiscal Responsibility and Budget Management (FRBM) framework, focusing on fiscal deficit targets rather than poverty measurement.

Q40 Text Solution:

The correct choices are: (A), (B), (C)

Explanation:

$f'(x) = 3x^2 - 3$. Roots at $x = \pm 1$.

$f''(x) = 6x$.

At $x = -1$, $f''(-1) = -6 < 0$ (Max).

Value: $-1 + 3 + 2 = 4$. **(A, C True).**

At $x = 1$, $f''(1) = 6 > 0$ (Min). **(B True).**

For $x \in (-1, 1)$, $f'(x) < 0$ (Decreasing). **(D False).**

Q41 Text Solution:

The optimal demand for good 1 is 12.5.

Explanation:

Cobb–Douglas demand: $x_1^* = \frac{\alpha}{\alpha+\beta}\frac{m}{p_1}$ with $\alpha = \beta = 0.5$.

So $x_1^* = \frac{0.5}{1} \cdot \frac{100}{4} = 0.5 \cdot 25 = 12.5$.

But Cobb–Douglas with exponents 0.5, 0.5 implies expenditure share on each good is 0.5 of income, so spending on good 1 is 50 and quantity is $50/4 = 12.5$.

Correct optimal demand for good 1 is 12.5

Q42 Text Solution:

The correct answer is 0.

Explanation:

Utility:
$u(x_1, x_2) = x_1 + 2x_2$
Prices: $p_1 = 1,\ p_2 = 3$
Income:$m = 60$
This is a perfect substitutes utility function. The consumer compares utility per rupee:
$\frac{MU_1}{p_1} = \frac{1}{1} = 1$
$\frac{MU_2}{p_2} = \frac{2}{3}$
Since
$1 > \frac{2}{3}$,
good 1 gives more utility per rupee.
Therefore, the consumer spends all income on good 1.
Demand for good 2:
$x_2^* = 0$

Q43 Text Solution:
The answer is 5%
Explanation:
Using the Harrod–Domar growth formula:

$$g = \frac{s}{v}$$

Given:

$$s = 0.2, \qquad v = 4$$

Compute:

$$g = \frac{0.2}{4} = 0.05$$

$$\boxed{g = 0.05 \text{ or } 5\%}$$

Q44 Text Solution:
The answer is 24.
Explanation:
Utility:
$u(x_1, x_2) = \min\{2x_1,\ x_2\}$
Perfect-complements condition: $2x_1 = x_2$
Budget constraint:
$2x_1 + 4x_2 = 120$
Substitute $x_2 = 2x_1$:
$2x_1 + 4(2x_1) = 120$
$2x_1 + 8x_1 = 120$
$10x_1 = 120$
$x_1^* = 12$
Then:
$x_2^* = 2x_1^* = 24$
Optimal quantity of good 2:
$\boxed{24}$

Q45 Text Solution:
The answer is 2%
Explanation:
In the Solow model with Harrod--neutral technological progress, output is:
$Y = K^{1/3}(AL)^{2/3}$.
Given:
$g_A = 0.02\ \ (2\%), \quad n = 0.01\ \ (1\%).$
A key result of the Solow model is that in steady state, **output per worker**grows at the rate of technological progress:
$g_{Y/L} = g_A$.
Therefore,
$g_{Y/L} = 0.02\ \text{ or } 2\%.$
Final answer:
$\boxed{2\%}$

Q46 Text Solution:
The correct answer is 0.5.
Explanation:
For utility
$u(x_1, x_2) = x_1 x_2,$

Marginal utilities:

$MU_1 = \frac{\partial u}{\partial x_1} = x_2, \quad MU_2 = \frac{\partial u}{\partial x_2} = x_1.$

Marginal rate of substitution:

$MRS_{12} = \frac{MU_1}{MU_2} = \frac{x_2}{x_1}.$

At bundle $(x_1, x_2) = (10, 5)$:

$MRS_{12} = \frac{5}{10} = \frac{1}{2} = 0.5$

Final answer:

$\boxed{0.5}$

Q47 Text Solution:

The answer is 0.56

Explanation:

Total outcomes when rolling a die twice:

$6 \times 6 = 36$

Favorable outcomes for $5 \leq X \leq 8$:

P(X=5) = 4

P(X=6) = 5

P(X=7) = 6

P(X=8)= 5

$Total\ favorable = 4 + 5 + 6 + 5 = 20$

$P(5 \leq X \leq 8) = \frac{20}{36} = \frac{5}{9} = 0.56$

Q48 Text Solution:

The correct answer is 1.

Explanation:

Income elasticity:

$\epsilon_m = \frac{dx_1/dm}{x_1/m}$

Engel curve:

$x_1(m) = 0.2m$

Derivative:

$\frac{dx_1}{dm} = 0.2$

Quantity at $m = 250$:

$x_1(250) = 50$

Income elasticity:

$\epsilon_m = 0.2 \cdot \frac{250}{50} = 1$

Q49 Text Solution:

The answer is 4

Explanation:

Characteristic equation: $\det(B - \lambda I) = 0$

$$\det \begin{pmatrix} 3-\lambda & 1 \\ 1 & 3-\lambda \end{pmatrix} = (3-\lambda)^2 - 1 = 0$$

$\lambda^2 - 6\lambda + 9 - 1 = 0 \Rightarrow \lambda^2 - 6\lambda + 8 = 0$

$(\lambda - 4)(\lambda - 2) = 0 \Rightarrow \lambda = 4 \text{ or } \lambda = 2$

Larger eigenvalue: **4.00**

Q50 Text Solution:

The answer is 9.5 (rounding to nearest integer 10)

Explanation:

Given,

$q(L) = 10L - 0.5L^2, \ p = 40, \ w = 20$

The marginal product of labor is:

$MP_L = 10 - L$

Profit condition:

$pMP_L = w$

$40(10 - L) = 20$

$L^* = 9.5$ (or 10)

Q51 Text Solution:

The answer is 55.

Explanation:

To find the profit-maximizing price, follow the monopoly rule:

Set MR = MC

Demand: $P = 100 - 2Q$

Total revenue:

$TR = PQ = (100 - 2Q)Q = 100Q - 2Q^2$

Marginal revenue:

$MR = \frac{dTR}{dQ} = 100 - 4Q$

Cost:

$C(Q) = 10Q \ \Rightarrow \ MC = 10$

Profit maximization:

$MR = MC$

$100 - 4Q = 10$

$4Q = 90 \quad \Rightarrow \quad Q^* = 22.5$

Price:

$P^* = 100 - 2(22.5) = 55$

Final answer:

55

Q52 **Text Solution:**

The answer is 6.67

Explanation:

Given data: 2, 4, 6, 8 with $n = 4$.

Sample mean:

$\bar{x} = \frac{2+4+6+8}{4} = 5$

Squared deviations:

$\left(2-5\right)^2 = 9, \ \ (4-5)^{)2} = 1, \ \ \left(6-5\right)^2 = 1, \ \ \left(8-5\right)^2 = 9$

Sum:

$9 + 1 + 1 + 9 = 20$

Unbiased sample variance:

$s^2 = \frac{20}{3}$

Final answer:

$\boxed{\frac{20}{3} = 6.67}$

Q53 **Text Solution:**

The answer is 30.

Explanation:

In **Bertrand duopoly with homogeneous products** and **identical constant marginal cost (MC)**, the Nash equilibrium price equals marginal cost:

$$p^* = MC$$

Given:

$$MC = 30$$

So the **Bertrand Nash equilibrium price** is:

30

Q54 **Text Solution:**

The answer is: 0.825

Explanation:

Given the consumption function:

C=50+0.7Y

At income Y=400:

C=50+0.7(400)=50+280=330

Average propensity to consume:

$APC = \frac{C}{Y} = \frac{330}{400} = 0.825$

Q55 **Text Solution:**

The answer is 100 crores.

Explanation:

$InitialCRR = 6\%, \ \ NewCRR = 5\%$

Reduction in CRR:

$\Delta CRR = 0.01$

Deposits = 10,000 crores

Additional lending:

$\Delta \text{Lending} = 0.01 \times 10000 = 100 \text{ crores}$

Final answer:

$\boxed{100 \text{ crores}}$

Q56 **Text Solution:**

The answer is: 165 millions

explanation:

$LFPR = 55\% = 0.55$

$Working - agepopulation = 300 \text{ million}$

Labour force:

$\text{Labour Force} = 0.55 \times 300 = 165 \text{ million}$

Final answer:

$\boxed{165 \text{ million}}$

Q57 **Text Solution:**

The answer is 4%

Explanation:

With perfect capital mobility and a fixed exchange rate, domestic interest rate is pinned to

the world interest rate by arbitrage and central-bank intervention. So in the long run

$r = r^* = 4\%$

Brief explanation: if domestic r tried to stay at 6%, capital would flow in (seeking higher returns), putting upward pressure on the domestic currency; to keep the exchange rate fixed the central bank must buy foreign currency (sell domestic reserves) until r falls to r^*. Under perfect capital mobility this arbitrage eliminates any persistent interest-rate gap.

Q58 **Text Solution:**

The answer is : 1

Explanation:

Given:

$n = 25,\ \bar{x} = 52,\ \mu_0 = 50,\ s = 10$

Test statistic:

$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$

Standard error:

$\frac{s}{\sqrt{n}} = \frac{10}{5} = 2$

Compute t:

$t = \frac{52-50}{2} = 1$

Final answer:

$\boxed{1}$

Q59 **Text Solution:**

The answer is: 3.542

Explanation:

We solve the IS and LM equations simultaneously.

IS Curve:

Goods market equilibrium:

$Y = 100 + 0.75(Y - T) + I_0 - 50r + G$

Substitute:

$T = 50,\ \ I_0 = 200,\ \ G = 150$

$Y = 100 + 0.75(Y - 50) + 200 - 50r + 150$

Simplify:

$Y = 100 + 0.75Y - 37.5 + 200 + 150 - 50r$

$Y = 0.75Y + 412.5 - 50r$

Bring terms together:

$0.25Y = 412.5 - 50r$

Solve for Y:

$Y = 1650 - 200r$

This is the IS curve.

LM Curve:

Money market equilibrium:

$(M/P)^d = 0.5Y - 20r$

Given:

$M/P = 400$

So:

$0.5Y - 20r = 400$

Substitute the IS expression $Y = 1650 - 200r$:

$0.5(1650 - 200r) - 20r = 400$

$825 - 100r - 20r = 400$

$825 - 120r = 400$

Solve for r:

$-120r = -425$

$r = \frac{425}{120}$

$r = \frac{85}{24} \approx 3.5417$

Q60 **Text Solution:**

The answer is 9

Explanation:

Direct substitution (polynomial is continuous everywhere):

$(3(2)^2 - 4(2) + 5) = 12 - 8 + 5 = 9$