## Section 3: Last 10 Years CBSE Board Examination Numericals (2016–2025) with Step-by-Step Solutions

**Board Numerical 1 (CBSE 2016). Calculate Net National Product at Factor Cost (National Income) from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Private Final Consumption Expenditure | 900 |
| (ii) | Profit | 100 |
| (iii) | Government Final Consumption Expenditure | 400 |
| (iv) | Net Indirect Taxes | 100 |
| (v) | Gross Domestic Capital Formation | 250 |
| (vi) | Change in Stock (Closing Stock minus Opening Stock) | 50 |
| (vii) | Net Factor Income from Abroad | (-) 40 |
| (viii) | Consumption of Fixed Capital (Depreciation) | 20 |
| (ix) | Net Imports | 30 |

• Method Used: Expenditure Method (Note: Change in Stock is ignored because Gross Domestic Capital Formation already includes Change in Stock; Net Imports = ₹30 crore implies Net Exports = −₹30 crore).

• Formula: Gross Domestic Product at Market Price (GDP) = Private Final Consumption Expenditure + Government Final Consumption Expenditure + Gross Domestic Capital Formation + Net Exports

• Gross Domestic Product at Market Price (GDP) = 900 + 400 + 250 + (−30) = ₹1,520 crore

• Formula: Net National Product at Factor Cost = Gross Domestic Product at Market Price (GDP) − Consumption of Fixed Capital (Depreciation) + Net Factor Income from Abroad − Net Indirect Taxes

• Net National Product at Factor Cost = 1,520 − 20 + (−40) − 100 = ₹1,360 crore

**Final Answer: ₹1,360 crore**

**Board Numerical 2 (CBSE 2017). Calculate Gross National Product at Market Price from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Compensation of Employees | 2,000 |
| (ii) | Interest | 500 |
| (iii) | Rent | 700 |
| (iv) | Profits | 800 |
| (v) | Employers' Contribution to Social Security Schemes | 200 |
| (vi) | Dividends | 300 |
| (vii) | Consumption of Fixed Capital (Depreciation) | 100 |
| (viii) | Net Indirect Taxes | 250 |
| (ix) | Net Exports | 70 |
| (x) | Net Factor Income to Abroad | 150 |
| (xi) | Mixed Income of Self-Employed | 1,500 |

• Method Used: Income Method (Note: Employers' Contribution to Social Security Schemes is already included in Compensation of Employees; Dividends are already included in Profits; Net Factor Income to Abroad = ₹150 crore means Net Factor Income from Abroad = −₹150 crore).

• Formula: Net Domestic Product at Factor Cost (NDP) = Compensation of Employees + Operating Surplus (Rent + Interest + Profits) + Mixed Income of Self-Employed

• Net Domestic Product at Factor Cost (NDP) = 2,000 + (700 + 500 + 800) + 1,500 = 2,000 + 2,000 + 1,500 = ₹5,500 crore

• Formula: Gross National Product at Market Price = Net Domestic Product at Factor Cost (NDP) + Consumption of Fixed Capital (Depreciation) + Net Factor Income from Abroad + Net Indirect Taxes

• Gross National Product at Market Price = 5,500 + 100 + (−150) + 250 = ₹5,700 crore

**Final Answer: ₹5,700 crore**

**Board Numerical 3 (CBSE 2018). Calculate (a) Operating Surplus, and (b) Domestic Income (Net Domestic Product at Factor Cost (NDP)) from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Compensation of Employees | 2,000 |
| (ii) | Rent and Interest | 800 |
| (iii) | Indirect Taxes | 120 |
| (iv) | Corporation Tax | 460 |
| (v) | Consumption of Fixed Capital (Depreciation) | 100 |
| (vi) | Subsidies | 20 |
| (vii) | Dividend | 940 |
| (viii) | Undistributed Profits (Retained Earnings) | 300 |
| (ix) | Net Factor Income to Abroad | 150 |
| (x) | Mixed Income of Self-Employed | 200 |

• Step 1 (Profit Calculation): Profit = Corporation Tax + Dividend + Undistributed Profits = 460 + 940 + 300 = ₹1,700 crore

• Step 2 (Operating Surplus): Formula: Operating Surplus = Rent and Interest + Profit = 800 + 1,700 = ₹2,500 crore

• Step 3 (Domestic Income): Formula: Net Domestic Product at Factor Cost (NDP) = Compensation of Employees + Operating Surplus + Mixed Income of Self-Employed

• Net Domestic Product at Factor Cost (NDP) = 2,000 + 2,500 + 200 = ₹4,700 crore

**Final Answer: (a) Operating Surplus = ₹2,500 crore; (b) Net Domestic Product at Factor Cost (NDP) = ₹4,700 crore**

**Board Numerical 4 (CBSE 2019). Calculate Net Value Added at Factor Cost from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Purchase of Machinery to be used in the Production Unit | 100 |
| (ii) | Sales | 200 |
| (iii) | Intermediate Costs | 90 |
| (iv) | Indirect Taxes | 12 |
| (v) | Change in Stock (Closing Stock minus Opening Stock) | 10 |
| (vi) | Excise Duty | 6 |
| (vii) | Stock of Raw Material | 5 |

• Method Used: Value Added Method (Note: Purchase of machinery is a capital expenditure, not an intermediate cost; Excise Duty is already part of Indirect Taxes; Stock of raw material is an opening/closing stock balance, whereas Change in Stock is already given; Subsidies and Depreciation are zero as not given).

• Formula: Value of Output = Sales + Change in Stock = 200 + 10 = ₹210 crore

• Formula: Gross Value Added at Market Price = Value of Output − Intermediate Costs = 210 − 90 = ₹120 crore
• Formula: Net Value Added at Factor Cost = Gross Value Added at Market Price − Depreciation − Net Indirect Taxes = 120 − 0 − 12 = ₹108 crore

**Final Answer: ₹108 crore**

**Board Numerical 5 (CBSE 2020). Calculate Net Domestic Product at Factor Cost (NDP) by the Expenditure Method from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Private Final Consumption Expenditure | 8,000 |
| (ii) | Government Final Consumption Expenditure | 1,000 |
| (iii) | Exports | 70 |
| (iv) | Imports | 120 |
| (v) | Consumption of Fixed Capital (Depreciation) | 60 |
| (vi) | Fixed Domestic Capital Formation | 500 |
| (vii) | Change in Stock (Closing Stock minus Opening Stock) | 100 |
| (viii) | Factor Income to Abroad | 40 |
| (ix) | Factor Income from Abroad | 90 |
| (x) | Indirect Taxes | 700 |
| (xi) | Subsidies | 50 |

• Step 1: Gross Domestic Capital Formation = Fixed Domestic Capital Formation + Change in Stock = 500 + 100 = ₹600 crore
• Step 2: Net Exports = Exports − Imports = 70 − 120 = −₹50 crore
• Step 3: Gross Domestic Product at Market Price (GDP) = Private Final Consumption Expenditure + Government Final Consumption Expenditure + Gross Domestic Capital Formation + Net Exports = 8,000 + 1,000 + 600 − 50 = ₹9,550 crore
• Step 4: Net Indirect Taxes = Indirect Taxes − Subsidies = 700 − 50 = ₹650 crore
• Step 5: Net Domestic Product at Factor Cost (NDP) = Gross Domestic Product at Market Price (GDP) − Consumption of Fixed Capital (Depreciation) − Net Indirect Taxes = 9,550 − 60 − 650 = ₹8,840 crore

**Final Answer: ₹8,840 crore**

**Board Numerical 6 (CBSE 2021 — Term 1 / Sample Paper Pattern). If Real Gross Domestic Product (GDP) is ₹400 crore and Nominal Gross Domestic Product (GDP) is ₹450 crore, calculate the Price Index (Base Year = 100). Further, if the Price Index rises to 125 in the next year with the same Real Gross Domestic Product (GDP), calculate the new Nominal Gross Domestic Product (GDP).**

• Part 1: Formula: Price Index (Gross Domestic Product (GDP) Deflator) = (Nominal Gross Domestic Product (GDP) / Real Gross Domestic Product (GDP)) × 100
• Price Index = (450 / 400) × 100 = 112.5
• Part 2: Formula: New Nominal Gross Domestic Product (GDP) = (Real Gross Domestic Product (GDP) × New Price Index) / 100
• New Nominal Gross Domestic Product (GDP) = (400 × 125) / 100 = ₹500 crore

**Final Answer: Price Index = 112.5; New Nominal Gross Domestic Product (GDP) = ₹500 crore**

**Board Numerical 7 (CBSE 2022 — Term 2). Calculate Net National Product at Factor Cost (National Income) from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Net Domestic Fixed Capital Formation | 350 |
| (ii) | Closing Stock | 100 |
| (iii) | Opening Stock | 60 |

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (iv) | Consumption of Fixed Capital (Depreciation) | 50 |
| (v) | Indirect Taxes | 120 |
| (vi) | Subsidies | 20 |
| (vii) | Private Final Consumption Expenditure | 1,500 |
| (viii) | Government Final Consumption Expenditure | 600 |
| (ix) | Net Exports | (-) 30 |
| (x) | Net Factor Income from Abroad | 40 |

• Step 1: Change in Stock = Closing Stock − Opening Stock = 100 − 60 = ₹40 crore

• Step 2: Gross Domestic Capital Formation = Net Domestic Fixed Capital Formation + Change in Stock + Consumption of Fixed Capital (Depreciation) = 350 + 40 + 50 = ₹440 crore

• Step 3: Gross Domestic Product at Market Price (GDP) = Private Final Consumption Expenditure + Government Final Consumption Expenditure + Gross Domestic Capital Formation + Net Exports = 1,500 + 600 + 440 − 30 = ₹2,510 crore

• Step 4: Net Indirect Taxes = Indirect Taxes − Subsidies = 120 − 20 = ₹100 crore

• Step 5: Net National Product at Factor Cost = Gross Domestic Product at Market Price (GDP) − Consumption of Fixed Capital (Depreciation) + Net Factor Income from Abroad − Net Indirect Taxes = 2,510 − 50 + 40 − 100 = ₹2,400 crore

**Final Answer: ₹2,400 crore**

**Board Numerical 8 (CBSE 2023). Calculate Gross Value Added at Factor Cost from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Units of Output Sold (in units) | 2,000 |
| (ii) | Price per Unit of Output (in ₹) | 20 |
| (iii) | Depreciation | 2,000 |
| (iv) | Change in Stock (Closing Stock minus Opening Stock) | (-) 500 |
| (v) | Intermediate Cost | 15,000 |
| (vi) | Subsidy | 3,000 |

• Step 1: Sales = Units of Output Sold × Price per Unit = 2,000 × 20 = ₹40,000 crore

• Step 2: Value of Output = Sales + Change in Stock = 40,000 + (−500) = ₹39,500 crore

• Step 3: Gross Value Added at Market Price = Value of Output − Intermediate Cost = 39,500 − 15,000 = ₹24,500 crore

• Step 4: Net Indirect Taxes = Indirect Taxes − Subsidies = 0 − 3,000 = −₹3,000 crore

• Step 5: Gross Value Added at Factor Cost = Gross Value Added at Market Price − Net Indirect Taxes = 24,500 − (−3,000) = ₹27,500 crore

**Final Answer: ₹27,500 crore**

**Board Numerical 9 (CBSE 2024). Calculate National Income (Net National Product at Factor Cost) by both Income Method and Expenditure Method from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Compensation of Employees | 1,200 |
| (ii) | Net Factor Income from Abroad | (-) 20 |
| (iii) | Net Indirect Taxes | 120 |
| (iv) | Profit | 800 |
| (v) | Private Final Consumption Expenditure | 2,000 |

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (vi) | Net Domestic Capital Formation | 770 |
| (vii) | Consumption of Fixed Capital (Depreciation) | 130 |
| (viii) | Rent | 400 |
| (ix) | Interest | 620 |
| (x) | Mixed Income of Self-Employed | 700 |
| (xi) | Net Exports | (-) 30 |
| (xii) | Government Final Consumption Expenditure | 1,100 |

• Income Method:

• • Net Domestic Product at Factor Cost (NDP) = Compensation of Employees + Rent + Interest + Profit + Mixed Income of Self-Employed = 1,200 + 400 + 620 + 800 + 700 = ₹3,720 crore

• • Net National Product at Factor Cost = Net Domestic Product at Factor Cost (NDP) + Net Factor Income from Abroad = 3,720 + (−20) = ₹3,700 crore

• Expenditure Method:

• • Gross Domestic Capital Formation = Net Domestic Capital Formation + Consumption of Fixed Capital (Depreciation) = 770 + 130 = ₹900 crore

• • Gross Domestic Product at Market Price (GDP) = Private Final Consumption Expenditure + Government Final Consumption Expenditure + Gross Domestic Capital Formation + Net Exports = 2,000 + 1,100 + 900 − 30 = ₹3,970 crore

• • Net National Product at Factor Cost = Gross Domestic Product at Market Price (GDP) − Consumption of Fixed Capital (Depreciation) + Net Factor Income from Abroad − Net Indirect Taxes = 3,970 − 130 − 20 − 120 = ₹3,700 crore

**Final Answer: ₹3,700 crore (by both Income Method and Expenditure Method)**

**Board Numerical 10 (CBSE 2025). Calculate (a) Net Domestic Product at Factor Cost (NDP), and (b) Gross National Product at Market Price from the following data:**

| Serial Number | Particulars | Amount (in ₹ Crore) |
|---|---|---|
| (i) | Private Final Consumption Expenditure | 4,500 |
| (ii) | Government Final Consumption Expenditure | 1,500 |
| (iii) | Net Domestic Fixed Capital Formation | 950 |
| (iv) | Opening Stock | 240 |
| (v) | Closing Stock | 290 |
| (vi) | Consumption of Fixed Capital (Depreciation) | 200 |
| (vii) | Exports | 650 |
| (viii) | Imports | 800 |
| (ix) | Factor Income Earned from Abroad | 180 |
| (x) | Factor Income Paid to Abroad | 230 |
| (xi) | Goods and Services Tax (Indirect Taxes) | 420 |
| (xii) | Subsidies | 70 |

• Step 1: Change in Stock = Closing Stock − Opening Stock = 290 − 240 = ₹50 crore

• Step 2: Gross Domestic Capital Formation = Net Domestic Fixed Capital Formation + Change in Stock + Consumption of Fixed Capital (Depreciation) = 950 + 50 + 200 = ₹1,200 crore

• Step 3: Net Exports = Exports − Imports = 650 − 800 = −₹150 crore

• Step 4: Gross Domestic Product at Market Price (GDP) = 4,500 + 1,500 + 1,200 − 150 = ₹7,050 crore

• Step 5: Net Indirect Taxes = Goods and Services Tax − Subsidies = 420 − 70 = ₹350 crore

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• Step 6: Net Domestic Product at Factor Cost (NDP) = Gross Domestic Product at Market Price (GDP) − Consumption of Fixed Capital (Depreciation) − Net Indirect Taxes = 7,050 − 200 − 350 = ₹6,500 crore

• Step 7: Net Factor Income from Abroad = Factor Income Earned from Abroad − Factor Income Paid to Abroad = 180 − 230 = −₹50 crore

• Step 8: Gross National Product at Market Price = Gross Domestic Product at Market Price (GDP) + Net Factor Income from Abroad = 7,050 + (−50) = ₹7,000 crore

**Final Answer: (a) Net Domestic Product at Factor Cost (NDP) = ₹6,500 crore; (b) Gross National Product at Market Price = ₹7,000 crore**

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