

ISC Class 12 Economics Specimen Paper 2

Written by the Future Topper subject team on the CISCE examination pattern. Not an official CISCE paper.
Found a mistake? Write to contactfuturetopper@gmail.com

Maximum Marks: 80 | Time Allowed: Three hours | Reading Time: 15 minutes

Both Sections are compulsory. Within each Section, attempt any two of the three long questions.

General Instructions

Write your answers on the separate answer paper provided. The first 15 minutes are for reading the paper, and you may not write during that time. Both Section A and Section B are compulsory. In Section A attempt Question 1, Questions 2 to 5, and any two of Questions 6, 7 and 8. In Section B attempt Question 9, Questions 10 to 13, and any two of Questions 14, 15 and 16. Marks for each question, or part of a question, are shown in brackets. All working for numerical questions must be shown as part of the answer. No diagram, curve or graph is printed in this paper, and wherever a question asks for one you must draw it yourself in pencil, label both axes and name every curve you show. Amounts are in rupees unless something else is stated. This paper carries 80 of the 100 marks for the subject, the remaining 20 being for the project work.

SECTION A: MICROECONOMICS (40 Marks)

Question 1 [8]

Each part carries 1 mark. For the parts that offer four choices, write only the option you choose. For the rest, answer in a single sentence or give the single word, term or value asked for.

- (i) The central problem of what to produce and in what quantities arises because:
 - (a) producers are greedy
 - (b) wants are unlimited while resources are scarce and have alternative uses
 - (c) money is in short supply
 - (d) governments interfere in the market
- (ii) State the law of diminishing marginal utility.
- (iii) If the price elasticity of demand for a good is zero, its demand curve is:
 - (a) a horizontal straight line
 - (b) a rectangular hyperbola
 - (c) a vertical straight line
 - (d) a downward sloping straight line
- (iv) Give one reason why the supply curve of a commodity slopes upwards.
- (v) In the short run a firm will go on producing even at a loss so long as its price at least covers its:
 - (a) average total cost
 - (b) average fixed cost
 - (c) marginal cost at every output
 - (d) average variable cost
- (vi) Name the shape of the total fixed cost curve and state why it takes that shape.
- (vii) Under perfect competition the marginal revenue of a firm:
 - (a) is equal to its average revenue at every output
 - (b) is always less than its average revenue
 - (c) falls twice as fast as its average revenue
 - (d) is zero
- (viii) What is meant by price discrimination, and in which market form is it possible?

Answer all of Questions 2 to 5. Each carries 3 marks.

Question 2 [3]

An economy produces guns and butter and is working at a point on its production possibility curve. Explain, with reference to a curve you are to draw and label, what happens to the curve and to the economy's position on it in each of these two cases. First, a long war destroys a part of the economy's capital stock. Second, a large number of workers who were previously idle are brought into employment.

[3]

Question 3 [3]

When the price of a commodity falls from Rs 10 to Rs 8 per unit, the quantity demanded rises from 300 units to 390 units. Calculate the price elasticity of demand by the percentage method. State also the quantity that would be demanded of a second commodity, of which 500 units are at present bought at Rs 25, if its price rose to Rs 30 and the price elasticity of its demand were 0.8. [3]

Question 4 [3]

Explain, with a reason in each case, the effect on the market demand curve for petrol of each of the following. First, a sharp rise in the price of motor cars. Second, a fall in the price of diesel, which some vehicles can use instead. Third, a rise in the number of households owning a vehicle. [3]

Question 5 [3]

When the price of a commodity rises from Rs 15 to Rs 18 per unit, the quantity supplied rises from 200 units to 250 units. Calculate the price elasticity of supply, state whether supply is elastic or inelastic, and state one reason why the supply of a commodity is generally more elastic in the long run than in the short run. [3]

Answer any two of Questions 6, 7 and 8. Each carries 10 marks.

Question 6 [10]

A firm's total cost at outputs of 0, 1, 2, 3, 4 and 5 units is Rs 40, Rs 70, Rs 92, Rs 110, Rs 136 and Rs 175 respectively.

- State the firm's total fixed cost and give your reason. Then work out, for each level of output from 1 to 5 units, the total variable cost, the average fixed cost, the average variable cost, the average cost and the marginal cost, setting your figures out as a schedule with one line for each level of output. [6]
- Explain, with reference to your marginal cost figures, how the law of variable proportions shows itself in them, and name the output at which the marginal cost of this firm is lowest. [2]
- Explain why the marginal cost curve of a firm is unaffected by its fixed cost, illustrating your answer from the figures you have worked out. [2]

Question 7 [10]

The firm whose cost figures are given below is selling in a perfectly competitive market at a price of Rs 26 per unit. Its total cost at outputs of 0, 1, 2, 3, 4 and 5 units is Rs 40, Rs 70, Rs 92, Rs 110, Rs 136 and Rs 175 respectively.

- Work out the total revenue, the average revenue and the marginal revenue at each level of output from 1 to 5 units, and explain why average revenue and marginal revenue are equal for a firm of this kind. [4]
- Work out the profit at each level of output and state the output at which the firm is in equilibrium, justifying your answer by the two conditions of producer's equilibrium. [4]
- State what would happen to this firm's output and profit in the long run if every firm in this industry were earning a profit above the normal, and explain the mechanism by which the change would come about. [2]

Question 8 [10]

- Explain four features of monopolistic competition, and state in each case how that feature marks the market off from perfect competition. [6]
- Explain what is meant by selling cost, and state why a firm under monopolistic competition incurs it while a firm under perfect competition does not. [2]
- Draw and label a diagram showing the demand curve faced by a firm under oligopoly where the firm believes its rivals will match a price cut but will not match a price rise, and state the name given to that curve. [2]

SECTION B: MACROECONOMICS AND INDIAN ECONOMIC DEVELOPMENT (40 Marks)

Question 9 [8]

Each part carries 1 mark. For the parts that offer four choices, write only the option you choose. For the rest, answer in a single sentence or give the single word, term or value asked for.

- (i) The sum of the rent, wages, interest and profit earned by the normal residents of a country, whether within the country or outside it, is:
 (a) gross domestic product at market price (b) net national product at factor cost
 (c) net domestic product at market price (d) personal disposable income
- (ii) Define aggregate demand.
- (iii) Of the four items named below, the one that is not a quantitative instrument of monetary policy is:
 (a) the bank rate (b) open market operations
 (c) the cash reserve ratio (d) the margin requirement on a loan
- (iv) State what is meant by a revenue receipt of the government, and give one example.
- (v) A fall in the external value of a country's currency brought about by market forces under a floating rate is called:
 (a) devaluation (b) revaluation
 (c) depreciation (d) appreciation
- (vi) Give one reason why the small size of the average land holding is held back as a problem of Indian agriculture.
- (vii) The strategy of import substitution followed in the early plan periods meant:
 (a) producing at home what had earlier been bought from abroad (b) raising exports to pay for imports
 (c) importing capital goods free of duty (d) removing all restrictions on trade
- (viii) Name the kind of unemployment that is widespread in Indian agriculture, in which more people are engaged on a holding than the work on it actually requires.

Answer all of Questions 10 to 13. Each carries 3 marks.

Question 10 [3]

Distinguish between a stock and a flow, giving two examples of each, and state which of the two national income is. [3]

Question 11 [3]

In an economy the consumption function is $C = 100 + 0.75Y$ and planned investment is Rs 150 crore, both figures in crores of rupees. Calculate the equilibrium level of income, the consumption and the saving at that level, and show that saving equals planned investment there. [3]

Question 12 [3]

Explain three functions of a central bank, naming in each case the aim the function serves. [3]

Question 13 [3]

Explain what is meant by human capital formation, and state two ways in which a country may add to its stock of human capital. [3]

Answer any two of Questions 14, 15 and 16. Each carries 10 marks.

Question 14 [10]

The following figures, all in crores of rupees, relate to an economy for a year. Compensation of employees 1,500; rent 200; interest 150; corporate profit 350; mixed income of the self employed 600; consumption of fixed capital 160; net factor income from abroad minus 25; net indirect taxes 120.

- (a) Calculate the net domestic product at factor cost, the national income, the gross national product at factor cost and the gross national product at market price. [6]

- (b) Explain why mixed income of the self employed appears as a separate item in the income method and cannot be split between wages and profit. [2]
- (c) Explain, with a reason in each case, why the salary paid to a government clerk is included in national income by the income method while the old age pension paid to a retired person is not. [2]

Question 15 [10]

- (a) The marginal propensity to consume in an economy is 0.8. Calculate the investment multiplier and the increase in national income that would follow an additional investment of Rs 150 crore. Explain also, round by round, how the multiplier process brings that increase about. [5]

A commercial banking system receives a fresh deposit of Rs 8,000 crore when the legal reserve ratio is 25 per cent.

- (b) Calculate the money multiplier, the total deposits the system can create and the amount of credit created. [3]
- (c) State two ways in which a central bank may reduce the supply of money in the economy, explaining how each works. [2]

Question 16 [10]

The distribution that follows gives the number of hours a group of twenty five students spent on reading in a week. The hours, taken as the mid value of each class, are 5, 10, 15, 20 and 25, and the number of students against those values is 3, 5, 8, 6 and 3 respectively.

- (a) Calculate the arithmetic mean of the number of hours spent on reading. [3]

The marks of eight students in a test were 16, 16, 18, 20, 20, 22, 24 and 24.

- (b) Calculate the standard deviation of these marks and the coefficient of variation. [4]

The prices of four articles in the base year were Rs 20, Rs 10, Rs 50 and Rs 25, and in the current year they were Rs 25, Rs 12, Rs 60 and Rs 20. The weights attached to the four articles are 4, 3, 2 and 1 respectively.

- (c) Calculate the weighted price index number by the method of weighted price relatives, and state what the figure you obtain means. [3]

ANSWER KEY AND MARKING SCHEME

Full working is shown for every numerical, and every schedule is carried through so that each figure in it can be checked. Marks shown in italics are the step marks an examiner would award. Accept any correct alternative method that reaches the same figure, accept a correctly drawn and labelled curve in any reasonable style, and accept a numerical answer rounded to one or to two decimal places.

Question 1 [8]

- (i) (b) wants are unlimited while resources are scarce and have alternative uses. If resources were unlimited everything could be produced at once and there would be nothing to choose, and if resources had only one use there would be no choice to make about where to put them. It is scarcity together with alternative uses that forces the choice.
- (ii) The law of diminishing marginal utility states that as a consumer goes on taking successive units of the same commodity, other things being unchanged, the utility that each further unit yields him falls. The first unit yields the most, the second less, and so on, until a point of satiety is reached beyond which a further unit yields negative utility.
- (iii) (c) a vertical straight line. Zero elasticity means the quantity demanded does not alter at all however the price moves, which is perfectly inelastic demand, and a quantity that stays fixed against every price is drawn as a vertical line.
- (iv) Any one of the following gains the mark. The marginal cost of production rises as output is increased in the short run, under the law of variable proportions, so a producer will only supply more if he is offered a price high enough to cover that rising cost. A higher price raises the profit per unit, so existing producers find it worth their while to use their plant more fully and new producers find it worth their while to enter. A higher price also makes it worth drawing resources away from other products into this one.
- (v) (d) average variable cost. The fixed cost has to be met whether the firm produces or shuts down, so it is not a consideration in the decision. So long as price covers the average variable cost the firm recovers the whole of the cost that production itself adds, and anything over that makes a contribution to the fixed cost, so the loss from producing is smaller than the loss from shutting down.
- (vi) The total fixed cost curve is a horizontal straight line parallel to the output axis. Fixed cost is the cost of the fixed factors, such as rent on the premises and the salary of permanent staff, and that cost has to be met in the same amount whatever the output. It is therefore the same at every output, and a quantity that does not change with output is drawn as a line parallel to the output axis. It stands above the origin, since the cost is incurred even at zero output.
- (vii) (a) is equal to its average revenue at every output. The firm is so small a part of the market that it can sell any quantity at the ruling price without affecting that price, so the price it gets for the last unit is the same as the price it gets for every unit. Marginal revenue therefore equals average revenue, and both are equal to the price, so the average revenue curve is a horizontal line.
- (viii) Price discrimination is the practice of charging different prices to different buyers, or in different markets, for the same product, where the difference in price is not accounted for by any difference in the cost of serving them. It is possible under monopoly, where the single seller has control over his price and can keep his markets separate so that the buyers in the cheaper market cannot resell to those in the dearer one.

1 mark for each of the eight parts. No mark is deducted for a wrong option, and a one-line answer that carries the correct point gains the mark even if it is loosely worded.

Question 2 [3]

The curve is to be drawn with guns on one axis and butter on the other, as a curve concave to the origin running from one axis to the other, with the economy's starting position marked as a point on the curve itself. First case, the destruction of a part of the capital stock. The economy's productive capacity has fallen, so less of both goods can now be produced and the whole curve shifts inwards towards the origin. A second curve should be drawn inside the first to show this. Second case, the employment of workers who were previously idle. Here the resources of the economy are unchanged. What has altered is only the extent to which they are being used, so the curve itself does not move at all. If the economy had been at a point inside the curve

because of that idleness, it would now move out towards the curve or on to it. But the question says the economy was already on its curve, which means its resources were already fully employed, so there were no idle workers of this kind to bring in and the second case cannot in fact arise from the starting position described. The candidate should say so. A shift of the curve calls for a change in resources or in technology, and a movement to the curve calls for idle resources to be taken up, and the two must not be confused.

Curve correctly drawn and labelled, with the starting point on the curve 1. Inward shift of the whole curve in the first case 1. Recognition that the second case moves the economy towards the curve and not the curve itself, and that a point already on the curve leaves no idle resources to take up 1.

Question 3 [3]

For the first commodity, percentage change in quantity demanded = $(390 - 300)/300 \times 100 = 30$ per cent.

Percentage change in price = $(8 - 10)/10 \times 100 = \text{minus } 20$ per cent. Price elasticity of demand = 30 divided by 20 = 1.5 in numerical value, so demand is elastic. For the second commodity, the percentage rise in price = $(30 - 25)/25 \times 100 = 20$ per cent. Since the elasticity is 0.8, the percentage fall in quantity demanded = $0.8 \times 20 = 16$ per cent. The fall in quantity = 16 per cent of 500 = 80 units, so the new quantity demanded = $500 - 80 = 420$ units.

Elasticity of the first commodity 1.5, with demand identified as elastic 1. Percentage fall in quantity of the second commodity 16 per cent 1. New quantity demanded 420 units 1.

Question 4 [3]

First, a sharp rise in the price of motor cars. Cars and petrol are complementary goods, since petrol is of no use without a vehicle to burn it in. A rise in the price of cars reduces the number of cars bought and so reduces the demand for petrol at every price, and the whole demand curve for petrol shifts to the left. Second, a fall in the price of diesel. Diesel is a substitute for petrol in those vehicles that can take either. A fall in its price draws buyers away from petrol, so the demand for petrol at every price falls and the demand curve again shifts to the left. Third, a rise in the number of households owning a vehicle. The number of buyers in the market has grown, and the demand curve of the market is the sum of the demand curves of the individual buyers. The demand for petrol at every price therefore rises and the curve shifts to the right. In none of the three cases is there a movement along the demand curve, because in none of them has the price of petrol itself changed.

Leftward shift from the rise in the price of cars, with complementarity as the reason 1. Leftward shift from the fall in the price of diesel, with substitution as the reason 1. Rightward shift from the rise in the number of buyers, and the point that none of the three is a movement along the curve 1.

Question 5 [3]

Percentage change in quantity supplied = $(250 - 200)/200 \times 100 = 25$ per cent. Percentage change in price = $(18 - 15)/15 \times 100 = 20$ per cent. Price elasticity of supply = 25 divided by 20 = 1.25. Since the value is greater than one, supply is elastic at this price. Supply is generally more elastic in the long run for any of the following reasons, one of which is wanted. In the short run the plant and machinery of the firm are fixed, so output can be raised only by working the existing plant harder, and that soon runs into rising marginal cost. In the long run the firm can build new plant, hire more of every factor and so expand output by a much larger proportion for the same rise in price. New firms can also enter the industry in the long run, which they cannot do at short notice.

Percentage changes of 25 per cent and 20 per cent 1. Elasticity of supply 1.25, with supply identified as elastic 1. One sound reason for the greater long run elasticity 1.

Question 6 [10]

- (a) Total fixed cost is Rs 40. The reason is that total cost at zero output is Rs 40, and the only cost that has to be met when nothing at all is produced is the cost of the fixed factors, so the whole of that Rs 40 is fixed cost. The schedule works out as follows, all figures in rupees. Total variable cost = total cost less Rs 40, average fixed cost = 40 divided by output, average variable cost = total variable cost divided by output, average cost = total cost divided by output, and marginal cost is the addition to total cost made by the unit in question.

Output 1: TC 70, TVC 30, AFC 40.00, AVC 30.00, AC 70.00, MC 30.

Output 2: TC 92, TVC 52, AFC 20.00, AVC 26.00, AC 46.00, MC 22.

Output 3: TC 110, TVC 70, AFC 13.33, AVC 23.33, AC 36.67, MC 18.

Output 4: TC 136, TVC 96, AFC 10.00, AVC 24.00, AC 34.00, MC 26.

Output 5: TC 175, TVC 135, AFC 8.00, AVC 27.00, AC 35.00, MC 39.

The marginal cost figures can be checked by adding them to the fixed cost: $40 + 30 + 22 + 18 + 26 + 39 =$ Rs 175, which is the total cost at the fifth unit.

Total fixed cost Rs 40, with the reason drawn from the cost at zero output 1. Total variable cost of Rs 30, 52, 70, 96 and 135 1. Average fixed cost of Rs 40.00, 20.00, 13.33, 10.00 and 8.00 1. Average variable cost of Rs 30.00, 26.00, 23.33, 24.00 and 27.00 1. Average cost of Rs 70.00, 46.00, 36.67, 34.00 and 35.00 1. Marginal cost of Rs 30, 22, 18, 26 and 39 1.

- (b) Marginal cost falls from Rs 30 to Rs 22 and then to Rs 18, after which it turns and rises to Rs 26 and then to Rs 39. It is lowest at the third unit, where it is Rs 18. This is the law of variable proportions showing itself in the cost figures. Over the first three units the variable factor is being applied to the fixed factor in proportions that suit it better and better, so the marginal product of the variable factor is rising and the cost of each further unit of output is therefore falling. That is the stage of increasing returns to a factor. Past the third unit the fixed factor is being crowded, the marginal product of the variable factor begins to fall, and the cost of each further unit of output rises. That is the stage of diminishing returns to a factor. Marginal cost is thus the mirror image of the marginal product of the variable factor, and the output at which marginal cost is lowest is the output at which that marginal product is highest.

Marginal cost identified as falling then rising, with its lowest point at the third unit 1. The pattern traced to rising and then falling marginal product of the variable factor 1.

- (c) Marginal cost is the addition that one more unit of output makes to total cost. Fixed cost does not alter when output alters, so it makes no addition to total cost when a further unit is produced and it contributes nothing at all to marginal cost. Every rupee of marginal cost comes from the variable cost. The figures bear this out. The marginal cost of the second unit may be worked out from total cost as 92 less 70 = Rs 22, and it may equally be worked out from total variable cost as 52 less 30 = Rs 22. The Rs 40 of fixed cost is present in both of the total cost figures and cancels out in the subtraction. Had the fixed cost been Rs 400 instead of Rs 40, every total cost figure would have been Rs 360 larger, yet every marginal cost figure would have been exactly as it is now, because the same Rs 360 would be present on both sides of each subtraction. The marginal cost curve would not move at all, while the average cost curve would shift upwards.

Marginal cost shown to come wholly from variable cost, since fixed cost makes no addition when output changes 1. The point illustrated from the figures, the marginal cost of a unit being the same whether taken from total cost or from total variable cost 1.

Question 7 [10]

- (a) In a perfectly competitive market the firm sells at the ruling price of Rs 26 whatever quantity it brings forward, so total revenue = 26 x output. Output 1: TR 26, AR 26, MR 26. Output 2: TR 52, AR 26, MR 26. Output 3: TR 78, AR 26, MR 26. Output 4: TR 104, AR 26, MR 26. Output 5: TR 130, AR 26, MR 26. Average revenue and marginal revenue are equal because the price does not change as the firm varies its output. Average revenue is total revenue divided by output, which for a constant price is simply the price itself. Marginal revenue is the addition made by the last unit, and since that unit sells at the same price as every other and does not oblige the firm to cut the price on the earlier units, the addition is also the price. Both therefore equal Rs 26, and the average revenue curve is a horizontal line at that height with the marginal revenue curve lying along it.

Total revenue of Rs 26, 52, 78, 104 and 130 2. Average revenue and marginal revenue both Rs 26 at every output 1. Equality explained by the firm being a price taker, so the last unit sells at the same price without forcing a cut on earlier units 1.

- (b) Profit = total revenue less total cost. Output 1: TR 26, TC 70, profit minus 44. Output 2: TR 52, TC 92, profit minus 40. Output 3: TR 78, TC 110, profit minus 32. Output 4: TR 104, TC 136, profit minus 32. Output 5: TR 130, TC 175, profit minus 45. The firm is in equilibrium at an output of 4 units. The first condition of producer's equilibrium is that marginal revenue should equal marginal cost. Marginal revenue is Rs 26 throughout, and the marginal cost of the fourth unit is $136 - 110 =$ Rs 26, so the condition is met exactly at the fourth unit. The second condition is that marginal cost should be rising at that output, and it is, for the marginal cost of the

fifth unit is $175 - 136 = \text{Rs } 39$, which is well above Rs 26. At 3 units the loss is also Rs 32, but the fourth unit neither adds to nor takes from profit, so the firm is indifferent between the two and the marginal conditions settle on 4 units as the equilibrium. Note that the firm is making a loss of Rs 32 at that output, yet it will go on producing in the short run, because at 4 units the average variable cost is Rs 24, which is below the price of Rs 26, so the price covers the whole of the variable cost and leaves Rs 8 towards the fixed cost of Rs 40. Shutting down would mean losing the whole Rs 40.

Profit of minus 44, minus 40, minus 32, minus 32 and minus 45 2. Equilibrium at 4 units, with marginal revenue of Rs 26 equal to the marginal cost of the fourth unit 1. The second condition shown by marginal cost rising to Rs 39 at the fifth unit, and the short run decision to go on producing because price exceeds average variable cost 1.

- (c) If every firm in the industry were earning a profit above the normal, new firms would be drawn into the industry, since under perfect competition entry is free and the above normal profit is visible to all. As the new firms came in, the supply of the industry would rise, and with the market demand unchanged the price would be bid down. Each firm would find its horizontal average revenue curve sinking. Entry would go on until the price had fallen to the level of the minimum average cost of the firms, at which point each firm would be earning only the normal profit and no further firm would see any gain in coming in. In the long run, then, the firm's output settles at the output at which average cost is lowest, and price equals marginal cost equals average cost at that output.

Entry of new firms raising supply and bidding the price down 1. Entry ceasing where price equals minimum average cost, leaving only the normal profit 1.

Question 8 [10]

- (a) Four features follow. First, a large number of sellers, each selling a product that is a close but not a perfect substitute for the others, so that no single firm is large enough for its own decisions to govern the market. This resembles perfect competition in the number of sellers but differs from it in that the products are not identical. Second, product differentiation, which is the central feature of this market. Each firm's product is marked off from its rivals' by brand, packaging, design, quality or the service that goes with it, so that buyers come to prefer one to another. Under perfect competition the product is homogeneous and buyers are wholly indifferent between sellers. Third, because of that differentiation each firm has some control over its own price and faces a downward sloping demand curve. It can raise its price a little and keep those buyers who are attached to its brand, though it will lose some to its rivals. Under perfect competition every firm is a price taker and faces a horizontal demand curve at the ruling price. Fourth, selling costs are incurred, for a firm that has a differentiated product has something to tell buyers about it and spends on advertising and salesmanship to do so. Under perfect competition there is nothing to advertise, since the product is identical whoever sells it, so selling cost is zero. A fifth feature that may be offered in place of any of these is free entry and free exit, as under perfect competition, though the entrant comes in with a product of his own rather than with an identical one, which is why the long run equilibrium leaves each firm with excess capacity.

Product differentiation stated as the central feature, with the contrast drawn 2. A large number of sellers with close but imperfect substitutes, with the contrast drawn 2. The downward sloping demand curve and some control over price, with the contrast drawn 1. Selling costs, or free entry with excess capacity, with the contrast drawn 1.

- (b) Selling cost is expenditure incurred by a firm for the purpose of attracting buyers to its own product and away from the products of its rivals, as distinct from expenditure on producing the goods themselves. Advertising in every form, the salaries and commission of salesmen, free samples, discounts to dealers and the cost of window display all fall under it. A firm under monopolistic competition incurs selling cost because its product is differentiated. It therefore has something particular to say about its own brand, and spending on saying it can shift the firm's demand curve to the right and make it less elastic as buyers become attached to the brand. A firm under perfect competition incurs no selling cost, because the product is homogeneous. Anything the firm spent on advertising would benefit the industry's product as a whole and not its own, since buyers cannot distinguish its output from anyone else's, and in any case the firm can already sell all it wishes at the ruling price, so there is nothing for the spending to achieve.

Selling cost defined and distinguished from the cost of production 1. Reason traced to product differentiation on one side and to a homogeneous product on the other 1.

- (c) The diagram is to be drawn with price on the vertical axis and quantity on the horizontal. Mark the prevailing price and the quantity sold at it, and draw the demand curve through that point in two parts. Above the prevailing price draw the curve relatively flat, that is more elastic, because if the firm raises its price the rivals do not follow and the firm loses a great many buyers to them. Below the prevailing price draw the curve relatively steep, that is less elastic, because if the firm cuts its price the rivals cut theirs too and the firm gains only a few buyers. The two parts meet at the prevailing price with a visible bend, and the curve is to be labelled as the kinked demand curve. The kink explains why prices under oligopoly are often rigid, for the firm loses by moving its price in either direction and so leaves it where it is.

Diagram drawn and labelled with the flatter portion above the prevailing price and the steeper portion below it, meeting at a kink 1. Curve named as the kinked demand curve, with the rigidity of price under oligopoly noted 1.

Question 9 [8]

- (i) (b) net national product at factor cost. The sum of the factor incomes earned by the normal residents of a country is the national income, and national income is net national product at factor cost. The word national fixes residence rather than territory as the boundary, and factor cost means the figure is reckoned before indirect taxes and subsidies are allowed for.
- (ii) Aggregate demand is the total expenditure that all the sectors of an economy taken together plan to make on the purchase of final goods and services at a given level of income over a period. It has four components, household consumption expenditure, investment expenditure by firms, government expenditure on goods and services, and net exports.
- (iii) (d) the margin requirement on a loan. Margin requirements are a selective or qualitative instrument, since they bear on the direction in which credit flows by making borrowing against particular securities dearer or harder. The bank rate, open market operations and the cash reserve ratio all work on the total volume of credit and are therefore quantitative.
- (iv) A revenue receipt of the government is a receipt that neither creates a liability for the government nor reduces any of its assets. Tax revenue such as the goods and services tax is an example, and so are non-tax revenues such as the interest the government earns on loans it has made and the fees it charges for its services.
- (v) (c) depreciation. Depreciation of a currency is a fall in its external value brought about by the play of demand and supply in the foreign exchange market under a floating rate. Devaluation is a fall brought about by a deliberate decision of the government under a fixed rate, which is why the two terms are not interchangeable.
- (vi) Any one of the following gains the mark. A small holding cannot carry the cost of a tractor, a tube well or other modern equipment, so the cultivator cannot obtain the economies that go with scale. The output of a small holding leaves little surplus after the family has been fed, so the cultivator has nothing to sell and nothing to invest. A small holding is poor collateral, so institutional credit is hard to come by and the cultivator falls back on the moneylender. Holdings are also fragmented into scattered plots, so time and land are lost in moving between them and in the boundaries themselves.
- (vii) (a) producing at home what had earlier been bought from abroad. Import substitution meant replacing imports with domestic production, and it was carried out behind tariffs and quotas that kept the foreign article out while the home industry was built up.
- (viii) Disguised unemployment, which is also called underemployment. More people work on the holding than the work on it requires, so if some of them were withdrawn the output of the holding would not fall. Their marginal productivity is therefore nil or close to it, and they appear to be employed while in substance they are not.

1 mark for each of the eight parts. No mark is deducted for a wrong option, and a one-line answer that carries the correct point gains the mark even if it is loosely worded.

Question 10 [3]

A stock is a quantity measured at a point of time. It has no time dimension attached to it, and the question it answers is how much there is at this moment. Examples are the quantity of money in circulation on a given date and the stock of capital of a country at the end of a year. A flow is a quantity measured over a period of time. It has a time dimension, and the question it answers is how much per month or per year. Examples are

the income a person earns in a month and the investment made in an economy during a year. The two are related, for a flow adds to or draws down a stock, as the flow of investment during the year adds to the stock of capital at the end of it. National income is a flow. It is the value of the final goods and services produced during a year, and the words during a year are an essential part of the definition, since the figure is meaningless without the period over which it has been reckoned.

Stock defined as measured at a point of time, with two correct examples 1. Flow defined as measured over a period, with two correct examples 1. National income identified as a flow, with the reason 1.

Question 11 [3]

At equilibrium the planned aggregate demand equals the income, that is $Y = C + I$. So $Y = 100 + 0.75Y + 150$, which gives $Y - 0.75Y = 250$, that is $0.25Y = 250$, so $Y = \text{Rs } 1,000$ crore. Consumption at that level = $100 + 0.75 \times 1,000 = 100 + 750 = \text{Rs } 850$ crore. Saving at that level = $Y - C = 1,000 - 850 = \text{Rs } 150$ crore. Saving of Rs 150 crore equals the planned investment of Rs 150 crore, which is the second way of stating the same equilibrium. The two statements must agree, because saving is whatever part of income is not consumed and investment is whatever part of aggregate demand is not consumption, so once total demand equals total income the part of each that is not consumption must be equal as well.

Equilibrium income Rs 1,000 crore 1. Consumption Rs 850 crore 1. Saving Rs 150 crore, shown to equal planned investment, with the reason 1.

Question 12 [3]

Three functions follow, any three of the following gaining the marks. First, the issue of currency. The central bank has the sole right to issue currency notes in the country, which gives the note issue uniformity, keeps public confidence in it and allows the total quantity of currency to be controlled, since a single authority can see the whole of it. Second, banker to the government. The central bank keeps the accounts of the government, receives its receipts and makes its payments, manages the public debt and advises the government on financial matters, so that the government's banking is done by an institution with no profit to make out of it. Third, banker's bank and lender of last resort. The commercial banks keep their reserves with the central bank and turn to it for accommodation when they are short, which keeps the banking system liquid and prevents a temporary shortage at one bank from turning into a panic. Fourth, the control of credit. By the bank rate, by open market operations, by varying the cash reserve ratio and by selective instruments, the central bank regulates the quantity and the direction of credit, with the aim of keeping prices steady and the growth of the economy on an even course. Fifth, custodian of the foreign exchange reserves, which allows the external value of the currency to be managed and the country's external payments to be met.

One function of the central bank explained, with the aim it serves named 1. A second, different function explained with its aim 1. A third, different function explained with its aim 1.

Question 13 [3]

Human capital formation is the process of adding to the stock of knowledge, skill, health and working capacity embodied in the people of a country, so that labour becomes more productive. It treats expenditure on people as an investment, because it creates an asset that yields a return in the form of higher output and higher earnings over the whole of a working life. Two ways in which a country may add to that stock are these, any two gaining the marks. Expenditure on education and training, from schooling and higher education through to vocational and on the job training, which raises the skill a worker brings to his task. Expenditure on health, including preventive medicine, clean water and nutrition, which lengthens working life, reduces the days lost to sickness and raises the energy a worker can bring to work. Expenditure on information, so that people know where the work is and what it pays and can take their skills to where they are most wanted. Migration itself, when a worker moves from a place where his skill earns little to a place where it earns more, though the cost of moving has to be set against the gain. Expenditure on research and on the training of researchers, which raises the stock of knowledge the whole economy draws upon.

Human capital formation defined, with the point that it is an investment creating a productive asset 1. One correct way of adding to the stock, properly explained 1. A second, different way, properly explained 1.

Question 14 [10]

- (a) Net domestic product at factor cost = compensation of employees + rent + interest + corporate profit + mixed income of the self employed = 1,500 + 200 + 150 + 350 + 600 = Rs 2,800 crore. National income, which is net national product at factor cost, = net domestic product at factor cost + net factor income from abroad = 2,800 + (minus 25) = Rs 2,775 crore. Gross national product at factor cost = national income + consumption of fixed capital = 2,775 + 160 = Rs 2,935 crore. Gross national product at market price = gross national product at factor cost + net indirect taxes = 2,935 + 120 = Rs 3,055 crore.

All five factor incomes added to give net domestic product at factor cost Rs 2,800 crore 2. National income Rs 2,775 crore, the net factor income from abroad correctly treated as negative 2. Gross national product at factor cost Rs 2,935 crore 1. Gross national product at market price Rs 3,055 crore 1.

- (b) Mixed income of the self employed is the income of those who work on their own account, the cultivator on his own land, the shopkeeper in his own shop, the doctor in his own practice. Such a person supplies several factors of production at once. He supplies his own labour, so part of what he earns is in the nature of wages. He supplies his own capital and often his own land or premises, so part of it is in the nature of interest and rent. And he bears the risk of the enterprise, so part of it is profit. He keeps no accounts that separate these elements, and there is no contract and no market transaction from which the split could be read, since he pays himself no wage and charges himself no rent. Any division would therefore be a guess. The whole receipt is accordingly shown under one head, and the head is called mixed income because the incomes of several factors are mixed together in it.

The self employed person identified as supplying several factors at once 1. The impossibility of a split explained by the absence of any separate contract, wage or rent from which it could be read 1.

- (c) The salary of a government clerk is included because it is a factor payment. The clerk supplies his labour to the government and the salary is the reward for that service, so a service has been rendered and an income earned in exchange for it. Government administration counts as production in the national accounts and its output is valued at the cost of the inputs, chiefly these salaries. The old age pension is excluded because it is a transfer payment. The retired person renders no service in return for it, and no output is produced in exchange, so including it would add to national income without anything having been produced. The pension merely moves purchasing power from the taxpayer to the pensioner, and the income out of which it is paid has already been counted once when it was earned. Counting it again would be double counting.

Salary included as a factor payment for a service rendered 1. Pension excluded as a transfer payment against which no service is rendered, with the double counting point 1.

Question 15 [10]

- (a) The marginal propensity to save = $1 - MPC = 1 - 0.8 = 0.2$. The investment multiplier $k = 1/MPS = 1/0.2 = 5$. Increase in national income = $k \times \text{increase in investment} = 5 \times 150 = \text{Rs } 750$ crore. The process works round by round. The Rs 150 crore spent on investment is paid out to those who supply the labour and the materials, so in the first round income rises by Rs 150 crore. Those who receive it spend 0.8 of it, that is Rs 120 crore, and save the rest, so in the second round income rises by Rs 120 crore. The receivers of that spend 0.8 of it, that is Rs 96 crore, which is the third round. The rounds go on, each 0.8 of the one before, as 150, 120, 96, 76.80, 61.44 and so on. The rounds form a geometric series whose first term is 150 and whose common ratio is 0.8, and the sum of such a series is 150 divided by $(1 - 0.8)$, that is 150 divided by 0.2 = Rs 750 crore, which is the figure the multiplier gives. The process comes to a stop because a part of the income is saved at every round and so drops out of the stream of spending, and that leakage makes each round smaller than the last.

Marginal propensity to save 0.2 1. Multiplier 5 1. Increase in national income Rs 750 crore 1. The first three rounds worked out as Rs 150 crore, Rs 120 crore and Rs 96 crore 1. The series summed to Rs 750 crore, with saving named as the leakage that brings the process to a stop 1.

- (b) The money multiplier = $1/LRR = 1/0.25 = 4$. Total deposits the system can create = the fresh deposit $\times$ the money multiplier = $8,000 \times 4 = \text{Rs } 32,000$ crore. Credit created = total deposits less the original deposit = $32,000 - 8,000 = \text{Rs } 24,000$ crore. The result may also be reached round by round. The first bank keeps Rs 2,000 crore as its reserve and lends Rs 6,000 crore, which returns to the system as a deposit, of which Rs 1,500 crore is kept and Rs 4,500 crore lent, and so on, the rounds summing to Rs 32,000 crore of deposits.

Money multiplier 4 1. Total deposits Rs 32,000 crore 1. Credit created Rs 24,000 crore 1.

- (c) Any two of the following gain the marks. A rise in the cash reserve ratio or the statutory liquidity ratio, which obliges the banks to keep back a larger part of every deposit, leaves them less to lend, lowers the money multiplier and so contracts the supply of money. The sale of government securities in the open market, by which the central bank takes cash out of the banking system in exchange for the securities it sells, so that the reserves of the banks fall and their power to lend falls with them. A rise in the bank rate or the repo rate, which makes the accommodation the banks get from the central bank dearer, so that they in turn raise their own lending rates, borrowing becomes less attractive and the creation of credit slows. A rise in the margin requirement on loans against particular securities, which obliges the borrower to find a larger part of the value himself and so reduces the amount that can be borrowed on a given security.

One instrument named, with a correct explanation of how it reduces the money supply 1. A second, different instrument named and explained 1.

Question 16 [10]

- (a) Set the mid values against the frequencies and take the products. Mid value 5 with frequency 3 gives 15. Mid value 10 with frequency 5 gives 50. Mid value 15 with frequency 8 gives 120. Mid value 20 with frequency 6 gives 120. Mid value 25 with frequency 3 gives 75. The sum of the frequencies, N , is $3 + 5 + 8 + 6 + 3 = 25$, which agrees with the twenty five students given. The sum of the products, that is the sum of fx , is $15 + 50 + 120 + 120 + 75 = 380$. Arithmetic mean = sum of fx divided by $N = 380/25 = 15.2$ hours.

Sum of frequencies $N = 25$ 1. Sum of $fx = 380$ 1. Arithmetic mean 15.2 hours 1.

- (b) The marks are 16, 16, 18, 20, 20, 22, 24, 24, and there are eight of them. Arithmetic mean = $(16 + 16 + 18 + 20 + 20 + 22 + 24 + 24)/8 = 160/8 = 20$ marks. Take the deviations from the mean: minus 4, minus 4, minus 2, 0, 0, 2, 4, 4. Their squares are 16, 16, 4, 0, 0, 4, 16, 16, and the sum of the squared deviations is 72. Variance = $72/8 = 9$, so the standard deviation = the square root of $9 = 3$ marks. Coefficient of variation = (standard deviation divided by the mean) $\times 100 = (3/20) \times 100 = 15$ per cent. The standard deviation is in the same unit as the marks themselves, while the coefficient of variation is a pure number and so allows the spread of this set to be compared with the spread of a set measured in some other unit or on some other scale.

Arithmetic mean 20 marks 1. Sum of the squared deviations 72 1. Standard deviation 3 marks 1. Coefficient of variation 15 per cent 1.

- (c) Work out the price relative for each article, that is the current price as a percentage of the base price, and weight it. First article: $25/20 \times 100 = 125$, weight 4, so the weighted relative is 500. Second article: $12/10 \times 100 = 120$, weight 3, so the weighted relative is 360. Third article: $60/50 \times 100 = 120$, weight 2, so the weighted relative is 240. Fourth article: $20/25 \times 100 = 80$, weight 1, so the weighted relative is 80. The sum of the weights is $4 + 3 + 2 + 1 = 10$, and the sum of the weighted relatives is $500 + 360 + 240 + 80 = 1,180$. Weighted price index number = sum of the weighted relatives divided by the sum of the weights = $1,180/10 = 118$. The figure means that, taking the four articles together with the importance the weights assign to them, prices in the current year stand at 118 for every 100 in the base year, that is they have risen by 18 per cent on the average. Note that the fourth article has in fact become cheaper, its relative being 80, but it carries the lowest weight, so it pulls the index down only a little.

Price relatives of 125, 120, 120 and 80 1. Sum of the weights 10 and sum of the weighted relatives 1,180 1. Index number 118, with its meaning stated as a rise of 18 per cent on the average 1.