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01

STATISTICS FOR ECONOMICS

Descriptive Statistics

Difficulty: Easy | 2026 · Q1 | MCQ · 1 mark

If kurtosis is defined as $(m_4/\sigma^4 - 3)$, where m_4 is the 4th order central moment and σ 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

EXPLANATION

Correct answer: A

The fourth central moment is the average fourth power of deviations from the mean, $m_4 = E[(X-\mu)^4]$. Dividing by σ^4 removes the measurement units. For a normal distribution this standardized fourth moment equals three.

The question subtracts that normal benchmark, so its formula defines **excess kurtosis**: $\gamma 2 = \frac{m_4}{\sigma^4} - 3$.

A positive value means $m_4/\sigma^4 > 3$, which is called leptokurtic. A value of zero is mesokurtic, and a negative value is platykurtic. The subtraction of three is essential: ordinary kurtosis and excess kurtosis have different numerical benchmarks.

Because deviations are raised to the fourth power, observations far from the mean contribute strongly to this measure. It is therefore useful for comparing the weight of extreme deviations relative to variance. A peak-height description alone is not a reliable definition of kurtosis.

- **B:** A mesokurtic distribution has standardized fourth moment three, so the stated formula gives zero rather than a positive value.
- **C:** A platykurtic distribution has standardized fourth moment below three, making its excess kurtosis negative.
- **D:** The normal distribution is the reference case: its fourth central moment is $3\sigma^4$, so subtracting three again gives zero.

KEYWORDS: excess kurtosis | fourth central moment | leptokurtic distribution

02
STATISTICS FOR ECONOMICS
Descriptive Statistics

Difficulty: Easy | 2026 · Q2 | MCQ · 1 mark

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

EXPLANATION

Correct answer: C

Dispersion describes how spread out observations are. An absolute measure expresses spread in the data's units. A relative measure compares spread with a reference size, allowing a unit-free comparison.

For observations with a positive mean, the coefficient of variation is

$$\text{CV} = \frac{\text{standard deviation}}{\text{mean}},$$

or this ratio multiplied by 100 when reported as a percentage. The numerator and denominator have the same units, so those units cancel.

For example, one group might have mean 100 and standard deviation ten, while another has mean twenty and standard deviation four. The first has greater absolute standard deviation, but its CV is ten percent compared with twenty percent for the second. The second group is more variable relative to its mean.

- **A:** Range is the largest observation minus the smallest. Subtracting two quantities preserves their measurement unit, so this is an absolute measure.
- **B:** Mean absolute deviation averages the absolute distances from the mean. Those distances still have the same units as the observations.
- **D:** Quartile deviation is half the difference between the third and first quartiles. It too retains the original unit; a separate coefficient of quartile dispersion would be a relative measure.

CV is most meaningful for a ratio-scale variable with a meaningful zero and a positive mean. It is undefined at a zero mean and should not be used mechanically for arbitrary shifted scales.

KEYWORDS: coefficient of variation | relative dispersion | scale invariance

03

INDIAN ECONOMY

Introduction and features

Difficulty: Easy | 2026 · Q3 | MCQ · 1 mark

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

EXPLANATION

Correct answer: D

Nationalisation transfers ownership of private enterprises to the government. India's major commercial-bank nationalisations occurred in 1969 and 1980, before the 1991 reform programme. They belonged to an earlier strategy of expanding public control over banking.

- **A:** The 1991 industrial policy removed licensing requirements for most industries. "Abolition of License Raj" describes that major reduction in entry and production controls; it does not mean every licence or regulation ceased to exist.
- **B:** The reforms opened greater opportunities for foreign investment. Encouraging foreign capital and technology was part of the move towards a more open economy.
- **C:** The rupee was devalued in two steps in July 1991. Devaluation lowers a currency's official external value and was part of the response to the balance-of-payments crisis.

KEYWORDS: bank nationalisation | economic reforms 1991 | rupee devaluation 1991

04

INDIAN ECONOMY

Introduction and features

Difficulty: Easy | 2026 · Q4 | MCQ · 1 mark

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

EXPLANATION

Correct answer: B

The Mahalanobis model supplied the central investment strategy of the Second Five-Year Plan. It distinguishes production of consumer goods from production of capital goods, such as machinery. Allocating more investment to the capital-goods sector can restrain the immediate expansion of consumer goods, but it builds the capacity to produce more investment goods and support future growth.

That long-run capacity argument explains the Second Plan's emphasis on heavy industry.

- **A:** The Harrod–Domar framework relates growth to saving and the capital-output ratio. It is commonly associated with the growth framework of the First Plan, rather than the Second Plan's distinctive sectoral investment strategy.
- **C:** The Gadgil Formula allocates central plan assistance among states using specified criteria. It is a resource-distribution formula, not the production-and-investment model underlying the Second Plan.
- **D:** The Solow model studies capital accumulation with factor substitution, diminishing returns and technological progress. It was not the model used to formulate this Indian plan.

KEYWORDS: mahalanobis model | second five year plan | capital goods investment

05

MICROECONOMICS

Consumer theory

Difficulty: Easy | 2026 · Q5 | MCQ · 1 mark

Let e, R, and p represent own price elasticity of demand, total revenue, and price, respectively for a good. If $\partial R/\partial p < 0$, then

A. $|e| > 1$

B. $|e| = 1$

C. $|e| < 1$

D. $|e| = 0$

EXPLANATION

Correct answer: A

Revenue is price multiplied by quantity sold. Raising price has two effects: each unit brings more revenue, but the quantity demanded may fall. Revenue falls overall only when the quantity response is sufficiently strong.

Write $R = pq(p)$ and define signed own-price elasticity as $e = (dq/dp)(p/q)$. Using the product rule,

$$\frac{dR}{dp} = q + p\frac{dq}{dp} = q(1 + e).$$

For positive sales q, the condition $dR/dp < 0$ requires $1 + e < 0$, or $e < -1$. Therefore $|e| > 1$: demand is elastic. A small percentage price rise causes a larger percentage quantity fall, reducing their product.

- **B:** At unit elasticity, $e = -1$ and the two revenue effects exactly offset locally, so $dR/dp = 0$, not a negative number.
- **C:** With downward-sloping inelastic demand, $-1 < e < 0$, so $q(1 + e) > 0$ and a price rise increases revenue. Even a nonnegative elasticity with magnitude below one could not make this derivative negative.
- **D:** Zero elasticity means quantity does not respond locally to price. The revenue derivative is then $q > 0$, because only the price-per-unit effect remains.

KEYWORDS: total revenue | elastic demand | price elasticity

06

MICROECONOMICS

General equilibrium and welfare

Difficulty: Easy | 2026 · Q6 | MCQ · 1 mark

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 contract curve 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.

EXPLANATION

Correct answer: C

General equilibrium solves prices and allocations together. Consumers take prices as given when making their individual choices, but the model chooses relative prices so their demands collectively match the available endowments. In that sense prices are endogenous: they are determined inside the model by preferences, resources and market clearing.

Only relative prices are economically determined in a pure exchange model. One price can be normalized as the numeraire; multiplying every price by the same positive factor multiplies endowment incomes as well and leaves feasible real choices unchanged.

- **A:** The contract curve is the set of Pareto-efficient allocations. An allocation allowing a mutually beneficial reallocation is outside that set, not an inefficient point on it.
- **B:** The Edgeworth box includes boundary allocations. For example, a person may initially own none of one good, placing the endowment on an edge; feasibility does not require strictly positive holdings for everyone.
- **D:** Net demand means desired consumption minus initial endowment. An individual may choose the endowment and have zero net demand. For a traded good with positive price, aggregate net demand is zero at market clearing, since one person's purchases must match another's sales.

KEYWORDS endogenous prices | exchange equilibrium | market clearing | net demand

07

MACROECONOMICS

National income accounting

Difficulty: Easy | 2026 · Q7 | MCQ · 1 mark

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.

EXPLANATION

Correct answer: B

GDP's production boundary includes more than goods sold for cash, but it does not include every useful activity. Government final consumption is included: public services such as administration and defence are current output, commonly valued through their production costs when no market price exists. B is therefore correct.

- **A:** Unpaid household services performed for one's own household, such as cooking or cleaning, are generally excluded by the national-accounting convention. Their usefulness does not change that boundary. Paying an employed domestic worker for comparable services is treated differently.
- **C:** Owner-occupied housing services are included using imputed rent: an estimate of what the owner would pay to rent similar housing. This avoids making GDP fall merely because a tenant buys the home they occupy.
- **D:** Goods produced and retained for the producer's own consumption, such as a farmer's crop eaten by the household, are included at an estimated value. Absence of a market sale does not automatically exclude this output.

KEYWORDS: gdp production boundary | government consumption | imputed rent | own consumption

08

MACROECONOMICS

Fiscal policy (based on two-period models)

Difficulty: Easy | 2026 · Q8 | MCQ · 1 mark

The relationship between tax revenue and tax rate is represented by _____.

A. J-Curve

B. Laffer Curve

C. Phillips Curve

D. IS Curve

EXPLANATION

Correct answer: B

The Laffer curve relates the tax rate to the tax revenue collected. Revenue depends on both the rate charged and the size of the taxable base. Raising a rate directly increases the tax collected from an unchanged base, but the base may shrink as people alter work, investment, reporting or compliance.

The familiar inverted-U illustration shows revenue initially rising with the rate and potentially falling at sufficiently high rates if the contraction in the base is strong enough. For instance, a 20-percent rate on a base of 100 yields 20 units of revenue; a 40-percent rate on a base that falls to 40 yields only 16.

- **A:** The J-curve concerns a possible initial deterioration and later improvement in the trade balance after currency depreciation, as quantities adjust over time.
- **C:** The Phillips curve relates unemployment to wage inflation or price inflation, depending on its formulation. It does not plot tax receipts against the tax rate.
- **D:** The IS curve represents combinations of income and the interest rate that clear the goods market, given fiscal and other conditions.

The Laffer relationship does not establish that a tax cut always raises revenue. That conclusion would require knowing that the starting rate is on a portion where a rate increase reduces revenue.

KEYWORDS: laffer curve | tax rate | tax revenue

09

INDIAN ECONOMY

Introduction and features

Difficulty: Easy | 2026 · Q9 | MCQ · 1 mark

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

EXPLANATION

Correct answer: C

The Permanent Settlement sought a predictable flow of land revenue to the East India Company. It fixed the revenue obligation of recognised zamindars, who collected rent from cultivators and paid the agreed amount to the Company. The word “permanent” refers to that fixed government revenue demand.

The arrangement was also expected to encourage zamindars to improve cultivation, since they could retain gains above the fixed demand. That expected incentive should not be confused with granting ownership directly to peasants.

- **A:** Ryotwari settlement dealt more directly with individual cultivators and developed in other regions. Abolishing that system was not the purpose of the Bengal Permanent Settlement of 1793.
- **B:** Peasant ownership would place the cultivators themselves at the centre of the ownership arrangement. The Permanent Settlement instead recognised zamindars and imposed the revenue obligation through them.
- **D:** The settlement strengthened the position of zamindars; it did not abolish them. Zamindari abolition belongs to a much later land-reform context.

KEYWORDS permanent settlement | zamindari | colonial land revenue

10

MATHEMATICS FOR ECONOMICS

Integral calculus

Difficulty: Medium | 2026 · Q10 | MCQ · 1 mark

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. $\frac{7}{3}e^8$

EXPLANATION

Correct answer: D

The expression inside the exponential, x^3, suggests the substitution $t = x^3$. Its derivative supplies an x^2 factor, so separate x^5 as $x^3 x^2$. The remaining x^3 also becomes t. This converts the entire integrand into one variable, rather than leaving a mixture of x and t.

The integrand is positive on $[1, 2]$, so its definite integral is the area. Set $t = x^3$, giving $dt = 3x^2\,dx$ and $x^5\,dx = t\,dt/3$. The limits change from $x = 1, 2$ to $t = 1, 8$:

$$\int_1^2 x^5 e^{x^3}\,dx = \frac{1}{3}\int_1^8 te^t\,dt.$$

For the remaining integral, use integration by parts with $u = t$ and $dv = e^t\,dt$. Then $du = dt$ and $v = e^t$, giving

$$\int te^t\,dt = te^t - \int e^t\,dt = te^t - e^t = (t-1)e^t.$$

Therefore

$$\frac{1}{3}[(t-1)e^t]_1^8 = \frac{1}{3}(7e^8 - 0) = \frac{7}{3}e^8.$$

Changing the limits is part of the substitution: the upper limit becomes $2^3 = 8$, not two. Once the limits are expressed in t, evaluate the antiderivative directly at those transformed limits. At the lower limit, $(1-1)e^1 = 0$ even though e^1 itself is not zero.

A useful check on the integration-by-parts step is differentiation: $d[(t-1)e^t]/dt = e^t + (t-1)e^t = te^t$. Omitting the subtraction of e^t would leave an unwanted extra term in this derivative.

- **A:** The expression $e^8/3$ omits the factor seven from the antiderivative $(t-1)e^t$ at the upper limit.
- **B:** The coefficient four does not equal the upper-bound value $t - 1 = 7$. The transformed upper limit is eight, not five.
- **C:** The coefficient five likewise fails the endpoint evaluation: $8 - 1 = 7$, while the lower endpoint contributes zero.

KEYWORDS: integration by substitution | integration by parts | definite integral

11

STATISTICS FOR ECONOMICS

Probability Theory

Difficulty: Easy | 2026 · Q11 | MCQ · 2 marks

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. $1 - \frac{365 \times 364}{366 \times 366}$

EXPLANATION

Correct answer: C

Use the standard birthday model: each person's birthday is independent and equally likely to fall on any of the 366 days. The condition is that all three birthdays are different, so choose them in sequence while avoiding days already used.

The first person's birthday is unrestricted, with probability one. The second must avoid that one day, leaving 365 acceptable days out of 366. Given that the first two differ, the third must avoid both, leaving 364 acceptable days. Thus

$$P(\text{all different}) = 1 \cdot \frac{365}{366} \cdot \frac{364}{366} = \frac{365 \cdot 364}{366^2}.$$

The denominators stay at 366 because each person's birthday can still be any calendar day. We remove used days only from the favorable counts, not from the underlying set of possible birthdays.

An equivalent count has 366^3 ordered birthday triples in total and $366 \cdot 365 \cdot 364$ triples with distinct dates. Cancelling the first factor gives the same answer.

- **A:** The value $1/366^3$ is the probability of one fully specified ordered triple of dates, rather than all possible triples with distinct birthdays.
- **B:** Multiplying the favorable counts and then taking their reciprocal is not favorable outcomes divided by total outcomes. It omits the total 366^3 possible triples.
- **D:** This is the complementary probability that at least two of the three people share a birthday.

KEYWORDS: birthday problem | distinct outcomes | conditional counting

12

STATISTICS FOR ECONOMICS

Correlation and Regression

Difficulty: Easy | 2026 · Q12 | MCQ · 2 marks

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%

EXPLANATION

Correct answer: C

The fitted logarithmic trend is $\widehat{\ln Y_t} = 12 + 0.1512t$. Increasing time by one year raises the fitted log level by 0.1512. To obtain a growth factor for the level of Y, exponentiate this log change.

Writing the exponentiated fitted trend as $\tilde{Y}_t = e^{12+0.1512t}$, the ratio for consecutive years is $\frac{\tilde{Y}_{t+1}}{\tilde{Y}_t} = \frac{e^{12+0.1512(t+1)}}{e^{12+0.1512t}} = e^{0.1512} \approx 1.1632.$

The rate of growth is the excess of this factor over one. Thus the compound annual percentage rate is
$100(e^{0.1512} - 1) \approx 16.32\%.$

The intercept controls the trend's level, but cancels from the ratio. Statistical significance affects evidence that the trend differs from zero; it does not change the mathematical conversion from log slope to compounded rate.

- **A:** Multiplying the slope by 100 gives 15.12%, the continuously compounded rate and a small-slope approximation to the ordinary compounded percentage. It is not the exact conversion here.
- **B:** The growth factor is about 1.1632, but this is not a percentage rate of 1.16%. One must subtract the unchanged base level and then multiply by 100.
- **D:** About 116% describes the new level as a percentage of the previous level, not the percentage increase. The increase is only the part above one hundred percent.

KEYWORDS: log linear trend | compound annual growth rate | exponential conversion

13

STATISTICS FOR ECONOMICS

Correlation and Regression

Difficulty: Easy | 2026 · Q13 | MCQ · 2 marks

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:

$Wage_i$ = wage of the employee i

$Pass_i = 1$ if the employee i passes in the annual appraisal, and 0 if the employee i fails.

$Fail_i = 1$ if the employee i fails in the annual appraisal, and 0 if the employee i passes.

Based on the above information, which one of the following regression models cannot be estimated?

A. $Wage_i = \alpha + \beta Pass_i + \gamma Fail_i + u_{1i}$; where α, β, and γ are the model parameters and u_{1i} is the error term

B. $Wage_i = \beta Pass_i + \gamma Fail_i + u_{2i}$; where β and γ are the model parameters and u_{2i} is the error term

C. $Wage_i = \alpha + \gamma Fail_i + u_{3i}$; where α and γ are the model parameters and u_{3i} is the error term

D. $Wage_i = \alpha + \beta Pass_i + u_{4i}$; where α and β are the model parameters and u_{4i} is the error term

EXPLANATION

Correct answer: A

Every employee either passes or fails, so for each observation $Pass_i + Fail_i = 1$. In A, the constant column representing the intercept is exactly the sum of the two indicator columns. This is perfect multicollinearity, often called the dummy-variable trap.

As a result, the three coefficients cannot be estimated uniquely by ordinary least squares. Adding any constant c to α and subtracting it from both β and γ leaves every fitted value unchanged:

$$(\alpha + c) + (\beta - c)Pass_i + (\gamma - c)Fail_i = \alpha + \beta Pass_i + \gamma Fail_i.$$

The data identify the pass-group and fail-group fitted means, but cannot separately identify all three redundant parameters. Removing the intercept or removing one dummy resolves this particular dependence, provided both groups appear in the sample.

- **B:** Without an intercept, the two dummy coefficients directly represent the two group means: β for pass and γ for fail. There is no extra constant column duplicating their sum.
- **C:** Pass is the omitted reference group. The intercept α is its fitted mean wage, and γ is the fail-minus-pass mean difference.
- **D:** Fail is the reference group. The intercept gives its fitted mean, while β gives the pass-minus-fail difference.

KEYWORDS: dummy variable trap | perfect multicollinearity | reference category

14

MICROECONOMICS

Imperfect competition and market structure

Difficulty: Easy | 2026 · Q14 | MCQ · 2 marks

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. first degree

B. third degree

C. perfect

D. second degree

EXPLANATION

Correct answer: D

Second-degree price discrimination uses a common menu or price schedule from which buyers select their quantity. Unit prices may change with the amount purchased, but the seller applies the same schedule to everyone. Thus two people purchasing the same amount face the same charge.

For example, a seller might charge 10 rupees per unit for the first 5 units and 8 rupees per unit for additional units. Buyers choose different quantities and can pay different average prices, even though no buyer is given a personally tailored schedule. This is quantity-based self-selection.

- **A:** First-degree discrimination tailors charges to each buyer's willingness to pay for each unit. Equal quantities need not imply equal payments across different buyers.
- **B:** Third-degree discrimination separates observable groups, such as students and other customers, and charges different group prices. A buyer's group, rather than just their chosen quantity, determines the price.
- **C:** Perfect price discrimination is another name for first-degree discrimination, where the seller extracts each buyer's entire willingness to pay. It is not the common quantity schedule described here.

KEYWORDS: second degree price discrimination | quantity pricing | self selection

15

MICROECONOMICS

General equilibrium and welfare

Difficulty: Easy | 2026 · Q15 | MCQ · 2 marks

Consider a social welfare function (SWF) defined as $SWF = f(U_1, U_2, \ldots, U_m)$, where U_i is the utility function of the ith 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 $w1 \ /= w2 \ /= \cdots \ /= w_m$.

B. Since SWF reflects value judgements, interpersonal comparisons can be made on scientific grounds.

C. John Rawls proposed $SWF = maximum\{U_1, U_2, \ldots, U_m\}$.

D. If $SWF = \sum_{i=1}^{m} U_i$, it is referred as the utilitarian function.

EXPLANATION

Correct answer: D

A social welfare function aggregates individual well-being into an ordering of social outcomes. The utilitarian form adds individual utilities:

$$SWF = U_1 + U_2 + \cdots + U_m.$$

Each person's utility receives the same coefficient. In this representation, a gain of 1 utility unit for one person offsets a loss of 1 utility unit for another in the sum. Interpreting such sums requires a common, interpersonally comparable utility scale; merely knowing each person's ordinal ranking is insufficient.

- **A:** An unequal-weight sum is a possible weighted utilitarian specification, but unequal weights based on each person's characteristics are not the equal-counting utilitarian principle associated with Bentham and Mill. The requirement that all these weights differ is especially unwarranted.
- **B:** Value judgments do not automatically establish an objective scientific basis for comparing individuals' utilities. Evidence can inform welfare assessment, but choosing interpersonal weights and ethical trade-offs adds normative assumptions.
- **C:** The standard Rawlsian welfare representation focuses on the least advantaged, $\min\{U_1, \ldots, U_m\}$, and seeks to maximize that minimum. Taking the maximum instead measures the welfare of the best-off person and reverses that priority.

The utilitarian sum differs from maximin because a larger total can compensate for losses to the least advantaged, whereas maximin gives their level priority.

KEYWORDS: utilitarian welfare | rawlsian maximin | interpersonal utility comparison

16

MACROECONOMICS

Income determination and policy in the short run

Difficulty: Easy | 2026 · Q16 | MCQ · 2 marks

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

EXPLANATION

Correct answer: B

The Taylor rule is a guide for setting a short-term nominal policy interest rate. It responds to inflation relative to its target and to output relative to potential. An inflation gap is the difference between actual and target inflation; an output gap measures how far actual production is above or below the level consistent with normal resource use.

When inflation is above target, the rule calls for a higher policy rate, other things equal. Output above potential also calls for a higher rate; weak output below potential points toward a lower one. These responses aim to restrain excess demand or support activity as appropriate.

- **A:** The instrument prescribed by the standard Taylor rule is the nominal interest rate, not the exchange rate. It does not directly set a currency price from the two gaps.
- **C:** Although exchange-rate developments may matter to a central bank, the standard rule's two gap terms concern inflation and output. Replacing the output gap with the exchange rate describes a different specification.
- **D:** A growth forecast may inform a policy decision, but the rule itself supplies an interest-rate prescription. It is not primarily a model for forecasting future growth.

KEYWORDS: taylor rule | nominal policy rate | inflation gap | output gap

17

MACROECONOMICS

Long-run growth

Difficulty: Easy | 2026 · Q17 | MCQ · 2 marks

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.

EXPLANATION

Correct answer: C

An endogenous variable is determined by relationships inside a model; an exogenous input is supplied from outside it. The central difference here concerns the source of technological progress. Romer's innovation-based model explains knowledge creation through economic choices such as research investment, whereas the basic Solow model takes the technology path as given.

Solow can include technological progress and show how it affects living standards. What it does not explain internally is why technology improves at the assumed rate. C refers to that distinction, not to the absence of technology from Solow's production function.

- **A:** Standard Solow production has constant returns when capital and labour are increased together, not increasing returns as claimed. Romer's treatment of ideas can introduce increasing returns at an aggregate level; returns may differ across sectors and inputs, so the stated simple reversal is misleading.
- **B:** Solow's saving rate is usually taken as given, but its capital stock evolves within the model through investment and depreciation. An exogenous saving parameter does not make capital accumulation itself exogenous.
- **D:** Capital accumulation is explained by the model's accumulation equation in Solow and also responds to economic activity in Romer's model. It is not an externally fixed path in both.

For instance, Solow's equation $\dot{K} = sY - \delta K$ determines capital change from production, saving and depreciation, even when s is fixed externally. The analogous missing explanation concerns the assumed technology growth rate; innovation models add a mechanism that determines knowledge creation.

KEYWORDS: romer endogenous growth | solow growth model | technological progress | capital accumulation

18

INDIAN ECONOMY

Poverty, Inequality, Inflation and Unemployment

Difficulty: Easy | 2026 · Q18 | MCQ · 2 marks

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

EXPLANATION

Correct answer: A

The three named rates order the cost of borrowing from the RBI and the return from placing surplus funds with it. The marginal standing facility provides overnight borrowing at a rate above the policy repo rate. The fixed reverse repo rate, paid when the RBI absorbs funds through that facility, is below the repo rate. Hence

$$\text{MSF rate} > \text{Repo rate} > \text{Fixed reverse repo rate}.$$

The borrowing backstop is more expensive than borrowing at the policy rate; parking surplus funds earns the lower fixed reverse repo rate. This explains the direction of both comparisons.

- **B:** It places reverse repo above repo, reversing the comparison between the fixed absorption rate and the policy lending rate.
- **C:** It makes MSF the lowest rate, although the standing borrowing facility is priced above the repo rate.
- **D:** It correctly puts reverse repo last, but incorrectly puts repo above MSF. The overnight standing borrowing facility carries the higher rate.

In April 2022, the Standing Deposit Facility replaced fixed reverse repo as the floor of the liquidity-adjustment corridor. The ordering above concerns the three listed rates, with reverse repo interpreted as the fixed rate rather than a rate determined in a variable-rate reverse repo auction.

KEYWORDS: marginal standing facility | policy repo rate | fixed reverse repo rate | liquidity corridor

19

MICROECONOMICS

Market failure and government policy

Difficulty: Easy | 2026 · Q19 | MCQ · 2 marks

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.

EXPLANATION

Correct answer: D

A positive consumption externality means that someone's consumption benefits other people without the consumer receiving payment for those benefits. Marginal private benefit counts the extra benefit to the consumer; marginal social benefit also includes the benefit to others.

If MEB denotes marginal external benefit, then

$$MSB = MPB + MEB.$$

With a positive spillover, $MEB > 0$, so $MSB > MPB$. That is D. For instance, consumption that improves a person's knowledge may also benefit people with whom that knowledge is shared; the private consumer may not take all of that benefit into account.

- **A:** This reverses the benefit ordering. Social benefit exceeds private benefit when the additional external effect is positive.
- **B:** A positive consumption benefit is represented on the benefit side. It does not, by itself, establish that social production cost is below private production cost.
- **C:** Social marginal cost above private marginal cost describes an additional external cost, such as pollution from production. That is a different spillover from the positive consumption effect specified here.

With no separate production externality, marginal social and private costs coincide. The reason for underconsumption in the basic model is the omitted external benefit, not a higher production cost.

KEYWORDS: positive consumption externality | marginal social benefit | marginal private benefit

20

MICROECONOMICS

Market failure and government policy

Difficulty: Medium | 2026 · Q20 | MCQ · 2 marks

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. $(MPC - MPB) > p > (MSC - MPC)$

EXPLANATION

Correct answer: A

Because the polluter owns the right to pollute, the affected party must offer compensation to persuade it to reduce production. Compare both parties' gains and losses from a small reduction in output.

For the polluter, one less unit sacrifices private marginal benefit but saves private marginal cost. Its lost private surplus is therefore $MPB - MPC$. A payment greater than this loss makes the reduction worthwhile to the polluter.

For the affected party, the benefit of the reduction is the avoided marginal external damage, $MSC - MPC$. It gains from the agreement if its payment is smaller than that avoided damage. Combining the two participation conditions gives

$$(MSC - MPC) > p > (MPB - MPC).$$

This is A. Such a strictly beneficial bargain exists when avoided damage exceeds the polluter's lost surplus, as for excess production above the efficient level. At equality with an endpoint, one party is indifferent; the strict inequalities in the choices describe positive gains to both parties.

- **B:** This puts the payment below the polluter's loss and above the victim's avoided damage. Neither participation requirement is met in the intended reduction bargain.
- **C:** The avoided damage is $MSC - MPC$, not its negative. Reversing that subtraction gives the wrong upper bound on willingness to pay.
- **D:** The polluter's forgone gain is $MPB - MPC$, not $MPC - MPB$. The payment also needs to be below the victim's benefit, not above it.

The Coase bargaining argument assumes well-defined rights and negligible transaction costs. It concerns a payment for a marginal reduction in harm, not a payment for increasing pollution.

KEYWORDS: coase theorem | property rights | avoided damage | bargaining payment

21

STATISTICS FOR ECONOMICS

Descriptive Statistics

Difficulty: Easy | 2026 · Q21 | MCQ · 2 marks

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.

EXPLANATION

Correct answer: C

A price index compares the cost of goods between periods. When goods have different quantities or importance, the weighting rule matters. Write $p0, q0$ for base-period prices and quantities, and $p1, q1$ for current-period values.

The Laspeyres price index holds the base-period basket fixed:

$$PL = \frac{\sum p1\,q0}{\sum p0\,q0} \times 100.$$

The numerator prices that old basket at current prices; the denominator prices the same basket at base prices. Thus changes in quantities do not enter this comparison. This is precisely the base-year quantity weighting described in C.

The Paasche price index instead uses the current basket:

$$PP = \frac{\sum p1\,q1}{\sum p0\,q1} \times 100.$$

For example, if the base basket contains two units of rice and one unit of milk, Laspeyres keeps those quantities in both sums even if current purchases change. Paasche would use the new quantities in both sums. Neither index mixes one period's quantities in its numerator with another period's quantities in its denominator.

- **A:** A consumer price index concerns goods and services purchased by households. Raw materials and semifinished goods alone do not describe that consumer basket.
- **B:** A producer price index tracks prices received by producers for their output; merely averaging consumer-goods prices does not define it. The perspective and coverage, not just the presence of goods, determine the index.
- **D:** Paasche uses current-period quantities $q1$. Using base-period quantities $q0$ is the Laspeyres rule instead.

KEYWORDS: laspeyres price index | paasche price index | quantity weights

22

MACROECONOMICS

Consumption and saving

Difficulty: Easy | 2026 · Q22 | MCQ · 2 marks

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.

EXPLANATION

Correct answer: D

In the usual Keynesian linear specification, $C = C_0 + cY$, where $C_0 > 0$ is autonomous consumption and $0 < c < 1$ is the marginal propensity to consume. Dividing by positive income gives

$$APC = \frac{C}{Y} = \frac{C_0}{Y} + c.$$

As income grows, autonomous consumption becomes a smaller fraction of income. The term C_0/Y approaches zero, so APC moves downward toward c, which is MPC. This establishes D. APC need not equal MPC at any finite positive income when $C_0 > 0$.

- **A:** The slope $dC/dY = c$ is constant in the stated linear model. Higher income raises consumption by the same fraction of each additional unit of income rather than raising MPC itself.
- **B:** The ratio $C_0/Y + c$ falls as income rises. The level of consumption increases, but its share of income declines.
- **C:** Saving is $S = Y - C$, so $APS = S/Y = 1 - c - C_0/Y$. As the subtracted term becomes smaller, APS increases, not decreases.

The average measures divide a total by income; the marginal measure concerns an increment. Keeping those definitions separate prevents confusing higher total consumption with a higher consumption share.

KEYWORDS: absolute income hypothesis | average propensity to consume | marginal propensity to consume | average propensity to save

23

MACROECONOMICS

Income determination and policy in the short run

Difficulty: Medium | 2026 · Q23 | MCQ · 2 marks

Consider a closed economy IS-LM model with downward sloping IS curve. If there is an increase in government spending, then which one of the following statements is CORRECT?

A. If LM curve is horizontal, then the equilibrium level of income remains unchanged.

B. If LM curve is horizontal, then the equilibrium interest rate increases.

C. If LM curve is vertical, then the equilibrium level of income remains unchanged.

D. If LM curve is vertical, then the equilibrium interest rate decreases.

EXPLANATION

Correct answer: C

Higher government spending adds to planned expenditure and shifts IS to the right. The new equilibrium must lie on the unchanged LM curve. Its shape determines whether the adjustment occurs through income, interest or both.

A vertical LM curve fixes income through money-market equilibrium. For example, if money demand is kY and does not respond to interest, then $M/P = kY$ determines Y independently of the rate. An outward IS shift cannot change that money-market income. Instead, interest rises until enough private spending is discouraged to offset the extra government spending. This is complete crowding out, and it establishes C.

A horizontal LM curve gives the other limiting case: the interest rate stays fixed while income adjusts. Government spending can then raise income without an interest increase crowding out investment, as long as the new equilibrium remains in the horizontal region.

- **A:** Horizontal LM holds interest fixed, not income. The outward IS shift raises equilibrium income along that horizontal line.
- **B:** The equilibrium interest rate does not increase while the economy remains on a horizontal LM segment; the additional spending raises income instead.
- **D:** At the income fixed by vertical LM, higher government spending requires a higher rate to reduce private demand. A lower rate would stimulate it further and move goods demand away from equilibrium.

KEYWORDS: fiscal policy effectiveness | lm curve slope | complete crowding out | liquidity trap

24

MACROECONOMICS

Open economy macroeconomics

Difficulty: Medium | 2026 · Q24 · Adapted practice | MCQ · 2 marks

In a fixed-price Mundell–Fleming model with a floating exchange rate, $r = r^* + \theta$, $m = 0.5Y - 10r$ and $Y = 200 + 0.5Y - 20r + 10E$. Here Y is income, m is real money supply and E is domestic currency per unit of foreign currency. The domestic interest rate r, world rate r^* and risk premium θ are in percentage points. Holding m and r^* fixed, by how much does E change when θ increases by one percentage point?

A. 2.5

B. 2

C. 1

D. 3

EXPLANATION

Practice-key note: Q24 is a reviewed practice adaptation of the original 2026 question, not an unchanged PYQ.

Correct answer: D

The country-risk premium is the extra return required on domestic assets. With world interest fixed, $r = r^* + \theta$ makes a one-point premium rise increase domestic interest by one percentage point.

Higher interest lowers real money demand at a given income. Since real money supply is fixed, income must rise to restore money-market balance:

$$0 = 0.5\Delta Y - 10\Delta r = 0.5\Delta Y - 10,$$

so $\Delta Y = 20$.

The floating exchange rate must also clear the goods market. Taking changes in the IS equation gives

$$\Delta Y = 0.5\Delta Y - 20\Delta r + 10\Delta E.$$

Substituting $\Delta Y = 20$ and $\Delta r = 1$ gives $10 = -20 + 10\Delta E$, hence $\Delta E = 3$. A higher domestic-currency price of foreign currency is depreciation. It raises net exports enough to offset lower interest-sensitive spending and accommodate the higher income.

- **A:** This uses $\Delta Y = 10$ instead of dividing the money-demand shift by 0.5. Substituting that incorrect income into goods balance gives $0.5(10) = -20 + 10\Delta E$, hence 2.5.
- **B:** This offsets only the direct 20-unit fall in interest-sensitive spending. It omits the extra net exports needed to accommodate the income increase required by fixed-money balance.
- **C:** This offsets only the income-related net-export requirement, $0.5(20) = 10$. It omits the direct 20-unit interest-sensitive spending loss.

KEYWORDS: country risk premium | mundell fleming income | floating exchange adjustment | money market balance

25

INDIAN ECONOMY

Introduction and features

Difficulty: Easy | 2026 · Q25 | MCQ · 2 marks

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

EXPLANATION

Correct answer: B

The Plan Holiday was the three-year interval from 1966 to 1969. The Third Five-Year Plan ended in 1966, while the Fourth began in 1969. During the intervening years, the government used three Annual Plans instead of starting another five-year plan immediately.

Wars, drought and economic pressures had disrupted the Third Plan and made a fresh five-year programme difficult to launch. "Holiday" therefore refers to the interruption of the five-year planning cycle, not the abandonment of all planning or public investment.

- **A:** The Second Plan ended in 1961 and the Third began in that same year. There was no 1966–69 interval between them.
- **C:** The Sixth Plan covered 1980–85 and the Seventh 1985–90. Their adjoining dates do not locate the Plan Holiday.
- **D:** The Ninth Plan covered 1997–2002 and the Tenth 2002–07. They likewise followed consecutively and belong to a much later period.

KEYWORDS: plan holiday 1966 1969 | annual plans | third to fourth plan transition

26

MICROECONOMICS

Introductory Game theory

Difficulty: Medium | 2026 · Q26 | MCQ · 2 marks

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:

X / Y	Left	Right
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.

EXPLANATION

Correct answer: B

No pure action pair is stable. Against Left, X prefers Bottom because $2 > 1$; against Right, X prefers Top because $4 > 3$. Against Top, Y prefers Left because $2 > 1$; against Bottom, Y prefers Right because $4 > 3$. Following these best responses cycles through the four cells.

For a mixed equilibrium, each player must make the other indifferent between their two actions. Let p be Y's probability of Left. X's expected payoffs are

$$U_X(Top) = 4 - 3p, \qquad U_X(Bottom) = 3 - p.$$

Equality gives $p = 1/2$. Let q be X's probability of Top. Y's expected payoffs are $U_Y(Left) = 3 - q$ and $U_Y(Right) = 4 - 3q$, which are equal at $q = 1/2$. Thus each player independently chooses each action with probability one-half. Arbitrary randomization would not suffice: these probabilities provide the required mutual best responses.

- **A:** A pure equilibrium is not hidden in the table. At every cell, at least one player has a strictly profitable unilateral switch.
- **C:** This is defensible as a statement of similarity. As in Matching Pennies, the players' best responses form an opposing cycle, there is no pure equilibrium, and each player mixes equally in equilibrium. The displayed payoffs are not literally zero-sum, but that does not make the word 'similar' false. B describes the equilibrium directly; the wording does not make C unequivocally incorrect.
- **D:** Battle of the Sexes has two coordinated pure equilibria. This table has none, so that coordination pattern does not fit.

Wording note: B is the official answer and describes the mixed equilibrium. C also captures a genuine resemblance to Matching Pennies: opposing best responses, no pure equilibrium and equal mixing. The displayed game is not literally zero-sum, but the word "similar" does not require identical payoff numbers. The source wording therefore does not establish a unique answer.

KEYWORDS: mixed strategy nash equilibrium | indifference condition | best response cycle

27

MATHEMATICS FOR ECONOMICS

Linear algebra

Difficulty: Easy | 2026 · Q27 | MCQ · 2 marks

A 2×2 matrix $Z = \begin{bmatrix} Z_1 & Z_2 \\ Z_3 & Z_4 \end{bmatrix}$ has the following properties:

(i) $Z_i \in \mathbb{R}$ for all $i = 1, 2, 3, 4$;

(ii) $Z_i \ /= 0$ for some $i = 1, 2, 3, 4$; and

(iii) $Z = Z^2 = Z^3 = \cdots$.

Which one of the following options is CORRECT?

A. Z^{-1} does not exist for all Z

B. $Z^{transpose} \ /= Z^{-1}$ 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

EXPLANATION

Correct answer: C

C is supported by the identity matrix.

Idempotence means that applying the transformation twice has the same effect as applying it once. For example, keeping the first coordinate and replacing the second by zero gives the matrix $\mathrm{diag}(1, 0)$; repeating that operation makes no further change.

Pay attention to the quantifiers. A claim about "some" allowed matrix needs one working example. A claim about "all" allowed matrices is disproved by one allowed counterexample. The assumptions permit both the identity and the coordinate projection just described.

The condition $Z^2 = Z$ means that Z is idempotent. The identity matrix I_2 is a nonzero real example satisfying every stated power identity. It also satisfies $I_2^{-1} = I_2$, proving that $Z = Z^{-1}$ is possible.

The requirement that some entry is nonzero only excludes the zero matrix. It does not require all entries to be nonzero, and does not guarantee invertibility. Thus choosing the identity is legitimate even though its off-diagonal entries are zero.

For D, strict positivity would require $h^T Zh > 0$ in every nonzero direction. A projection leaves one direction unchanged but sends another to zero. The latter direction violates strict positivity even though the matrix itself is nonzero.

- **A:** If this means that every allowed matrix is singular, the invertible identity disproves it. If it means that an inverse does not exist for all allowed matrices, the singular projection $\mathrm{diag}(1, 0)$ makes it true. The wording permits both readings.
- **B:** For the same example, $I_2^T = I_2^{-1} = I_2$. The asserted inequality therefore does not hold for all allowed matrices.
- **D:** Take $Z = \mathrm{diag}(1, 0)$ and $h = (0, 1)^T$. This nonzero idempotent matrix satisfies all the assumptions, but $h^T Zh = 0$, not a strictly positive number.

In fact, multiplying $Z^2 = Z$ by Z^{-1} shows that any invertible idempotent matrix must be the identity. Other nonzero idempotent matrices need not be invertible or positive definite.

Wording note: C is the official answer. The phrase "does not exist for all" in A can mean either that every allowed matrix is singular or that some allowed matrix is singular. The identity disproves the first reading, while the coordinate projection proves the second. That scope ambiguity prevents an unqualified unique-answer claim.

KEYWORDS: idempotent matrix | identity matrix | matrix inverse | quantifier scope

28

MICROECONOMICS

Theory of production and cost

Difficulty: Easy | 2026 · Q28 | MCQ · 2 marks

A single-input production function is given by $Q = L^{0.25}$, where $Q\ (>0)$ and $L\ (>0)$ denote output and the single input, respectively.

The unit price of L is $w\ (>0)$. The cost is C_1 when no output is produced.

Which one of the following statements is CORRECT?

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.

EXPLANATION

Correct answer: B

Production is $Q = L^{1/4}$. Its marginal product is positive but diminishing: $dQ/dL = (1/4)L^{-3/4}$ and

$$\frac{d^2Q}{dL^2} = -\frac{3}{16}L^{-7/4} < 0 \quad (L > 0).$$

A negative second derivative makes the production function strictly concave. To obtain cost, invert the technology. Producing Q requires $L = Q^4$, costing wQ^4. Including the output-independent cost gives $C(Q) = C_1 + wQ^4$.

$$C'(Q) = 4wQ^3, \qquad C''(Q) = 12wQ^2 > 0 \quad (Q > 0).$$

Cost is therefore strictly convex. Economically, diminishing productivity means increasingly more input is needed for additional output, so marginal cost rises. Adding C_1 shifts the cost curve vertically without changing its curvature.

- **A:** It reverses both results: the fourth-root production curve bends downward, while the fourth-power cost curve bends upward.
- **C:** Both functions are differentiable on their stated positive domains, but production is concave rather than convex. Differentiability does not determine the sign of curvature.
- **D:** The production function is indeed concave, but the cost function has a positive second derivative and is convex. Smoothness cannot make both curvatures identical.

KEYWORDS: diminishing marginal product | production concavity | cost convexity | inverse production

29

MICROECONOMICS

Consumer theory

Difficulty: Easy | 2026 · Q29 | MCQ · 2 marks

Consider the statements I, II, and III: I. Income elasticity of demand for a normal good is positive. II. Income elasticity of demand for an inferior good is negative. III. Income elasticity of demand for a luxury good is less than 1. Which one of the following options is CORRECT?

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

EXPLANATION

Correct answer: D

Income elasticity describes demand's response to income with prices fixed: $\eta_m = (\partial q/\partial m)(m/q)$. Its sign identifies whether income raises or lowers demand; comparison with one tells us whether demand changes more or less than proportionately.

Statement I is true. Demand for a normal good rises with income, so its income elasticity is positive. Statement II is also true: for an inferior good, higher income reduces demand over the relevant range, giving negative income elasticity.

Statement III is false. A luxury has income elasticity greater than one: demand rises by a larger percentage than income. A normal necessity instead has elasticity between zero and one. "Luxury" here is a demand classification, not simply a synonym for an expensive good. Thus I and II are correct and III is not.

- **A:** It wrongly rejects the negative income response of an inferior good. Consumers switching away from that good as income rises is precisely what makes it inferior.
- **B:** It denies the positive income response defining a normal good and accepts a below-one elasticity for luxuries, which actually describes a normal necessity when positive.
- **C:** It wrongly treats inferior-good elasticity as nonnegative and accepts the necessity-like elasticity for a luxury. Both conflict with the definitions based on income responses.

KEYWORDS: income elasticity | normal good | inferior good | luxury good

30

MICROECONOMICS

Consumer theory

Difficulty: Easy | 2026 · Q30 | MCQ · 2 marks

Consider a demand curve represented as $q^a p^b = c$, where q is the quantity demanded, p is the per unit price, and a, b, and c are all positive constants. The absolute value of the own price elasticity of demand is

A. b/a

B. a/b

C. b

D. a

EXPLANATION

Correct answer: A

Elasticity measures a proportional quantity response, so the demand equation must be expressed in terms of quantity's dependence on price. Because $a > 0$, take the ath root after isolating q^a:

$$q^a = cp^{-b}, \qquad q = c^{1/a} p^{-b/a}.$$

For a power-form demand $q = Kp^r$, differentiation gives $dq/dp = rKp^{r-1}$. Multiplying by p/q cancels the level terms and leaves elasticity r. Applying this here,

$$e = \frac{dq}{dp}\frac{p}{q} = -\frac{b}{a}.$$

Since both exponents are positive, the signed elasticity is negative and its absolute value is b/a. The constant c changes the level of demand but not its proportional price response.

- **B:** The reciprocal a/b is the absolute elasticity obtained when price is expressed as a function of quantity. The question asks how quantity responds to price.
- **C:** Using b alone ignores that the original equation contains q^a, not q. Isolating quantity divides the price exponent by a.
- **D:** The quantity exponent a alone does not measure the price response. Both powers enter the ratio after quantity is isolated.

KEYWORDS: constant elasticity demand | absolute price elasticity | inverse demand elasticity

31

MICROECONOMICS

Theory of production and cost

Difficulty: Easy | 2026 · Q31 | MSQ · 2 marks

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 $\frac{dAP_L}{dL} < 0$

EXPLANATION

Correct answer: A, D

Average product is output per worker, $AP_L = Q(L)/L$, whereas marginal product is the extra output from an additional unit of labour, $MP_L = dQ/dL$, holding the other inputs fixed. The marginal contribution raises the average when it exceeds the existing average and lowers it when it falls below.

The quotient rule makes this precise for $L > 0$:
$\frac{dAP_L}{dL} = \frac{LQ'(L) - Q(L)}{L^2} = \frac{MP_L - AP_L}{L}$.

The denominator is positive, so the sign depends entirely on the marginal-minus-average difference.

- **A:** When marginal product is greater than average product, the numerator is positive. Additional labour raises output per worker, so the average-product curve slopes upward.
- **B:** A marginal contribution below the current average drags output per worker down. It gives a negative derivative, not the stated positive one.
- **C:** A worker adding more output than the existing per-worker average raises that average; the derivative cannot be negative under this inequality.
- **D:** When marginal product falls below average product, the numerator is negative and the average-product curve slopes downward.

Equality of the two products gives a stationary average product, although additional shape information is needed to identify that stationary point as a maximum. Falling marginal product alone also need not imply falling average product: marginal product may still be above the average.

KEYWORDS: average product | marginal product | marginal average relationship

32

MICROECONOMICS

Perfect competition and partial equilibrium

Difficulty: Easy | 2026 · Q32 | MSQ · 2 marks

Consider the following demand and supply functions:

Demand Function	$D(p) = 400 - 8p$
Supply Function	$S(p) = 2p$

where $D(p)$, $S(p)$, and p represent quantity demanded, quantity supplied, and unit price, respectively; and the choke price is Rupees 50.

Identify which of the following statement(s) is/are CORRECT.

A. The choke price is equal to the market clearing price.

B. If a 25% ad valorem tax is imposed by the government, then the new market clearing price is equal to the choke price.

C. If a 100% ad valorem 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.

EXPLANATION

Correct answer: C

A choke price is the buyer price at which demand becomes zero. Here $400 - 8p = 0$ gives 50 rupees. This is a property of demand, not necessarily an equilibrium price. A tax creates a gap between the buyer price p_b and seller receipt p_s; market clearing compares $D(p_b)$ with $S(p_s)$.

- **A:** Without tax, $400 - 8p = 2p$ gives $p = 40$ and quantity 80. The equilibrium therefore lies below the choke price.
- **B:** Using the usual tax-exclusive convention, a 25 percent ad valorem tax means $p_b = 1.25p_s$. Market clearing gives $400 - 8(1.25p_s) = 2p_s$, so $p_s = 100/3$ and $p_b = 125/3 \approx 41.67$. Neither price equals 50, and trade remains positive.
- **C:** A 100 percent ad valorem tax gives $p_b = 2p_s$ under that convention. The original demand curve still reaches zero at buyer price 50: taxation does not erase the choke price. The equilibrium buyer price is $400/9 \approx 44.44$, also below it.
- **D:** A 10-rupee unit tax means $p_b = p_s + 10$. Hence $400 - 8(p_s + 10) = 2p_s$, yielding $p_s = 32$ and $p_b = 42$, with quantity 64. Again the market clears before demand falls to zero.

The existence of a choke price should not be confused with whether a particular tax pushes the market to that price.

KEYWORDS: choke price | ad valorem tax | unit tax | competitive equilibrium

33

MACROECONOMICS

Income determination and policy in the short run

Difficulty: Medium | 2026 · Q33 | MSQ · 2 marks

Consider the following goods and money market equations:

Goods market	Money market
$Y = C + I + G$	$M^s = M^d$
$C = 20 + 0.75(Y - T)$	$M^d = 0.2Y - 15i$
$T = -40 + 0.2Y$	$M^s = 200$
$I = 240 - 8i$	
$G = 300$	

where Y is output, C is consumption expenditure, I is investment expenditure, G is government expenditure, T is tax, i is interest rate, M^s is money supply, and M^d is money demand.

Identify the CORRECT option(s).

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 $Y = 1200$

EXPLANATION

Correct answer: A, B

Goods-market and money-market equilibrium must hold at the same income and interest rate. Derive each equation before testing the proposed outcomes. The negative autonomous tax is a transfer: $T = -40 + 0.2Y$ implies disposable income $Y - T = 0.8Y + 40$, not $0.8Y - 40$.

- **A:** Consumption becomes $C = 20 + 0.75(0.8Y + 40) = 50 + 0.6Y$. Adding investment and government spending gives $Y = 50 + 0.6Y + 240 - 8i + 300$. Hence $0.4Y = 590 - 8i$, or $i = 73.75 - 0.05Y$. A is correct.
- **B:** Money-market clearing requires $200 = 0.2Y - 15i$. Rearranging gives $i = Y/75 - 40/3$. Rounding the coefficients gives the displayed $i = 0.0133Y - 13.33$, so B is correct as an approximate decimal expression.
- **C:** At $Y = 1400$ and $i = 7$, desired money is $0.2(1400) - 15(7) = 175$, below the supply of 200. Goods spending is also only $50 + 0.6(1400) + 240 - 8(7) + 300 = 1374$, not 1400. The proposed pair clears neither market.
- **D:** Reducing government purchases does not change the money equation. At $Y = 1200$ and $i = 4$, desired money is $240 - 60 = 180$, still below 200. Goods spending with $G = 200$ is $770 + 208 + 200 = 1178$, not 1200. This pair also fails both requirements.

Use the unrounded money equation for calculations. A proposed equilibrium can be rejected as soon as it fails either market; there is no need to solve every alternative model from scratch.

KEYWORDS: is lm equilibrium | transfer payments | government spending cut | equilibrium verification

34

MACROECONOMICS

Open economy macroeconomics

Difficulty: Easy | 2026 · Q34 | MSQ · 2 marks

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.

EXPLANATION

Correct answer: B

Currency appreciation means one unit of the domestic currency buys more foreign currency. Hold the goods prices in each producer's own currency fixed so that the exchange-rate effect can be isolated.

Suppose a dollar initially costs Rs. 80. A foreign product priced at 1 dollar costs Rs. 80 to an Indian buyer, while an Indian product priced at Rs. 800 costs 10 dollars to a foreign buyer. If the rupee appreciates and a dollar costs only Rs. 70, the foreign product costs Rs. 70, but the Indian product costs $800/70 \approx 11.43$ dollars.

- **A:** Appreciation makes foreign goods cheaper to domestic buyers, as the imported product's rupee price falls from 80 to 70. The statement reverses that effect.
- **B:** A stronger domestic currency makes a fixed domestic-currency price larger in foreign-currency terms. The Rs. 800 product becoming about 11.43 dollars instead of 10 illustrates this statement.
- **C:** Depreciation has the opposite import effect. If a dollar instead rises to Rs. 90, the 1-dollar foreign product costs Rs. 90, making it more expensive, not less.
- **D:** With that depreciation, the Rs. 800 domestic product costs only $800/90 \approx 8.89$ dollars abroad. It becomes cheaper to foreign buyers, not more expensive.

KEYWORDS: currency appreciation | currency depreciation | import prices | export prices

35

MACROECONOMICS

Money Supply and Money Demand

Difficulty: Easy | 2026 · Q35 | MSQ · 2 marks

In the context of Keynesian money demand, ceteris paribus, the real demand for money increases when

A. interest rate decreases

B. income increases

C. price level decreases

D. interest rate increases

EXPLANATION

Correct answer: A, B

Real money demand is the purchasing power people want to hold as money. In the usual Keynesian model it is written $M^d/P = L(Y, i)$, where Y is real income and i is the nominal interest rate on alternative assets. Income raises the need for transactions balances; interest is the return forgone by holding money rather than an interest-bearing asset.

- **A:** When the interest rate falls, holding money sacrifices less interest income. People are willing to hold more real balances, other things unchanged.
- **B:** Higher real income normally entails more spending and transactions. Desired real money holdings therefore increase.
- **C:** A lower price level alone does not raise the desired purchasing power $L(Y, i)$ when real income and interest are fixed. Instead, fewer nominal rupees are needed to provide the same real balances. A fixed nominal money supply would have greater real value, but that is a change in real supply, not in the demand function.
- **D:** A higher interest rate makes money more costly to hold relative to interest-bearing assets. Real money demand falls rather than rises.

For a simple price-level comparison, suppose people want money sufficient to buy ten baskets. If a basket's price falls from Rs. 100 to Rs. 80, nominal money demand falls from Rs. 1000 to Rs. 800 while desired real balances remain ten baskets. This distinguishes a price-level change from the income and interest effects in A and B.

KEYWORDS: keynesian money demand | opportunity cost of money | transactions demand | real money balances

INDIAN ECONOMY

36 Demographic Issues

Difficulty: Medium | 2026 · Q36 | MSQ · 2 marks

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.

EXPLANATION

Correct answer: A, B, D

The Economic Survey 2024–25 discusses both changes in the workforce's skills and programmes intended to improve employability. These are related, but a trend in skills and a scheme announcement are different kinds of evidence.

- **A:** The Survey reports an increase in the proportion of skilled people between 2018–19 and 2023–24 across socio-economic classifications, including rural, urban and gender groups. An increase in every group does not mean that the groups reached equal skill levels or that everyone became trained.
- **B:** The PM Internship Scheme was announced in the Union Budget 2024–25. Internships provide workplace experience, helping young people connect what they have learned with tasks performed in businesses.
- **C:** Men were not the majority of Jan Shikshan Sansthan beneficiaries. The Survey reports women as about 82% of the total, so the male-majority claim fails.
- **D:** The same figure supports a female majority. It is the share of women among JSS beneficiaries, not the percentage of all Indian women covered by JSS.

KEYWORDS: economic survey 2024 25 | pm internship scheme | jss women beneficiaries | vocational training trends

37

MICROECONOMICS

Theory of production and cost

Difficulty: Easy | 2026 · Q37 | MSQ · 2 marks

Consider the following Cobb-Douglas production function: $Q(K, L) = AK^{0.5}L^{0.5};\ A > 0$, where Q is the quantity produced using two inputs, capital (K) and labour (L). Assuming that K is a positive constant, identify the CORRECT statement(s).

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.

EXPLANATION

Correct answer: B, C

When capital is fixed, $AK^{1/2}$ is a positive constant. Output is therefore a positive multiple of $\sqrt{L}$: hiring more labour raises output, but the extra output from each further labour unit becomes smaller.

For positive labour, the first and second derivatives are

$$MPL = \frac{\partial Q}{\partial L} = \frac{A\sqrt{K}}{2\sqrt{L}} > 0, \qquad \frac{\partial^2 Q}{\partial L^2} = -\frac{A\sqrt{K}}{4L^{3/2}} < 0.$$

The first derivative determines whether output rises or falls. The second determines whether the slope becomes larger or smaller.

- **A:** Marginal product contains $1/\sqrt{L}$, which decreases as labour increases. Thus marginal product does not increase.
- **B:** This correctly describes diminishing marginal product: with capital fixed, each additional labour unit adds less output than before.
- **C:** Positive marginal product means output rises; its decline means that output rises at a progressively slower rate. Both parts of the statement hold.
- **D:** Diminishing marginal product is not negative marginal product. The derivative remains positive, so total output does not fall.

These are short-run conclusions with capital held constant. They do not imply decreasing returns to scale, which would require examining a simultaneous proportional increase in both inputs.

KEYWORDS: cobb douglas production | diminishing marginal product | short run production

38

INDIAN ECONOMY

Poverty, Inequality, Inflation and Unemployment

Difficulty: Medium | 2026 · Q38 | MSQ · 2 marks

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.

EXPLANATION

Correct answer: A, B, D

Structural change concerns the economy's broad movement over time, rather than an uninterrupted trend in every year.

- **A:** Agriculture's share of employment fell from about 61.5% in 2000 to 42.4% in 2019. Workers increasingly entered non-agricultural activities with higher average productivity. The pandemic partly reversed that movement, but agriculture's share in 2022, about 45.4%, was still below its 2000 level.
- **B:** Construction has been relatively responsive in creating employment as its output grows. Employment elasticity measures percentage employment growth divided by percentage output growth. For example, employment growth of 6% alongside output growth of 10% gives an elasticity of 0.6. A relatively high elasticity need not exceed one.
- **C:** Production has generally become more capital-intensive, with greater use of machinery and labour-saving technology. This contradicts the claim of increasing labour intensity.
- **D:** Services have been the main driver of output growth. Leading output growth does not mean employing the largest number of workers: agriculture can retain a large workforce share while services contribute more to growth.

KEYWORDS: structural employment change | construction employment elasticity | capital intensity | services led growth

39

INDIAN ECONOMY

Poverty, Inequality, Inflation and Unemployment

Difficulty: Hard | 2026 · Q39 | MSQ · 2 marks

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 (Reduced Inequalities)?

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

EXPLANATION

Correct answer: A, B

Reduced inequalities covers both the distribution of economic resources and inclusion in public institutions. The SDG India Index 2023–24 therefore uses more than a single income measure under Goal 10.

- **A:** The share of Panchayati Raj seats held by women appears in the Goal 10 table. It measures representation in local government. Although women's representation also relates to gender equality, that connection does not exclude this indicator from Goal 10.
- **B:** The Gini coefficient is also listed under Goal 10. It summarises inequality in a distribution: on the zero-to-one scale, zero means complete equality, while a higher value indicates greater concentration. It measures dispersion, not average prosperity.
- **C:** The unemployment rate for people aged 15–59 appears under Goal 8, Decent Work and Economic Growth, rather than the Goal 10 indicator table.
- **D:** Annual growth of GDP per capita at constant prices is likewise a Goal 8 indicator. Constant prices remove the effect of price changes, so this tracks growth in real output per person. A rising average alone does not establish that its benefits are distributed more equally.

KEYWORDS: sdg india index 2023 24 | sdg 10 indicators | gini coefficient | womens pri representation

40

INDIAN ECONOMY

Introduction and features

Difficulty: Easy | 2026 · Q40 | MSQ · 2 marks

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)

EXPLANATION

Correct answer: A, B, D

A sector regulator makes or enforces rules for participants within its statutory jurisdiction. This differs from a development finance institution, whose principal task is to provide finance and support economic development. Being created by law does not, by itself, make an institution a sector regulator.

- **A:** SEBI regulates the securities market and protects investors. Its functions concern market participants and conduct, so it is a regulatory institution.
- **B:** IRDAI regulates and promotes the orderly development of insurance and protects policyholders' interests. Its development role exists alongside explicit regulatory powers.
- **C:** SIDBI primarily promotes, finances and develops the MSME sector. Lending, refinancing and coordinating development institutions do not make it the general sector regulator in the sense used for the other bodies here.
- **D:** CERC regulates matters within its central electricity jurisdiction, including inter-state transmission and specified generation tariffs. It is a regulator even though it operates outside financial markets.

KEYWORDS: sector regulators | development finance institutions | sidbi

41

STATISTICS FOR ECONOMICS

Descriptive Statistics

Difficulty: Easy | 2026 · Q41 | NAT · 1 mark

Harmonic mean of the following twelve observations: 15, 20, 20, 5, 20, 20, 15, 20, 15, 20, 20, and 20 is _____ (rounded off to one decimal place).

Accepted answer: **14.5 to 15.5 (inclusive)**

EXPLANATION

Correct answer: 15.0

The harmonic mean is the reciprocal of the arithmetic mean of the reciprocals. For positive observations $x_1, \ldots, x_n$, its formula is

$$H = \frac{n}{\sum_{i=1}^{n} 1/x_i}.$$

First count repeated observations carefully. The list contains three values of fifteen, eight values of twenty and one value of five. Their frequencies add to twelve, matching the number in the question.

Instead of writing twelve separate fractions, collect equal reciprocals:

$$\sum_{i=1}^{12} \frac{1}{x_i} = \frac{3}{15} + \frac{8}{20} + \frac{1}{5} = 0.2 + 0.4 + 0.2 = 0.8.$$

Therefore

$$H = \frac{12}{0.8} = 15.$$

To the requested one decimal place, report 15.0. The numerator is the total number of observations, not the number of distinct values. Treating five, fifteen and twenty as equally frequent would describe a different data set.

A small value has a large reciprocal, so the single five has a noticeable effect on this average. As a check, the arithmetic mean is $(3 \cdot 15 + 8 \cdot 20 + 5)/12 = 17.5$. The harmonic mean of positive observations cannot exceed their arithmetic mean, and the calculated fifteen satisfies that condition. It also lies between the smallest and largest observations.

KEYWORDS: harmonic mean | frequency weights

42

STATISTICS FOR ECONOMICS

Probability Theory

Difficulty: Easy | 2026 · Q42 | NAT · 1 mark

It is given that the Prob $(-1 \leq z \leq 1) = 0.683$, Prob $(-2 \leq z \leq 2) = 0.954$, and 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 Prob $(1 \leq X \leq 7) =$ _____ (rounded off to three decimal places).

Accepted answer: **0.800 to 0.820 (inclusive)**

EXPLANATION

Correct answer: 0.819

The supplied probabilities refer to a standard normal variable with mean zero and standard deviation one. Convert the given X to that scale by subtracting its mean and dividing by its standard deviation. Its variance is 4, so its standard deviation is 2, not 4.

$$Z = \frac{X-5}{2}, \qquad 1 \leq X \leq 7 \iff -2 \leq Z \leq 1.$$

This interval is not symmetric around zero, so no single supplied central probability applies directly. Split it at zero. Normal symmetry gives

$$P(-2 \leq Z \leq 0) = \frac{0.954}{2} = 0.477,$$

$$P(0 \leq Z \leq 1) = \frac{0.683}{2} = 0.3415.$$

The intervals meet only at a point, which has probability zero for a continuous normal variable. Their probabilities therefore add to $0.477 + 0.3415 = 0.8185$. Rounded to three decimal places using ordinary half-up rounding, this is 0.819.

As a check, the interval from minus two to one contains the central interval from minus one to one but is contained within minus two to two. Its probability must therefore lie between 0.683 and 0.954, as the result does.

The given three-standard-deviation probability is not needed. Retain the four-decimal intermediate value until the final rounding step.

KEYWORDS: normal standardization | normal symmetry | asymmetric interval probability

43

STATISTICS FOR ECONOMICS

Descriptive Statistics

Difficulty: Medium | 2026 · Q43 | NAT · 1 mark

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 _____ (rounded off to two decimal places).

Accepted answer: **6.00 to 7.00 (inclusive)**

EXPLANATION

Correct answer: 6.54

When observations are added, both the mean and the spread around that mean change. We cannot simply append deviations measured from the old mean. A convenient way to combine the groups is to recover the original sum and sum of squares, then calculate variance for all eight observations.

For these descriptive data, use the variance with divisor equal to the number of observations: $\sigma^2 = \frac{\sum x_i^2}{n} - \bar{x}^2$.

The original five observations have sum $5 \cdot 40 = 200$. Rearranging the variance identity gives their sum of squares:

$\sum_{i=1}^{5} x_i^2 = 5(\sigma^2 + \bar{x}^2) = 5(49 + 1600) = 8245.$

The three new observations contribute $30 + 35 + 40 = 105$ to the sum and $30^2 + 35^2 + 40^2 = 3725$ to the sum of squares. For all eight observations,

$\sum x_i = 305, \qquad \sum x_i^2 = 11970, \qquad \bar{x} = \frac{305}{8} = 38.125.$

Now calculate the new variance and take its square root:

$\sigma_{\text{new}}^2 = \frac{11970}{8} - (38.125)^2 = 42.734375,$

$\sigma_{\text{new}} = \sqrt{42.734375} = 6.537153\ldots \approx 6.54.$

The standard deviation is Rs. 6.54; variance would be measured in squared rupees. Keep the mean unrounded until the end because squaring a prematurely rounded mean can change the final answer.

The divisor here is eight, consistent with treating the listed group as the complete descriptive data. The divisor $n - 1$ belongs to the usual unbiased sample-variance estimator and would require a different interpretation of the supplied standard deviation. Also, the old mean forty cannot be reused after adding observations whose mean is only thirty-five.

KEYWORDS: combined variance | sum of squares | population standard deviation

44

MICROECONOMICS

Introductory Game theory

Difficulty: Easy | 2026 · Q44 | NAT · 1 mark

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).

Accepted answer: **0.4 to 0.6 (inclusive)**

EXPLANATION

Correct answer: 0.5

In a symmetric coexistence equilibrium, a randomly encountered opponent is Hawk with probability p and Dove with probability $1 - p$. Both behaviours can be used only if they earn the same expected payoff; otherwise everyone using the worse one has an incentive to switch.

A Hawk receives -2 against Hawk and 4 against Dove, so

$$U(H) = -2p + 4(1 - p) = 4 - 6p.$$

A Dove receives 0 against Hawk and 2 against Dove:

$$U(D) = 0p + 2(1 - p) = 2 - 2p.$$

Indifference requires $4 - 6p = 2 - 2p$, hence $4p = 2$ and $p = 0.5$. This means half the population is Hawkish under the symmetric random-matching interpretation.

At this fraction both expected payoffs equal 1. If Hawks are less common, $U(H) - U(D) = 2 - 4p$ is positive; if they are more common, it is negative. The all-Hawk and all-Dove populations therefore do not satisfy the same coexistence condition. Also, 0.5 is a fraction, not 0.5 percent: it corresponds to 50 percent.

KEYWORDS hawk dove game | symmetric mixed equilibrium | expected payoff

45

MICROECONOMICS

Consumer theory

Difficulty: Easy | 2026 · Q45 | NAT · 1 mark

The utility function of a consumer in a two-good world is given by $u(x1, x2) = minimum\{x1, x2\}$, 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).

Accepted answer: **3**

EXPLANATION

Correct answer: 3

The utility $\min\{x_1, x_2\}$ counts complete one-for-one pairs of the goods. An extra unit of only the more abundant good does not raise utility. At positive prices, optimal consumption therefore has $x1 = x2$: money spent on an unmatched excess could instead help increase the number of complete pairs.

Let income be m. At prices one and two, one pair costs three rupees. Substituting equal quantities into the exhausted budget gives

$$m = x1 + 2x2 = 3x2, \qquad x2 = \frac{m}{3}.$$

An Engel curve holds prices fixed and relates one good's optimal quantity to income. Here income is on the vertical axis and x_2 on the horizontal axis. Its slope is therefore

$$\frac{dm}{dx2} = 3.$$

The answer is exactly 3 rupees of additional income per extra unit of good two, accompanied by the matching extra unit of good one. The reciprocal $1/3$ is dx_2/dm, which would be the slope if the axes were reversed. The explicit axis convention determines which derivative is required.

KEYWORDS: perfect complements | engel curve | axis convention

46

MACROECONOMICS

National income accounting

Difficulty: Easy | 2026 · Q46 | NAT · 1 mark

Consider the following information for a country:

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

The Net National Product (NNP) of the country is _____ (in integer).

Accepted answer: **6680**

EXPLANATION

Correct answer: 6680

Two adjustments are required. "National" attributes income to residents rather than simply to production within the territory; "net" removes the depreciation of fixed capital used up during production.

First find net factor income from abroad by subtracting outward payments from inward receipts:

$$NFIA = 200 - 220 = -20.$$

Because more factor income is paid abroad than received, gross national product is lower than GDP: $GNP = 7500 - 20 = 7480$.

Now subtract depreciation to obtain net national product:

$$NNP = 7480 - 800 = 6680.$$

The result is in the same monetary units as the table. Reversing receipts and payments would incorrectly raise GNP; adding depreciation would move in the wrong direction from gross to net.

KEYWORDS: net national product | net factor income abroad | depreciation

47

MACROECONOMICS

Long-run growth

Difficulty: Easy | 2026 · Q47 | NAT · 1 mark

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 _____ (in integer).

Accepted answer: **18 to 22 (inclusive)**

EXPLANATION

Correct answer: 20

In the standard AK growth equation, saving finances new capital, depreciation removes existing capital, and population growth spreads capital across more people. Since output is proportional to capital, the per-capita output growth rate is

$$g_y = sA - \delta - n.$$

Here s is the saving fraction, $A = 0.5$ is output per unit of capital, depreciation is $\delta = 0.04$ and population growth is $n = 0.02$. To sustain per-capita growth of 0.04, investment per unit of capital must cover all three requirements:

$$sA = g_y + \delta + n = 0.04 + 0.04 + 0.02 = 0.10.$$

Thus $0.5s = 0.10$, giving $s = 0.20$, or 20%.

A check clarifies the role of population: at this saving rate, aggregate capital and output grow at $sA - \delta = 0.10 - 0.04 = 0.06$. Subtract population growth of 2 percent to get 4-percent per-capita growth under the model's standard growth-rate convention.

Ignoring population would produce a saving rate of 16 percent, sufficient for 4-percent aggregate growth but only 2-percent per-capita growth. Keep all rates as fractions during the calculation and convert the final saving fraction to a percentage at the end.

KEYWORDS: ak growth model | saving rate | population growth | capital depreciation

48

MACROECONOMICS

Unemployment and Inflation

Difficulty: Easy | 2026 · Q48 | NAT · 1 mark

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 _____ (rounded off to one decimal place).

Accepted answer: **4.0 to 5.0 (inclusive)**

EXPLANATION

Correct answer: 4.5

Expected inflation provides the starting point in the expectations-augmented Phillips curve. Actual inflation is lower than that expectation when unemployment exceeds its natural rate, because the labour market has more slack. The standard relation is

$$\pi = \pi^e - \alpha(u - u_n),$$

where α measures the response to the unemployment gap. Use all rates in percentage units. The gap is $5 - 4 = 1$ percentage point, so responsiveness 0.5 reduces inflation by 0.5 percentage point from the expected 5%:

$$\pi = 5 - 0.5(5 - 4) = 4.5\%.$$

Thus the answer to one decimal place is 4.5. A result above 5% would reverse the sign of the unemployment effect. Also, use the one-percentage-point gap, not actual unemployment of 5% by itself; at the natural rate the gap would be zero and actual inflation would equal the expected rate.

KEYWORDS: expectations augmented phillips curve | unemployment gap | inflation expectations

49

MATHEMATICS FOR ECONOMICS

Optimization

Difficulty: Easy | 2026 · Q49 | NAT · 1 mark

The maximum value of the objective function $(x+y)$ subject to the constraint $(x^2+y^2)=2$ is _____ (in integer).

Accepted answer: **2**

EXPLANATION

Correct answer: 2

The constraint fixes the total squared size of the two coordinates. To make their sum large, we need to know how large the product xy can be, because $(x+y)^2 = x^2+y^2+2xy$.

A square cannot be negative, so $(x-y)^2 = x^2+y^2-2xy \geq 0$. With $x^2+y^2=2$, this gives $2xy \leq 2$ and hence $(x+y)^2 \leq 4$. This is the particular Cauchy–Schwarz inequality used below, derived without needing to recall the theorem.

By Cauchy–Schwarz,
$(x+y)^2 \leq (1^2+1^2)(x^2+y^2) = 2 \cdot 2 = 4.$

Hence $x+y \leq 2$. This bound is attained at $x=y=1$, which satisfies $x^2+y^2=2$. The maximum is therefore exactly two.

Equality also occurs at $x=y=-1$, but that point gives the minimum sum -2. The sign of the sum distinguishes the maximum from the other equality case.

Equality in the square inequality requires $x-y=0$, so the coordinates must be equal. Combining $x=y$ with the constraint gives $2x^2=2$, leaving the two points $(1,1)$ and $(-1,-1)$.

A squared bound controls the magnitude of the sum: $|x+y| \leq 2$, or $-2 \leq x+y \leq 2$. To maximize the sum itself, select the positive equality case. The point $(\sqrt{2},0)$ is feasible but gives only $\sqrt{2}$; concentrating all the squared size in one coordinate is less effective than the equal positive allocation.

KEYWORDS: cauchy schwarz inequality | equality condition | constrained maximum

50

MATHEMATICS FOR ECONOMICS

Differential calculus

Difficulty: Easy | 2026 · Q50 | NAT · 1 mark

The value of the first derivative of $f(x) = (3x^3 + 2x^2 + x + 1)^2$ evaluated at $x = 2$ is _____ (in integer).

Accepted answer: **3150**

EXPLANATION

Correct answer: 3150

This function is a composition: first calculate the polynomial, then square its result. When x changes, the square changes because the inner polynomial changes. The chain rule multiplies these two rates of change.

Writing $u = g(x)$ makes the roles clear: $df/du = 2u$, while $du/dx = g'(x)$. Therefore $df/dx = (df/du)(du/dx) = 2g(x)g'(x)$.

Let $g(x) = 3x^3 + 2x^2 + x + 1$. The outer square requires the chain rule:

$$f'(x) = 2g(x)g'(x), \qquad g'(x) = 9x^2 + 4x + 1.$$

At $x = 2$, the inner function and its derivative are

$$g(2) = 24 + 8 + 2 + 1 = 35, \qquad g'(2) = 36 + 8 + 1 = 45.$$

Therefore $f'(2) = 2 \cdot 35 \cdot 45 = 3150$. Differentiating the outer square supplies the factor $2g(x)$; the additional factor $g'(x)$ accounts for how the inner polynomial changes.

For the inner derivative, the power rule gives $d(3x^3)/dx = 9x^2$ and $d(2x^2)/dx = 4x$. The derivative of x is one and the derivative of the constant one is zero. This produces the displayed $9x^2 + 4x + 1$.

A common error is to stop at $2g(2) = 70$. That differentiates with respect to the inner quantity, not with respect to x. Multiplying by $g'(2) = 45$ converts it to the rate requested. Differentiate the function before substituting $x = 2$; substituting first would leave only a constant and destroy the rate-of-change information.

KEYWORDS: chain rule | polynomial derivative | composite function

51

STATISTICS FOR ECONOMICS

Hypothesis Testing

Difficulty: Medium | 2026 · Q51 | NAT · 2 marks

It is given that the variance of a population is 4, but its mean (μ) is unknown. A sample of size 25 is drawn randomly from this population to test the null hypothesis $H_0 : \mu = 4.8$. The sample elements are $x_1, x_2, \ldots, x_{25}$ such that $\sum_{i=1}^{25} x_i = 150$ and $\sum_{i=1}^{25} x_i^2 = 1116$. Based on the above information, the calculated value of t-statistic is _____ (in integer).

Accepted answer: **2**

EXPLANATION

Correct answer: 2

The question asks for the sample-based t statistic. Its denominator uses the sample standard deviation s, so we first recover that quantity from the supplied totals.

The sample mean is $\bar{x} = 150/25 = 6$. The sum of squared deviations from the sample mean can be calculated without listing every observation:

$$\sum (x_i - \bar{x})^2 = \sum x_i^2 - n\bar{x}^2 = 1116 - 25(6^2) = 216.$$

Using the sample-variance divisor $n - 1$ gives

$$s^2 = \frac{216}{24} = 9, \qquad s = 3, \qquad SE(\bar{x}) = \frac{s}{\sqrt{n}} = \frac{3}{5} = 0.6.$$

Subtract the null mean, $\mu_0 = 4.8$, and divide by this standard error:

$$t = \frac{\bar{x} - \mu 0}{s/\sqrt{n}} = \frac{6 - 4.8}{0.6} = 2.$$

The result is positive because the observed mean exceeds the null mean. It measures a difference of two estimated standard errors.

The supplied population variance four would instead give known standard deviation two and the z statistic $(6 - 4.8)/(2/5) = 3$. Known population variance would ordinarily favor that known-variance procedure, but it does not change the algebraic sample-based statistic explicitly requested here. Do not replace the sample standard deviation three with the population standard deviation two inside the t calculation.

KEYWORDS: one sample t statistic | sample variance | standard error

52

MATHEMATICS FOR ECONOMICS

Optimization

Difficulty: Medium | 2026 · Q52 | NAT · 2 marks

Consider a firm is having monopoly in production of two goods X and Y. The markets for the two goods do not interact. The profit function is given by

$$\pi(x, y) = 25x + 13y - 2.5x^2 - y^2 + xy - 10$$

where, x and y are quantities of goods X and Y, respectively.

The maximum profit is _____ (rounded off to one decimal place).

Accepted answer: **142 to 143 (inclusive)**

EXPLANATION

Correct answer: 142.5

The partial derivatives of profit are marginal profits: each measures the gain from increasing one output while holding the other fixed. At an interior maximum, neither small increase nor small decrease should raise profit, so both marginal profits must be zero.

Use the supplied profit function as a whole. The xy term means that its partial derivative with respect to x includes y, and its partial derivative with respect to y includes x. Separate markets do not justify dropping a term from the stated profit function.

Differentiate profit with respect to each quantity:

$$\pi_x = 25 - 5x + y = 0, \qquad \pi_y = 13 - 2y + x = 0.$$

These equations give $y = 5x - 25$ and $x = 2y - 13$. Substitute $y = 5x - 25$ into the second relation: $x = 2(5x - 25) - 13 = 10x - 63$. Thus $9x = 63$, giving $x = 7$ and then $y = 10$. Both quantities are positive, as the interior calculation requires.

The Hessian is

$$H = \begin{pmatrix} -5 & 1 \\ 1 & -2 \end{pmatrix}.$$

Its first leading principal minor is negative and its determinant is $10 - 1 = 9 > 0$. Hence it is negative definite. Profit is strictly concave, so this stationary point is the unique global maximum, including over the nonnegative quantity region.

Substitute the quantities into profit:

$$\pi(7, 10) = 175 + 130 - 122.5 - 100 + 70 - 10 = 142.5.$$

The maximum is 142.5 in the profit function's monetary units, already expressed to one decimal place.

Zero marginal profits identify a candidate. The curvature check establishes that it is a maximum. The Hessian records all second partial derivatives, including the cross effects; checking only the two negative diagonal entries would not be sufficient. Here its quadratic form is

$$-5u^2 + 2uv - 2v^2 = -5(u - v/5)^2 - \tfrac{9}{5}v^2 < 0$$

for every nonzero direction (u, v). Profit therefore bends downward in every direction, which supports the global maximum conclusion.

The constant cost of ten disappears when differentiating, so it does not change the optimal quantities. It must still be subtracted when calculating the maximum profit. Forgetting it would give 152.5 instead of 142.5.

KEYWORDS: profit maximization | first order condition | hessian | negative definiteness

53

STATISTICS FOR ECONOMICS

Probability Theory

Difficulty: Easy | 2026 · Q53 | NAT · 2 marks

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).

Accepted answer: **18 to 22 (inclusive)**

EXPLANATION

Correct answer: 20

Let R denote rain and G a good picnic. The question tells us the picnic was good and asks how likely rain was under that information. This is $P(R \mid G)$, which differs from the given $P(G \mid R) = 0.3$.

A good picnic can occur on a rainy day or a dry day. The two joint probabilities are

$$P(R \cap G) = P(R)P(G \mid R) = 0.4(0.3) = 0.12,$$

$$P(R^c \cap G) = 0.6(0.8) = 0.48.$$

Adding these disjoint possibilities gives $P(G) = 0.12 + 0.48 = 0.60$. Bayes' rule now yields

$$P(R \mid G) = \frac{P(R \cap G)}{P(G)} = \frac{0.12}{0.60} = 0.20.$$

The question requests a percentage, so multiply by 100: $0.20 = 20\%$.

For an intuitive check, among 100 occasions following this model, the expected counts are 12 good rainy picnics and 48 good dry picnics. Restricting attention to the 60 good picnics leaves 12 rainy ones: $12/60 = 20\%$.

The posterior rain probability is lower than the original 40% because good picnics are more likely in dry weather. Using 12% would report the probability of rain and enjoyment together, rather than rain conditional on enjoyment. The denominator must include good picnics from both weather conditions.

KEYWORDS: bayes theorem | total probability | posterior probability

54

MICROECONOMICS

Market failure and government policy

Difficulty: Medium | 2026 · Q54 | NAT · 2 marks

Consider the following information in the context of negative production externality:

Supply curve: $P = 15 + 0.08Q$

Demand curve: $P = 40 - 0.15Q$

where, P is price per unit and Q is quantity.

If marginal external cost is $0.06Q$, then the socially efficient equilibrium price is _____ (rounded off to two decimal places).

Accepted answer: **26.00 to 28.00 (inclusive)**

EXPLANATION

Correct answer: 27.07

The supply curve represents marginal private cost. Pollution adds a cost borne by others, so marginal social cost is the sum of private and external costs:

$$MSC = 15 + 0.08Q + 0.06Q = 15 + 0.14Q.$$

Demand measures marginal benefit. With no consumption externality specified, the efficient quantity equates demand to marginal social cost:

$$40 - 0.15Q = 15 + 0.14Q, \qquad Q_s = \frac{25}{0.29} = \frac{2500}{29}.$$

Evaluate demand at this quantity to obtain the socially efficient buyer price:

$$P_s = 40 - 0.15\left(\frac{2500}{29}\right) = \frac{785}{29} = 27.0689655\ldots.$$

It rounds to 27.07 price units per unit of output. Keep the unrounded quantity until the final calculation.

For comparison, marginal private cost at this quantity is $635/29 \approx 21.90$, and marginal external damage is $150/29 \approx 5.17$. A Pigouvian tax of that amount separates the buyer price from the producer's net receipt; the two add to $785/29$. Substituting efficient output into the original private supply curve would give the net producer price, not the requested social-equilibrium price.

KEYWORDS: marginal social cost | negative production externality | efficient price | pigouvian tax

55

MICROECONOMICS

Consumer theory

Difficulty: Medium | 2026 · Q55 | NAT · 2 marks

In a two-good world, the utility function of a consumer is given by $u(x1, x2) = x1x2$, where $x1$ and x_2 are the quantities consumed of the two goods X_1 and X_2, respectively. The market price of each of the goods is Rupee 1 and consumer's disposable income is Rupees 100. If the price of X_2 is doubled keeping the price of X_1 unchanged, then the associated Compensating Variation is Rupees _____ (rounded off to one decimal place).

Accepted answer: **41.3 to 41.5 (inclusive)**

EXPLANATION

Correct answer: 41.4

Compensating variation for a price rise is the additional income needed at the new prices to restore the consumer's original utility. The consumer may change the quantities purchased; compensation need not cover the cost of buying the exact old bundle.

Initially both prices are one. Utility $x1x2$ is maximized by equal expenditure on the two goods, so $x1 = x_2 = 50$ and initial utility is 2500.

At the new prices, minimize spending $x_1 + 2x_2$ while achieving $x1x_2 = 2500$. Substituting $x_1 = 2500/x_2$ gives

$$E(x_2) = \frac{2500}{x2} + 2x_2.$$

The first-order condition is $-2500/x_2^2 + 2 = 0$, hence $x_2 = 25\sqrt{2}$ and $x_1 = 50\sqrt{2}$. The second derivative $5000/x_2^3$ is positive, confirming the minimum. Required spending is

$$E = 50\sqrt{2} + 2(25\sqrt{2}) = 100\sqrt{2}.$$

Subtract the income already available:

$$CV = 100\sqrt{2} - 100 = 41.421356\ldots.$$

Thus the compensation is Rs. 41.4 to one decimal place. Purchasing the old bundle at the new prices would cost Rs. 150 and suggest Rs. 50 compensation. That is unnecessarily large because substitution toward the relatively cheaper first good restores the same utility at a lower cost.

KEYWORDS: compensating variation | expenditure minimization | cobb douglas utility

56

MICROECONOMICS

Imperfect competition and market structure

Difficulty: Medium | 2026 · Q56 | NAT · 2 marks

Let us consider a duopoly market with the following market demand and firm-specific cost functions:

$P = 120 - 0.6Q$, where $Q = Q_1 + Q_2$

$C_1 = 6Q_1$ and $C_2 = 0.5Q_2^2$

where, P is unit price of the product. C_i is the cost function and Q_i is the output of firm i $(i = 1, 2)$.

The total output (Q) produced by the duopolists ignoring their interdependence is _____ (rounded off to two decimal places).

Accepted answer: **110.00 to 150.00 (inclusive)**

EXPLANATION

Correct answer: 111.58

Under the Cournot interpretation, each firm chooses its own output taking its rival's output as fixed, without allowing for a response by the rival. This is the meaning of "ignoring their interdependence" used for this solution; the firms still recognize that their own output affects market price.

Firm 1's profit is $\pi_1 = [120 - 0.6(Q_1 + Q_2)]Q_1 - 6Q_1$. Its first-order condition is $114 - 1.2Q_1 - 0.6Q_2 = 0$. Firm 2 has increasing marginal cost $MC_2 = Q_2$, so its profit is $\pi_2 = [120 - 0.6(Q_1 + Q_2)]Q_2 - 0.5Q_2^2$ and its condition is $120 - 0.6Q_1 - 2.2Q_2 = 0$.

From the first condition, $Q_1 = 95 - 0.5Q_2$. Substitute into the second:

$$0.6(95 - 0.5Q_2) + 2.2Q_2 = 120, \qquad 1.9Q_2 = 63.$$

Thus $Q_2 = 630/19$ and $Q_1 = 1490/19$. Both are positive. Their own-profit second derivatives are -1.2 and -2.2, so the quantities are mutual profit-maximizing responses.

The requested total is

$$Q = \frac{2120}{19} = 111.578947\ldots \approx 111.58.$$

Do not treat firm 2's average cost $0.5Q_2$ as its marginal cost, or replace quantity-setting behavior with the competitive condition $P = MC$.

KEYWORDS: cournot competition | asymmetric costs | best response | aggregate output

57

MACROECONOMICS

Long-run growth

Difficulty: Easy | 2026 · Q57 | NAT · 2 marks

Consider the following equations for a closed economy:

$S_t = aY_t$

$I_t = g(Y_t - Y_{t-1})$

where S_t, Y_t, and I_t represent savings, income, and investment, respectively in period t; and a and g are two positive constants.

For $Y_0 = 100$, $a = 0.5$ and $g = 0.6$, the value of Y_2 is _____ (in integer).

Accepted answer: **3600**

EXPLANATION

Correct answer: 3600

Use the closed-economy saving-investment equilibrium condition $S_t = I_t$. Saving is a fraction of current income, whereas accelerator investment responds to the increase in income from the previous period. Equating the supplied expressions gives

$aY_t = g(Y_t - Y_{t-1})$.

Both sides contain current income, so first solve for it. Expanding and rearranging yields $(g - a)Y_t = gY_{t-1}$. With $g = 0.6$ and $a = 0.5$,

$Y_t = \frac{0.6}{0.6-0.5} Y_{t-1} = 6Y_{t-1}$.

Starting at $Y_0 = 100$, one update gives $Y_1 = 600$, and a second gives $Y_2 = 3600$.

Substitution verifies the second period: saving is $0.5(3600) = 1800$, while investment is $0.6(3600 - 600) = 1800$. They agree. The first period likewise has saving and investment of 300.

The factor 6 is the ratio of one period's income to the previous period's income, not a 6-percent growth rate. Do not replace the denominator $g - a$ with a: that would ignore the current-income term already present inside the investment equation.

KEYWORDS: accelerator investment | saving investment equilibrium | first order difference equation

58

MACROECONOMICS

National income accounting

Difficulty: Easy | 2026 · Q58 | NAT · 2 marks

Consider the following equation:

$$Y = C(Y_d) + I(r) + G + NX(\epsilon);\ Y_d = Y - T$$

where Y is income, C is consumption expenditure, Y_d is disposable income, T is tax amount, I is investment expenditure, r is real interest rate, G is government expenditure, NX is net export, and ϵ is real exchange rate.

It is given that $Y = 5000$, $G = 1000$, $T = 1000$, $C = 250 + 0.75Y_d$, $I = 1000 - 50r$, $NX = 500 - 500\epsilon$, and $r = 5$.

If G decreases to 750, then the national savings increase by _____ (in integer).

Accepted answer: **250**

EXPLANATION

Correct answer: 250

National saving is the part of national income not used for private consumption or government purchases: $S = Y - C - G$. It combines private saving, $Y - T - C$, with government saving, $T - G$; the tax terms cancel when the two are added.

Hold the stated income and taxes fixed, as in the small-open-economy saving calculation. Disposable income is $5000 - 1000 = 4000$, so consumption is $250 + 0.75(4000) = 3250$.

Initial national saving is

$$S_0 = 5000 - 3250 - 1000 = 750.$$

Government purchases fall by 250 while private consumption remains 3250. New national saving is $S_1 = 5000 - 3250 - 750 = 1000$, giving an increase $\Delta S = 1000 - 750 = 250$.

The private-government decomposition gives the same result. Private saving stays at $5000 - 1000 - 3250 = 750$; government saving rises from zero to $1000 - 750 = 250$. Only the public component changes.

The external sector reconciles saving with expenditure. At the given interest rate, investment is $1000 - 50(5) = 750$. Net exports initially equal $S_0 - I = 0$, but after the spending cut they equal $S_1 - I = 250$. In $NX = 500 - 500\epsilon$, this corresponds to the real exchange rate falling from 1 to 0.5.

Subtracting taxes again in $Y - C - G$ would double-count them. Also, do not apply a closed-economy income multiplier while holding all the supplied conditions fixed: the calculation uses given income, with net exports and the exchange rate adjusting.

KEYWORDS: national saving | government saving | fiscal contraction | current account balance

59

MACROECONOMICS

Long-run growth

Difficulty: Easy | 2026 · Q59 | NAT · 2 marks

Consider a Solow model with the production function: $Y = K^{\alpha}L^{1-\alpha}$, where Y, K, and L are output, capital, and labour, respectively. α is a positive constant. The savings rate, depreciation rate, and labour growth rates are 20%, 7%, and 3%, respectively. If $\alpha = 0.5$, then the steady-state capital-labour ratio is _____ (in integer).

Accepted answer: **4**

EXPLANATION

Correct answer: 4

Let $k = K/L$ be capital per worker and $y = Y/L$ be output per worker. Dividing the constant-returns production function by labour gives $y = k^{\alpha} = \sqrt{k}$. Saving finances investment of $0.20\sqrt{k}$ per worker.

Keeping capital per worker unchanged requires enough investment both to replace worn-out capital and to equip the growing workforce. The required investment is $(\delta + n)k = (0.07 + 0.03)k = 0.10k$. The positive steady state therefore satisfies

$$0.20\sqrt{k} = 0.10k.$$

For $k > 0$, divide by $0.10\sqrt{k}$ to obtain $2 = \sqrt{k}$. Squaring gives $k = 4$ units of capital per worker.

At this stock, output per worker is 2 and saving is $0.20(2) = 0.4$. Replacement and workforce expansion require $0.07(4) + 0.03(4) = 0.28 + 0.12 = 0.4$, so the capital-labour ratio remains unchanged.

Using depreciation alone would omit capital needed by new workers. Also, the intermediate value 2 is output per worker, or $\sqrt{k}$, not the requested capital-labour ratio. The zero-capital boundary also makes both sides zero, but the economically relevant positive Solow steady state reached from a positive initial stock is the one calculated here.

KEYWORDS: solow steady state | capital labour ratio | break even investment

60

STATISTICS FOR ECONOMICS

Correlation and Regression

Difficulty: Medium | 2026 · Q60 | NAT · 2 marks

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 α and β 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 α is _____ (in integer).

Accepted answer: **-1**

EXPLANATION

Correct answer: -1

In a simple least-squares regression with an intercept, the fitted line passes through the sample means. Once the slope is known, the intercept is $\hat{\alpha} = \bar{Y} - \hat{\beta}\bar{X}$. We therefore first calculate the means and centered cross-products.

The means are $\bar{X} = 6000/100 = 60$ and $\bar{Y} = 500/100 = 5$. The centered predictor square total is

$$S_{XX} = \sum X_i^2 - \frac{(\sum X_i)^2}{n} = 460000 - \frac{6000^2}{100} = 100000.$$

The centered cross-product total is

$$S_{XY} = \sum X_i Y_i - \frac{(\sum X_i)(\sum Y_i)}{n} = 40000 - \frac{6000(500)}{100} = 10000.$$

Thus the OLS slope is $\hat{\beta} = S_{XY}/S_{XX} = 0.1$, and

$$\hat{\alpha} = 5 - 0.1(60) = -1.$$

Substituting the mean predictor into the fitted line checks the result: $-1 + 0.1(60) = 5$, matching the sample mean of Y.

The total $\sum Y_i^2$ is unnecessary for finding this slope and intercept. It would be useful for quantities such as total variation or goodness of fit, but the coefficient formulas do not require it.

Using $\sum X_i Y_i / \sum X_i^2$ would omit centering and instead fit a slope for a regression constrained through the origin. The present model explicitly includes an intercept.

KEYWORDS: ols intercept | centered cross products | sample mean identity

Coverage at a glance.

60 questions · 180 practice minutes · Wrong MCQs lose one-third of their marks. MSQs and NATs have no negative marking; MSQs need all correct options and no others.

Subject	Questions
Statistics for Economics	12
Indian Economy	9
Microeconomics	18
Macroeconomics	16
Mathematics for Economics	5

Answer key

1 · A	2 · C	3 · D	4 · B	5 · A	6 · C	7 · B	8 · B	9 · C	10 · D
11 · C	12 · C	13 · A	14 · D	15 · D	16 · B	17 · C	18 · A	19 · D	20 · A
21 · C	22 · D	23 · C	24 · D	25 · B	26 · B	27 · C	28 · B	29 · D	30 · A
31 · A, D	32 · C	33 · A, B	34 · B	35 · A, B	36 · A, B, D	37 · B, C	38 · A, B, D	39 · A, B	40 · A, B, D
41 · 14.5 to 15.5 (inclusive)	42 · 0.800 to 0.820 (inclusive)	43 · 6.00 to 7.00 (inclusive)	44 · 0.4 to 0.6 (inclusive)	45 · 3	46 · 6680	47 · 18 to 22 (inclusive)	48 · 4.0 to 5.0 (inclusive)	49 · 2	50 · 3150
51 · 2	52 · 142 to 143 (inclusive)	53 · 18 to 22 (inclusive)	54 · 26.00 to 28.00 (inclusive)	55 · 41.3 to 41.5 (inclusive)	56 · 110.00 to 150.00 (inclusive)	57 · 3600	58 · 250	59 · 4	60 · -1

Q24 is a reviewed adaptation of the original question. It is labelled in the solutions.

Topic breakdown.

Question counts in this practice resource, not predicted exam weightages.

Descriptive Statistics	5	Introduction and features	5
Consumer theory	5	General equilibrium and welfare	2
National income accounting	3	Fiscal policy (based on two-period models)	1
Integral calculus	1	Probability Theory	3
Correlation and Regression	3	Imperfect competition and market structure	2
Income determination and policy in the short run	3	Long-run growth	4
Poverty, Inequality, Inflation and Unemployment	3	Market failure and government policy	3
Consumption and saving	1	Open economy macroeconomics	2
Introductory Game theory	2	Linear algebra	1
Theory of production and cost	3	Perfect competition and partial equilibrium	1
Money Supply and Money Demand	1	Demographic Issues	1
Unemployment and Inflation	1	Optimization	2
Differential calculus	1	Hypothesis Testing	1

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