INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

November 2026

CB2 - Business Economics

Time allowed: 3 Hours 15 Minutes

Total Marks: 100

Q.1) Consider the short-run production function:

$$Q(L) = \frac{L\left(20 - \frac{L}{2}\right)^2}{5}$$

where Q is total physical product and L is units of labour.

When L=10, which one of the following gives the average physical product of labour and the marginal physical product of labour, respectively?

A. 45 and 15
B. 15 and 45
C. 45 and 30
D. 450 and 15
E. 90 and 15

[2 Marks]

Q.2) A newly elected government in an emerging economy introduces a strict fiscal rule requiring that the annual budget deficit must not exceed 2% of GDP. One year later, the economy enters a sharp recession with falling tax revenues and rising unemployment benefits.

What would be the consequences of this rule in the above mentioned situation?

A. The rule enhances macroeconomic stability by ensuring automatic countercyclical fiscal expansion during the recession.
B. The rule may reduce credibility because it forces the government to increase spending during downturns.
C. The rule may worsen the recession by constraining discretionary fiscal stimulus when it is most needed.
D. The rule is irrelevant because fiscal policy does not influence aggregate demand in the short run.
E. The rule guarantees long-term growth by eliminating all forms of government borrowing.

[2 Marks]

Q.3) A Mumbai-based biotech startup is developing AI-driven drug discovery tools. Despite high potential social benefits, the firm invests less in R&D than what policymakers consider socially optimal, partly because competitors can learn from published findings and reverse-engineer methods.

Which of the following best explains this market outcome?

A. The firm faces decreasing returns to scale, so marginal private benefit falls below marginal cost.
B. Knowledge spillovers create a positive externality, so marginal social benefit exceeds marginal private benefit.
C. Patent protection ensures full appropriation of returns, leading to overinvestment in R&D.
D. R&D is a normal good, so demand falls when income rises, reducing optimal output.
E. Perfect information in the market eliminates uncertainty, discouraging investment.

[2 Marks]

Q.4) In 2026, the Reserve Bank of India (RBI) observes that inflation has risen above its target range while economic growth has slowed and unemployment is increasing. The government announces a policy package aimed primarily at stabilizing the macroeconomy.

Which of the following combinations of macroeconomic variables is the government MOST likely targeting in this situation?

A. Inflation and unemployment
B. Exchange rate and balance of payments
C. Government fiscal deficit and public debt
D. Income inequality and poverty levels
E. Savings rate and investment levels

[2 Marks]

Q.5) A decentralised cryptocurrency ecosystem enables peer-to-peer lending, payment settlement, and storing wealth without the involvement of regulated financial intermediaries. Which of the following statements most accurately captures an economic limitation of such innovation in replacing traditional banking functions?

A. Decentralised protocols eliminate adverse selection and moral hazard by making transaction records publicly visible on a distributed ledger.
B. Smart contracts fully replicate the maturity transformation role of banks without introducing liquidity risk.
C. The absence of centralised balance sheets limits the ability to perform large-scale risk pooling and lender-of-last-resort functions.
D. Cryptocurrencies inherently guarantee price stability, removing the need for monetary policy transmission via banks.
E. Decentralised finance ensures perfect capital allocation due to algorithmic governance, outperforming banks in all states of the economy.

[2 Marks]

Q.6) A manufacturing firm is exposed to fluctuations in the market price of a key raw material. According to economic theory on how firms deal with risk and uncertainty, which of the following statements most accurately captures the economic mechanism and consequence of hedging this exposure using futures contracts?

A. Hedging eliminates downside price risk while forfeiting potential windfalls from favourable price drops, transforming price uncertainty into a known contractual cost.
B. Hedging operates through the law of large numbers, allowing the firm to pool independent risks with other market participants and lower its long-term average input costs.
C. Hedging converts Knightian uncertainty into objective risk, enabling the firm to eliminate broader market volatility in consumer demand.
D. Hedging completely removes basis risk, guaranteeing that the standardised futures price matches the firm's local physical spot purchase price at delivery.
E. Hedging is primarily undertaken by risk-neutral firms seeking to exploit arbitrage opportunities and increase their expected profit margins.

[2 Marks]

Q.7) In India's telecom industry, three major firms repeatedly adjust their tariffs within days of each other without any formal agreement. One firm (Firm A) typically announces price changes first, and the others follow with similar revisions.

Which of the following best explains this observed behaviour?

A. The firms operate in perfect competition, leading to price-taking behaviour
B. The firms engage in tacit collusion through price leadership, reflecting interdependence and barriers to entry
C. The firms form a cartel with legally binding agreements to fix prices
D. The firms behave as monopolistic competitors with complete independence in pricing decisions
E. The firms follow marginal cost pricing due to the absence of strategic interaction

[2 Marks]

Q.8) Which of the following best explains how an inflation-targeting central bank adjusts interest rates to influence economic activity?

A. It raises interest rates when inflation is above target to reduce aggregate demand and lowers them when inflation is below target to stimulate demand.
B. It raises interest rates when inflation is below target to encourage saving and lowers them when inflation is above target to increase spending.
C. It keeps interest rates constant to anchor expectations and relies only on fiscal policy to control inflation.
D. It lowers interest rates when inflation is above target to increase borrowing costs and reduce demand.
E. It adjusts interest rates only in response to changes in unemployment, not inflation.

[2 Marks]

Q.9) During a period of rising crude oil prices and some foreign portfolio outflows, the Indian rupee weakens toward 100 per US dollar. A prominent economist argues that the RBI should not treat 100 as a special barrier and should avoid heavy intervention unless markets become disorderly. Which explanation is most consistent in a free foreign exchange market?

A. The rupee can depreciate because higher oil import payments worsen the current account and capital outflows reduce demand for rupees; the exchange rate then adjusts automatically, so the exact level of 100 has no special economic significance.
B. The rupee weakens mainly because of portfolio outflows, but the balance of payments can only be restored if the RBI sells reserves to hold the exchange rate below 100.
C. The rupee weakens because higher oil prices always cause a permanent balance of payments deficit, so exchange rates cannot correct the imbalance on their own.
D. The rupee weakens because crossing 100 itself causes a loss of confidence that mechanically lowers exports, even if inflation, trade flows, and capital flows are unchanged.
E. The rupee weakens because depreciation is always harmful to the economy; therefore, the RBI must keep the exchange rate fixed at a round number to protect credibility.

[2 Marks]

Q.10) Which one of the following statements is correct?

A. Sterilised foreign exchange intervention allows a central bank to influence the exchange rate without altering the domestic money supply, thereby limiting conflicts with its monetary policy objectives.
B. Non-sterilised intervention has no effect on domestic interest rates because it operates only in foreign exchange markets.
C. Raising interest rates to appreciate the currency will always be consistent with expansionary monetary policy objectives.
D. A depreciation of the currency achieved through monetary expansion will reduce inflation and stabilise domestic prices.
E. Central bank intervention in foreign exchange markets is ineffective unless accompanied by fiscal policy changes.

[2 Marks]

Q.11) In 2026, the global market for foundational AI models is dominated by a few large firms such as OpenAI, Anthropic, Google, and Meta. These firms closely monitor each other's pricing for API access and frequently respond to changes in rivals' model capabilities and subscription fees.

Which of the following best explains why prices for AI model access may remain relatively stable despite rapid technological improvements?

A. Firms operate in perfect competition and are price takers.
B. High fixed costs eliminate any incentive to change prices.
C. Strategic interdependence leads firms to avoid price competition to prevent retaliation.
D. Government regulation fixes prices at a constant level.
E. Demand for AI models is perfectly inelastic.

[2 Marks]

Q.12) Which of the following combinations of macroeconomic policy actions is most likely to simultaneously increase short-run aggregate demand for firms while reducing their long-run cost uncertainty?

A. Expansionary fiscal policy financed by short-term borrowing alongside an unanticipated contractionary monetary policy
B. Expansionary monetary policy with a credible long-term inflation target commitment by the central bank
C. Contractionary fiscal policy combined with supply-side deregulation of product markets
D. Expansionary fiscal policy financed through immediate taxation increases with no change in monetary stance
E. Monetary tightening combined with increased government capital expenditure funded by deficits

[2 Marks]

Q.13) Explain how barriers to entry influence the persistence of supernormal profits in a monopolistic market and identify the condition under which such profits are most likely to be sustained.

A. Supernormal profits persist only when sunk costs are negligible, ensuring high contestability.
B. Supernormal profits persist when barriers to entry are high, reducing the threat of potential competition.
C. Supernormal profits persist only when firms operate under perfect information and free entry.
D. Supernormal profits persist when there are many close substitutes, increasing competitive pressure.
E. Supernormal profits persist when marginal cost equals average revenue in the long run.

[2 Marks]

Q.14) In a closed economy with no taxation, the marginal propensity to consume (MPC) is

0.6. The government increases its expenditure by 50 units. Subsequently, due to rising inflationary expectations, the MPC falls to 0.5 before the full multiplier process completes.

Assuming the first round of spending occurs with the original MPC and all subsequent rounds occur with the new MPC, what is the total increase in national income?

A. 100
B. 110
C. 120
D. 130
E. 140

[2 Marks]

Q.15) Which of the following best describes the primary reason why conventional monetary policy became largely ineffective during the 2008 financial crisis, necessitating unprecedented government intervention?

A. The central bank's inability to lower nominal interest rates below zero created a liquidity trap where additional money supply failed to stimulate lending.
B. Banks hoarded excess reserves rather than lending due to fears of counterparty insolvency, breaking the money multiplier transmission mechanism.

C. Hyperinflation fears prevented the central bank from expanding the money supply despite the recessionary gap.
D. The fixed exchange rate regime in major economies prevented monetary expansion without triggering capital flight.
E. Structural rigidities in labor markets prevented wage adjustments, rendering interest rate changes ineffective for aggregate demand.

[2 Marks]

Q.16) A large metropolitan city in India is facing severe air pollution due to vehicular emissions and industrial activity. The state government is considering multiple policy instruments to improve environmental sustainability.

Explain two different policy approaches (one market-based and one non-market-based) that could be applied in this context, and assess their likely effectiveness.

[4 Marks]

Q.17) A cloud-kitchen firm in Mumbai can operate using two alternative plant sizes in the short run. Let Q denote number of meals in hundreds. Their total cost functions (in ₹'000) are:

— Small plant: $TC_S = 100 + 4Q + 0.5Q^2$
— Large plant: $TC_L = 200 + 2Q + 0.2Q^2$

In the long run, the firm will choose the plant that minimizes average cost at each output level. If the firm plans to produce Q = 10 (hundreds of meals per day), what is the long-run average cost (₹'000 per 100 meals), and what is the corresponding marginal cost at that output level for the chosen plant?

[2 Marks]

Q.18) Global Horizon Bank (GHB) operates in a modern economy that is currently entering a severe recession, characterised by a sharp rise in unemployment and falling asset prices. GHB's asset portfolio is highly diversified, featuring unsecuritised retail auto loans, syndicated loans provided jointly with other banks to large commercial real estate developers, and substantial holdings of securitised corporate debt.

To manage its exposure to a general downturn in credit conditions, GHB, along with several other major retail banks, has purchased large volumes of credit derivatives from Apex Assurance, a massive multinational insurance conglomerate.

i) Explain how the rising unemployment in the recession will expose GHB to credit risk through its retail auto loans, and identify who would bear the initial losses from these defaults. **[1.5]**

ii) Assess why depositor panic regarding GHB's solvency could rapidly translate into a liquidity crisis for the bank. **[1.5]**

iii) Explain why GHB's holdings of securitised corporate debt do not generate the same run-based liquidity risk as its retail deposit base, even if the corporate issuers begin to default. **[1.5]**

iv) Describe the defining characteristic of a syndicated loan and explain how this structure affects the credit risk associated with lending to the commercial real estate developers. **[1]**

v) Evaluate how Apex Assurance's provision of credit derivatives could transform this credit shock into a systemic risk event, contrasting this with the typical economic rationale for regulating insurance companies. **[2]**

vi) Discuss two specific regulatory or government interventions (such as recapitalisation or bankruptcy design) that could be utilised to prevent GHB's potential failure from causing systemic contagion across the wider economy. **[1.5]**

[9 Marks]

Q.19) Explain why firms in monopolistic competition earn only normal profits in the long run. **[3 Marks]**

Q.20) In 2024–2026, rapid advances in generative AI have led to a surge in demand for high-performance AI chips (e.g., GPUs). Anticipating continued price increases, hedge funds and proprietary trading firms actively participate in both spot and futures markets for these chips. Some firms also engage in short selling of AI-related semiconductor stocks when they believe prices are unsustainably high.

Discuss how price expectations and speculative activity in this market could lead to a price bubble. In your answer, apply relevant concepts to:

- The interaction between spot and futures prices
- The role of self-fulfilling speculation
- The impact of speculative buying and short selling on price stability
- The distinction between stabilising and destabilising speculation (diagram not required, but explanation expected)

[8 Marks]

Q.21) In Mumbai's high-end co-working space market, firms face nonlinear demand due to network effects and pricing tiers, while supply reflects capacity expansion decisions.

The market demand and supply functions are:

$$Q_d = (150 - P)^2$$

$$Q_s = 50P + 1250$$

Where Q is the number of occupied seats (in units) and P is the monthly rental price per seat (₹).

i) Calculate the equilibrium price and quantity. **[1.5]**

ii) The government introduces a per-unit subsidy to suppliers, shifting supply to:

$$Q_s = 50P + 2250$$

Calculate the new equilibrium price and quantity. Hence, determine the change in consumer expenditure (Price × Quantity). **[2]**

iii) Using point elasticity, calculate the Price Elasticity of Demand (PED) at the initial equilibrium. **[2]**

iv) Using your result from (iii), explain whether the subsidy primarily benefits consumers or producers. **[0.5]**

[6 Marks]

Q.22) A major food delivery platform in India introduces dynamic surge pricing during peak dinner hours in metropolitan cities. As a result, delivery charges increase significantly between 7 pm and 10 pm, while remaining low during non-peak hours.

Explain how the price mechanism operates in this scenario to influence the behaviour of both consumers and firms in the market.

[3 Marks]

Q.23) Explain, using the New Classical framework and expectations formation, why an anticipated increase in aggregate demand leads to a rise in the price level but no change in output or employment in the short run. **[4 Marks]**

Q.24) Maya is a freelance graphic designer who allocates a fixed monthly entertainment budget between two modern consumption options: Cloud Gaming Subscriptions and Specialty Coffee.

i) Explain two reasons why an economist would choose ordinal indifference curve analysis over classical marginal utility theory to model Maya's preferences for these two goods. **[2]**

ii) Explain the concept of the Marginal Rate of Substitution (MRS) in the context of Maya's consumption, and assess why her indifference curve for these two goods is convex to the origin. **[2]**

iii) Suppose Maya's freelance income decreases, and simultaneously, the monthly price of Cloud Gaming Subscriptions falls. Explain how these two distinct events will independently alter the position and slope of her budget line. **[2]**

iv) Assuming Specialty Coffee is a normal good, explain how a decrease in its price will affect Maya's quantity demanded, explicitly isolating the substitution effect and the income effect. **[2]**

[8 Marks]

Q.25) An economy is modelled using the following open-economy aggregate expenditure framework (₹ billion):

Consumption function:
$C = 80 + 0.7(Y - T)$

Tax function:
$T = 100 + 0.2Y$

Investment:
$I = 140$

Government expenditure:
$G = 160$

Exports:
$X = 120$

Imports:
$M = 40 + 0.15Y$

i) Derive the equilibrium level of national income. **[2]**

ii) Suppose the government increases autonomous taxes by ₹20 billion (i.e., the intercept of the tax function rises to 120). At the same time, a currency depreciation increases exports by ₹30 billion and raises the marginal propensity to import to 0.2.

Calculate the new equilibrium level of income. **[2]**

[4 Marks]

Q.26)

i) Briefly define the main types of unemployment. **[2.5]**

ii) Assess how unemployment can generate consequences for individuals, their social networks, and the wider economy. **[2]**

iii) Evaluate how these consequences may feed back into the level and stability of business activity. **[1.5]**

[6 Marks]

Q.27)

i) Explain how the conflict between providing international liquidity and maintaining convertibility (the Triffin dilemma), alongside the asymmetric burden of balance of payments adjustment, caused the collapse of the Bretton Woods system. **[3]**

ii) Assess why a deliberate policy of exchange rate depreciation intended to correct a persistent current account deficit may initially exacerbate the deficit and destabilise domestic businesses, with specific reference to the J-curve effect and trade elasticities. **[3]**

[6 Marks]

Q.28) Explain why economies experience cyclical fluctuations (periods of boom followed by recession), and discuss the key factors that influence the duration and magnitude of these business cycle phases. **[7 Marks]**

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