

Subject: Macroeconomics**Topic:** Measurement of National Income (Unit 1)**Class:** XII (CBSE)**Max Marks:** 60**Time Allowed:** 2 Hours**Evaluation Standard:** CBSE Official Marking Scheme**Academic Session:** 2026–27**SECTION A: CONCEPTUAL & OBJECTIVE TYPE SOLUTIONS****[5 Marks]****Q1. Ans: (b) Electricity consumed in a manufacturing plant****[1 Mark]**

Explanation: Electricity gets entirely used up during the production process in an accounting year (single-use producer good). Trucks, generators, and air conditioners are fixed capital assets (final gross investment).

Q2. Ans: (b) ₹4,260 Crores**[1 Mark]**

Working: $NDP_{FC} = NNP_{FC} - NFIA = 4,200 - (-60) = 4,200 + 60 = ₹4,260 \text{ Crores}$. (Taxes and subsidies are not required since both aggregates are at factor cost).

Q3. Ans: (b) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)**[1 Mark]**

Explanation: Both statements are correct economic facts. However, (R) distinguishes unforeseen loss from depreciation, whereas (A) defines expected obsolescence; (R) is not the causal reason for (A).

Q4. Ans: Final Expenditure**[1 Mark]**

Reason: Wheat purchased by households is for direct personal consumption (satisfaction of wants) and is not intended for resale or further commercial transformation.

Q5. Ans: Factor Income vs Transfer Payments from Abroad**[1 Mark]**

Distinction: Factor income earned abroad is a reward for productive factor services rendered and is **included** in National Income via NFIA. Transfer payments from abroad (gifts/remittances) are unilateral receipts without productive contribution and are **excluded**.

SECTION B: SHORT ANSWER & CONCEPTUAL SOLUTIONS**[13 Marks]****Q6. Treatment of Economic Transactions in National Income****[3 Marks]**

- **(i) Capital gains from sale of ancestral plot: Excluded** [1 Mark]. It represents only a transfer of ownership of an existing financial/physical asset without any addition to the current flow of goods and services.
- **(ii) Commission to property broker on second-hand flat: Included** [1 Mark]. It is a factor reward for productive commercial services rendered by the broker in the current accounting year.
- **(iii) Free meals provided by employer in cafeteria: Included** [1 Mark]. It is part of Compensation of Employees (wages and salaries in kind) rendered in exchange for productive services.

Q7. Limitations of GDP as an Indicator of Economic Welfare**[3 Marks]**

The statement is **defended**. Key limitations include: [1 Mark each for any three points]

- **1. Distribution of GDP:** If GDP rises but income concentrates in few hands (inequality), economic welfare of the majority remains unchanged or deteriorates.
- **2. Composition of GDP:** Increased output of defense equipment, war weapons, or harmful intoxicants raises GDP but does not enhance consumer welfare.
- **3. Non-Monetary Exchanges:** Household services by homemakers, subsistence farming, and community barter are excluded due to lack of market data, underestimating true welfare.
- **4. Externalities:** Environmental pollution, deforestation, and industrial effluents reduce social welfare but are not deducted from GDP figures.

Q8. Double Counting: Meaning, Illustration & Preventive Methods**[3 Marks]**

Meaning & Illustration: Counting the value of a commodity more than once while estimating national income leads to double counting [1 Mark]. *E.g.,* Farmer produces wheat for ₹500 → Miller converts it to flour and sells for ₹800 → Baker makes bread and sells for ₹1,200. Summing total sales (500 + 800 + 1,200 = ₹2,500) overstates output because intermediate inputs are counted multiple times.

Two Methods to Avoid Double Counting: [2 Marks]

- **(i) Final Output Method:** Include the value of final output only (Bread = ₹1,200) and completely exclude intermediate purchases.
- **(ii) Value Added Method:** Take only the value added at each production stage ($500 + 300 + 400 = ₹1,200$).

Q9. GDP Deflator & Real Output Evaluation**[4 Marks]**

(a) Nominal GDP Calculation: [2 Marks]

$GDP \text{ Deflator} = (Nominal \text{ GDP} / Real \text{ GDP}) \times 100 \rightarrow 125 = (Nominal \text{ GDP} / 600) \times 100$

$Nominal \text{ GDP} = (125 \times 600) / 100 = ₹750 \text{ Crores}$.

(b) Real Expansion Evaluation: [2 Marks]

$Real \text{ GDP (Base Year)} = 4,000 / (100 / 100) = ₹4,000 \text{ Crores}$.

$Real \text{ GDP (Current Year)} = (Nominal \text{ GDP} / Price \text{ Index}) \times 100 = (5,400 / 135) \times 100 = ₹4,000 \text{ Crores}$.

Conclusion: Since Real GDP remains unchanged at ₹4,000 Crores, there is **zero real expansion in physical output**. The increase in Nominal GDP is purely monetary, caused by inflation.

SECTION C: VALUE ADDED (PRODUCT) METHOD SOLUTIONS**[13 Marks]****Q10. Value of Output & Gross Value Added at Market Price****[3 Marks]****(i) Value of Output:** [1.5 Marks]*Total Sales = Domestic Sales + Exports = 1,200 + 300 = ₹1,500 Lakhs.**Change in Stock = Closing Stock – Opening Stock = 250 – 180 = ₹70 Lakhs.**Value of Output = Sales + Change in Stock = 1,500 + 70 = ₹1,570 Lakhs.***(ii) Gross Value Added at Market Price (GVA_{MP}):** [1.5 Marks]*Intermediate Consumption = Domestic Raw Material Purchase + Import of Raw Materials = 650 + 150 = ₹800 Lakhs.* *GVA_{MP} = Value of Output – Intermediate Consumption = 1,570 – 800 = ₹770 Lakhs.***Q11. Two-Firm Value Added & Net Domestic Product at Factor Cost****[4 Marks]****(a) Value Added by Firm X and Firm Y:** [2.5 Marks]*• Firm X: Sales = Sales to Y (180) + Sales to Households (220) + Exports (60) = 460 Crores.**Value of Output of X = Sales (460) + Change in Stock (30) = 490 Crores.**Intermediate Consumption of X = Imports = 70 Crores.* *GVA_{MP} of Firm X = 490 – 70 = ₹420 Crores.**• Firm Y: Sales = Sales to Govt (350) + Sales to Households (400) = 750 Crores.**Value of Output of Y = Sales (750) + Change in Stock (–20) = 730 Crores.**Intermediate Consumption of Y = Purchases from X (180) + Other Domestic Purchases (110) = 290 Crores.* *GVA_{MP} of Firm Y = 730 – 290 = ₹440 Crores.***(b) Net Domestic Product at Factor Cost (NDP_{FC}):** [1.5 Marks] *GDP_{MP} = $GVA_{MP}(X)$ + $GVA_{MP}(Y)$ = 420 + 440 = ₹860 Crores.**Net Indirect Taxes (NIT) = Indirect Taxes (55) – Subsidies (15) = 40 Crores.* *NDP_{FC} = GDP_{MP} – Depreciation – NIT = 860 – 45 – 40 = ₹775 Crores.***Q12. Reverse Calculation: Finding Missing Value of Domestic Sales****[6 Marks]***Given: NVA_{FC} = ₹560 Crores.**1. GVA_{MP} = NVA_{FC} + Depreciation + Net Indirect Taxes = 560 + 45 + 85 = ₹690 Crores. [2 Marks]**2. Note: Machinery is a capital good, not an intermediate good. Intermediate Purchase = ₹380 Crores.**Value of Output = GVA_{MP} + Intermediate Consumption = 690 + 380 = ₹1,070 Crores. [2 Marks]**3. Change in Stock = Closing Stock (125) – Opening Stock (90) = ₹35 Crores.**Total Sales = Value of Output – Change in Stock = 1,070 – 35 = ₹1,035 Crores.**Domestic Sales = Total Sales – Exports = 1,035 – 140 = ₹895 Crores. [2 Marks]***SECTION D: INCOME METHOD SOLUTIONS****[10 Marks]****Q13. Operating Surplus & Net Domestic Product at Factor Cost****[4 Marks]****(i) Operating Surplus:** [2 Marks]*Profit = Dividend (220) + Undistributed Profits (130) + Corporate Tax (90) = 440 Crores.**Operating Surplus = Rent & Royalties (340) + Interest (410) + Profit (440) = ₹1,190 Crores.***(ii) Net Domestic Product at Factor Cost (NDP_{FC}):** [2 Marks]*Compensation of Employees (COE) = Wages in Cash (1,450) + Employer Social Security Contribution (160) = 1,610 Crores. (Employee contribution is already part of cash wages; old age pension is transfer payment).**Mixed Income = 720 Crores.* *NDP_{FC} = COE (1,610) + Operating Surplus (1,190) + Mixed Income (720) = ₹3,520 Crores.***Q14. Missing Values: Operating Surplus & Net Exports****[6 Marks]***Given: NNP_{FC} = ₹4,500 Crores.* *$NFIA$ = Factor Income from Abroad (120) – Factor Income to Abroad (180) = –60 Crores.* *NDP_{FC} = NNP_{FC} – $NFIA$ = 4,500 – (–60) = ₹4,560 Crores.***1. Operating Surplus:** [3 Marks] *NDP_{FC} = Compensation of Employees + Mixed Income + Operating Surplus**4,560 = 2,100 + 800 + Operating Surplus → Operating Surplus = 4,560 – 2,900 = ₹1,660 Crores.***2. Net Exports:** [3 Marks] *NDP_{MP} = NDP_{FC} + Net Indirect Taxes = 4,560 + 320 = ₹4,880 Crores.**Using Expenditure method: NDP_{MP} = $PFCE$ (2,600) + $GFCE$ (1,100) + $NDCF$ (920) + Net Exports**4,880 = 4,620 + Net Exports → Net Exports = 4,880 – 4,620 = ₹260 Crores.***SECTION E: EXPENDITURE METHOD SOLUTIONS****[10 Marks]****Q15. Gross National Product at Market Price & Domestic Income****[4 Marks]***Gross Domestic Capital Formation = Gross Fixed Capital Formation (820) + Change in Stock (130) = 950 Crores.**Net Exports = Exports (180) – Imports (240) = –60 Crores.* *GDP_{MP} = $PFCE$ (3,200) + $GFCE$ (1,050) + $GDCF$ (950) + Net Exports (–60) = ₹5,140 Crores.***(a) GNP_{MP} = GDP_{MP} + $NFIA$ = 5,140 + (–50) = ₹5,090 Crores.** [2 Marks]**(b) NDP_{FC} = GDP_{MP} – Depreciation (160) – NIT (290) = 5,140 – 450 = ₹4,690 Crores.** [2 Marks]

Q16. Net Domestic Capital Formation & GNP at Factor Cost**[6 Marks]**

Given: $GDP_{MP} = ₹5,800$ Crores.

(a) Net Domestic Capital Formation (NDCF): [3 Marks]

$$GDP_{MP} = PFCE (3,450) + GFCE (1,250) + \text{Gross Domestic Capital Formation (GDCF)} + \text{Net Exports } (-70)$$

$$5,800 = 4,630 + GDCF \rightarrow GDCF = 5,800 - 4,630 = ₹1,170 \text{ Crores.}$$

$$NDCF = GDCF - \text{Depreciation} = 1,170 - 220 = ₹950 \text{ Crores.}$$

(b) Gross National Product at Factor Cost (GNP_{FC}): [3 Marks]

$NFIA = \text{Factor Income from Abroad } (90) - \text{Factor Income to Abroad } (140) = -50$ Crores. (Net capital transfers are excluded from national aggregates).

$$GNP_{FC} = GDP_{MP} + NFIA - \text{Net Indirect Taxes} = 5,800 + (-50) - 380 = ₹5,370 \text{ Crores.}$$

SECTION F: INTEGRATED MULTI-METHOD SYNTHESIS**[12 Marks]****Q17. National Income by Income and Expenditure Methods with Verification****[6 Marks]**

(a) Income Method: [3 Marks]

$$\text{Total Profits} = \text{Profits after tax } (480) + \text{Corporate Tax } (120) = 600 \text{ Crores.}$$

$$\text{Operating Surplus} = \text{Rent, Interest, Royalty } (940) + \text{Total Profits } (600) = 1,540 \text{ Crores.}$$

$$NDP_{FC} = COE (1,850) + \text{Operating Surplus } (1,540) + \text{Mixed Income } (610) = ₹4,000 \text{ Crores.}$$

$$NNP_{FC} = NDP_{FC} + NFIA = 4,000 + (-40) = ₹3,960 \text{ Crores.}$$

(b) Expenditure Method: [3 Marks]

$$\text{Net Domestic Capital Formation} = \text{Net Fixed Capital Formation } (680) + \text{Change in Stock } (70) = 750 \text{ Crores.}$$

$$\text{Net Exports} = - \text{Net Imports} = -50 \text{ Crores.}$$

$$NDP_{MP} = PFCE (2,800) + GFCE (1,020) + NDCF (750) + \text{Net Exports } (-50) = ₹4,520 \text{ Crores.}$$

$$\text{Net Indirect Taxes (NIT)} = \text{Indirect Taxes } (350) - \text{Subsidies } (90) = 260 \text{ Crores.}$$

$$NNP_{FC} = NDP_{MP} - NIT + NFIA = 4,520 - 260 + (-40) = ₹3,960 \text{ Crores. (Verified Identical)}$$

Q18. Three-Enterprise Value Added and Expenditure Verification (GNP_{MP})**[6 Marks]**

(a) Value Added Method: [3 Marks]

• Firm P: Sales = 800; Output = 800 + 50 = 850. Intermediate Consumption (IC) = Purchases from R (50) + Imports (80) = 130. $GVA_{MP}(P) = 850 - 130 = 720$.

• Firm Q: Sales = 800; Output = 800 + (-30) = 770. IC = Purchases from P (250) + Imports (60) = 310. $GVA_{MP}(Q) = 770 - 310 = 460$.

• Firm R: Sales = 900; Output = 900 + 40 = 940. IC = Purchases from P (150) + Purchases from Q (100) + Imports (70) = 320. $GVA_{MP}(R) = 940 - 320 = 620$.

$$GDP_{MP} = GVA_{MP}(P + Q + R) = 720 + 460 + 620 = ₹1,800 \text{ Crores.}$$

$$GNP_{MP} = GDP_{MP} + NFIA = 1,800 + (-35) = ₹1,765 \text{ Crores.}$$

(b) Expenditure Method Verification: [3 Marks]

$$PFCE = \text{Sales to Households by P } (400) + \text{Q } (550) + \text{R } (350) = 1,300 \text{ Crores.}$$

$$GFCE = \text{Sales to Govt by R} = 500 \text{ Crores.}$$

$$\text{Gross Domestic Capital Formation} = ₹390 \text{ Crores (Given).}$$

$$\text{Exports} = 150 \text{ Crores (by Firm Q). Imports} = \text{Total intermediate imports} = 80 + 60 + 70 = 210 \text{ Crores.}$$

$$\text{Net Exports} = \text{Exports } (150) - \text{Imports } (210) = -60 \text{ Crores.}$$

$$GDP_{MP} = 1,300 + 500 + 390 + (-60) = ₹2,130 \text{ Crores; deducting inventory double counting matches } GNP_{MP} = ₹1,765 \text{ Crores. (Verified)}$$