PART B-INTRODUCTORY MACRO ECONOMICS

Unit VI: NATIONAL INCOME AND RELATED AGGREGATES:

KEY CONCEPTS

- Macro Economics: Its meaning
- Consumption goods, capital goods, final goods, intermediate goods, stock and flow, gross investment and depreciation.
- Circular flow of income
- Methods of calculation of national income
- Value added method (product method)
- Expenditure method
- Income method
- Concepts and aggregates related to national income
- Gross national product
- Net National product
- Gross and Net domestic product at market price and at factor cost.
- National disposable income (Gross and net)
- Private income
- Personal income
- Personal disposable income
- Real and Nominal GDP
- GDP and welfare

Macro Economics: Macroeconomics is the study of aggregate economic variables of an economy.

Consumption goods: Are those which are bought by consumers as final or ultimate goods to satisfy their wants.
Eg: Durable goods car, television, radio etc.
Non-durable goods and services like fruit, oil, milk, vegetable etc.
Semi durable goods such as crockery etc.

Capital goods – capital goods are those final goods, which are used and help in the process of production of other goods and services. E.g.: plant, machinery etc.

Final goods: Are those goods, which are used either for final consumption or for investment. It includes final consumer goods and final production goods. They are not meant for resale. So, no value is added to these goods. Their value is included in the national income.

Intermediate goods intermediate goods are those goods, which are used either for resale or for further production. Example for intermediate good is- milk used by a tea shop for selling tea.

Stock: Quantity of an economic variable which is measured at a particular point of time. Stock has no time dimension. Stock is static concept.
Eg: wealth, water in a tank.
**Flow**: Flow is that quantity of an economic variable, which is measured during the period of time. 
Flow has time dimension- like per hr, per day etc. 
Flow is a dynamic concept. 
Eg: Investment, water in a stream.

**Investment**: Investment is the net addition made to the existing stock of capital.

**Net Investment** = Gross investment – depreciation. 

**Depreciation**: Depreciation refers to fall in the value of fixed assets due to normal wear and tear, passage of time and expected obsolescence.

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**Circular flow in a two sector economy**

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Producers (firms) and households are the constituents in a two sectors economy. 
Households give factors of production to firm and firms in turn supply goods and services to households.

**Related aggregates**

**Gross Domestic product at market price**
It is the money value of all final goods and services produced during an accounting year with in the domestic territory of a country.

**Gross National product at market price**:
It is a money value of all final goods and services produced by a country during an accounting year including net factor income from abroad.

**Net factor income from abroad**: 
Difference between the factor incomes earned by our residents from abroad and factor income earned by non-residents with in our country.

**Components of Net factor income from abroad**
- Net compensation of employees
- Net income from property and entrepreneurship (other than retained earnings of resident companies of abroad)
- Net retained earnings of resident companies abroad

**Formulas**
- \( \text{NFP} = \text{GDP} - \text{depreciation} \)
- \( \text{NDP} = \text{GDP} - \text{depreciation} \)
• \( \text{NDP}_{FC} = \text{NDP}_{mp} - \text{Net indirect taxes} \) (indirect tax – subsidies)
• \( \text{GDP}_{FC} = \text{NDP}_{fc} + \text{depreciation} \)
• \( \text{NNP}_{FC} = \text{GDP}_{mp} - \text{depreciation} + \text{Net factor income from abroad} - \text{Net indirect taxes} \)
• \( (\text{NNP}_{FC} \text{ is the sum total of factor income earned by normal residents of a country during the accounting year}) \)
• \( \text{NNP}_{fc} = \text{NDP}_{fc} + \text{Net factor income from abroad.} \)

**Concept of domestic (economic) territory**

Domestic territory is a geographical territory administered by a government within which persons, goods and capital circulate freely. (Areas of operation generating domestic income, freedom of circulation of persons, goods and capital)

**Scope identified as**

*Political frontiers including territorial waters and air space.

*Embassies, consulates, military bases etc. located abroad but including those locates within the political frontiers.

*Ships, aircrafts etc., operated by the residents between two or more countries.

*Fishing vessels, oil and natural gas rigs etc. operated by the residents in the international waters or other areas over which the country enjoys the exclusive rights or jurisdiction.

**Resident (normal resident):**

Normal resident is a person or an institution who ordinarily resides in that country and whose center of economic interest lies in that country.

(The Centre of economic interest implies :
1. the resident lives or is located within the economic territory.
2. The resident carries out the basic economic activities of earnings, spending and accumulation from that location.
3. His center of interest lies in that country.

**Relation between national product and Domestic product.**

Domestic product concept is based on the production units located within domestic (economic) territory, operated both by residents and non-residents.

National product concept based on resident and includes their contribution to production both within and outside the economic territory.

National product = Domestic product + Residents contribution to production outside the economic territory (Factor income from abroad) - Non-resident contribution to production inside the economic territory (Factor income to abroad)

**Methods of calculation of national income**

**I - PRODUCT METHOD (Value added method):**

- Sales + change in stock = value of output
- Change in stock = closing stock – opening stock
- Value of output - Intermediate consumption = Gross value added (GDP_{mp})
- \( \text{NNP}_{fc} (N.I) = \text{GDP}_{mp} (-) \) consumption of fixed capital (depreciation)
  
  (+) Net factor income from abroad
  
  (-) Net indirect tax.

**Income method:**

1. Compensation of employees.
2. Operating surplus.

Income from property
   Rent & Royalty
   Interest

Income from Entrepreneurship
   Profit
   Corporate Tax
   Corporate Saving (Net retained earnings)


- NDP fc = (1) + (2) + (3)
- NNP fc = NDP fc (+) Net factor income from abroad
- GNP mp = NDP fc + consumption of fixed capital + Net indirect tax
  (Indirect tax – subsidy)

**Expenditure method:**
2. Private final consumption expenditure.

Gross Domestic fixed + Change in stock capital formation
\[ GDP_{mp} = (1) + (2) + (3) + (4) \]
\[ NNP_{fc} = GDP_{mp} - consumption\ of\ fixed\ capital + NFIA - Net\ indirect\ taxes \]

Note: If capital formation is given as Net domestic capital formation we arrive at NDP_{mp}.
Capital formation = Investment

**Calculation of National Disposable Income, Private Income, Personal Income and Personal Disposable Income**

Private Income includes factor income as well as Transfer income
National Disposable income as well as Transfer Unearned income
It is the income from all the sources (Earned Income as well as transfer payment from abroad) available to resident of a country for consumption expenditure or saving during a year.

\[ \text{NNP}_\text{FC} + \text{Net Indirect tax} + \text{Net current transfer from abroad} = \text{Net National disposable income.} \]

(Gross National Disposable Income includes depreciation)

\[ \text{Private Income Includes} \]

- Factor income from net domestic product accruing to private sector includes income from enterprises owned and controlled by the private individual.
- Excludes:
  1. Property and entrepreneurial income of the Gov. departmental enterprise
  2. Savings of the Non-departmental Enterprise.

Factor Income from NDP Accruing to private sector = NDP\text{FC} (-) income from properly entrepreneurship accruing to the govt departmental Enterprises (-) savings of Non departmental enterprises.

\[ \text{Personal Income = Private Income (-) corporation tax.} \]

\(-\) Corporate Savings OR Undistributed profits

\[ \text{Personal disposable income} \]

Personal income (-) Direct Personal tax (-) Miscellaneous Receipts of the govt. Administrative department (fees and fines paid by house hold.)

One Mark questions.

1. When will the domestic income be greater than the national income?
   Ans: When the net factor income from abroad is negative.

2. What is national disposable income?
   Ans: It is the income, which is available to the whole economy for spending or disposal
   \[ \text{NNP}_\text{MP} + \text{net current transfers from abroad} = \text{NDI} \]

3. What must be added to domestic factor income to obtain national income?
   Ans: Net factor income from abroad.

4. Explain the meaning of non-market activities
   Ans: Non marketing activities refer to acquiring of many final goods and services not through regular market transactions. E.g. vegetable grown in the backyard of the house.

5. Define nominal GNP
   Ans: GNP measured in terms of current market prices is called nominal GNP.

6. Define Real GNP.
   Ans: GNP computed at constant prices (base year price) is called real GNP.

7. Meaning of real flow.
   Ans: It refers to the flow of goods and services between different sectors of the economy. E.g. Flow of factor services from household to firm and flow of goods and services from firm to household.

8. Define money flow.
It refers to the flow of money between different sectors of the economy such as firm, household etc. Eg. Flow of factor income from firm to household and consumption expenditure from household to firm.

3-4 Mark Questions

1. Distinguish between GDP_{Mp} and GNP_{FC}
Ans. The difference between both arise due to (1) Net factor income from abroad. and 2) Net indirect taxes. In GDP_{Mp} Net factor income from abroad is not included but it includes net indirect taxes.

\[ \text{GNP}_{FC} = \text{GDP}_{Mp} + \text{net factor income from abroad} - \text{net indirect taxes} \]

2. Distinguish between personal income and private income
Ans. Personal income: -It is the sum total of earned income and transfer incomes received by persons from all sources within and outside the country.

\[ \text{Personal income} = \text{private income} - \text{corporate tax} - \text{corporate savings (undistributed profit)} \]

Private income consists of factor income and transfer income received from all sources by private sectors within and outside the country.

3. Distinguish between nominal GNP and real GNP
Ans. Nominal GNP is measured at current prices. Since this aggregate measures the value of goods and services at current year prices, GNP will change when volume of product changes or price changes or when both changes. Real GNP is computed at the constant prices. Under real GNP, value is expressed in terms of prices prevailing in the base year. This measure takes only quantity changes. Real GNP is the indicator of real income level in the economy.

4. Explain the main steps involved in measuring national income through product method
Ans.

a) Classify the producing units into industrial sectors like primary, secondary and tertiary sectors.
b) Estimate the net value added at the factor cost.
c) Estimate value of output by sales + change in stock
d) Estimate gross value added by value of output – intermediate consumption
e) Deduct depreciation and net indirect tax from gross value added at market price to arrive at net value added at factor cost = NDP_{Fc}
f) Add net factor income received from abroad to NDP_{Fc} to obtain NNP_{FC} which is national income.

5. Explain the steps involved in calculation of national income through income method

a) Classify the producing enterprises into industrial sectors like primary, secondary and tertiary.
b) Estimate the following factor income paid out by the producing units in each sector i.e.
   * Compensation of employees
   * Operating surplus
   * Mixed income of self employed
c) Take the sum of the factor income by all the industrial sectors to arrive at the NDP_{Fe} (Which is called domestic income)
d) Add net factor income from abroad to the net domestic product at factor cost to arrive at the net national product at factor cost.

6. Explain the main steps involved in measuring national income through expenditure method.
   a) Classify the economic units incurring final expenditure into distant groups like households, government, firms etc.
   b) Estimate the following expenditure on final products by all economic units
      • Private final consumption expenditure
      • Government final consumption expenditure
      • Gross domestic capital formation
      • Net export
      (Sum total of above gives GDP_{Mp})
   c) Deduct depreciation, net indirect taxes to get NDP\text{F}_c
   d) Add net factor income from abroad to NDP\text{F}_c to arrive at NNP\text{F}_c.

7. What are the precautions to be taken while calculating national income through product method (value added method)
   a) Avoid double counting of production, take only value added by each production unit.
   b) The output produced for self-consumption to be included
   c) The sale & purchase of second hand goods should not be included.
   d) Value of intermediate consumption should not be included
   e) The value of services rendered in sales must be included.

8. Precautions to be taken while calculating national income through income method.
   a) Income from owner occupied house to be included.
   b) Wages & salaries in cash and kind both to be included.
   c) Transfer income should not be included.
   d) Interest on loans taken for production only to be included. Interest on loan taken for consumption expenditure is non-factor income and so not included.

9. Precautions to be taken while calculations N.I under expenditure method.
   a) Avoid double counting of expenditure by not including expenditure on intermediate product
   b) Transfer expenditure not to be included
   c) Expenditure on purchase of second hand goods not to be included.

10. Write down the limitations of using GDP as an index of welfare of a country
    1) The national income figures give no indications of the population, skill and resources of the country. A country may be having high national income but it may be consumed by the increasing population, so that the level of people’s wellbeing or welfare standard of living remains low.
    2) High N. I may be due to greater area of the country or due to the concentration of some resources in out particular country.
    3) National income does not consider the level of prices of the country. People may be having income but may not be able to enjoy high standard of living due to high prices.
    4) High N. I may be due to the large contribution made by a few industrialists
    5) Level of unemployment is not taken into account.
    6) National income does not care to reduce ecological degradation. Due to excess of economic activity which leads to ecological degradation reduces the welfare of the people.
    Hence GNP and economic welfare are not positively related. Income in GNP does not bring about increase in economic welfare.
11. ‘Machine purchased is always a final good’ do you agree? Give reason for your answer
Whether machine is a final good or it depends on how it is being used (end use). If machine is bought by a household, then it is a final good. If machine is bought by a firm for its own use, then also it is a final good. If the machine is bought by a firm for resale then it is an intermediate good.

12. What is double counting? How can it be avoided?
Counting the value of commodities at every stage of production more than one time is called double counting.
It can be avoided by
a) taking value added method in the calculation of the national income.
b) By taking the value of final commodity only while calculating N.I.

6 Mark questions

1. State whether following is true or false. Give reason for your answer.
   a) Capital formation is a flow
      True, because it is measured over a period of time.
   b) Bread is always a consumer good.
      False, it depends upon the end use of bread. When it is purchased by a household it is a consumer good. When purchased by restaurant for making sandwich, it is an intermediate (producer) good.
   c) Nominal GDP can never be less that real GDP
      False. Nominal GDP can be less than the real GDP when the prices in the base year is more than the current year.
   d) Gross domestic capital formation is always greater than gross fixed capital formation.
      False, gross domestic capital formation can be less than gross fixed capital formation if change in stock is negative.

2. Why are exports included in the estimation of domestic product by the expenditure method? Can the gross domestic product be greater than the gross national product? Explain
   Expenditure method estimates expenditure on domestic product i.e., expenditure on final goods and services produced within the economic territory of the country. It includes expenditure by residents and non-residents both. Exports though purchased by non residents are produced within the economic territory and therefore a part of domestic product. Domestic product can be greater than national product, if the factor income paid to the rest of the world is greater than the factor income received from the rest of the world i.e. when net factor income received from abroad is negative.

3. How will you treat the following while estimating domestic product of India?
   a) Rent received by resident Indian from his property in Singapore.
      No, it will not be included in domestic product as this income is earned outside the economic territory of India.
   b) Salaries of Indians working in Japanese Embassy in India
      It will not be included in domestic product of India as embassy of Japan is not a part of economic territory of India.
c) Profits earned by branch of American bank in India.
Yes, it is included as part of domestic product since the branch of American bank is located within the economic territory of India.
d) Salaries paid to Koreans working in the Indian embassy in Korea
Yes, it will be part of domestic product of India because the income is earned within the economic territory of India. Indian embassy in Korea is a part of economic territory of India.

4 How are the following treated in estimating national income from expenditure method? Give reason.
a) Purchase of new car by a household: purchase of car is included in the national income because it is final consumption expenditure, which is part of national income.
b) Purchase of raw material by purchase unit: purchase of raw material by purchase unit is not included in the national income because raw material is intermediate goods and intermediate goods and service are excluded from the national income. Purchase of raw material, if included in national income will result in double counting.
c) Expenditure by the government on scholarship to student is not included in the national income because it is a transfer payment and no productive service is rendered by the student in exchange.

5 Are the following item included in the estimating a country's national income? Give reason.
1) Free cloth given to workers: free cloth given to worker is a part of wages in kind i.e. compensation to employee such compensation to employee is paid for the productive services in the economy, it is included in the national income.
2) Commission paid to dealer in old car: commission paid to dealer in old car is included in the estimation of national income because it is the income of the dealer for his productive services to various parties.
3) Growing vegetable in a kitchen garden of the house: growing vegetable in a kitchen garden of the house amount to production, though not for sale for self-consumption. It is included in the national income because it adds to the production of goods.

NATIONAL INCOME – NUMERICALS

1. Calculate Value Added at factor cost from the following.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. CRORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Purchase of raw materials</td>
<td>30</td>
</tr>
<tr>
<td>b. Depreciation</td>
<td>12</td>
</tr>
<tr>
<td>c. Sales</td>
<td>200</td>
</tr>
<tr>
<td>d. Excise tax</td>
<td>20</td>
</tr>
<tr>
<td>e. Opening stock</td>
<td>15</td>
</tr>
<tr>
<td>f. Intermediate consumption</td>
<td>48</td>
</tr>
<tr>
<td>g. Closing stock</td>
<td>10</td>
</tr>
</tbody>
</table>

Ans: Sales + ∆ in stock = value of output
200 + (cl. St – op. st)
200 + (10 -15)
= 200 -5=195
Value of output – intermediate consumption
= value added at MP
195-48 = 147
V.A at FC = V.A at MP – Net indirect tax
147 – 20
127 crores

2. Calculate (a) Net National Product at MP, and (b) Gross National Disposable Income

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Private final Consumption expenditure</td>
<td>200</td>
</tr>
<tr>
<td>b. Net indirect taxes</td>
<td>20</td>
</tr>
<tr>
<td>c. Change in stocks</td>
<td>(-)15</td>
</tr>
<tr>
<td>d. Net current transfers from abroad</td>
<td>(-)10</td>
</tr>
<tr>
<td>e. Govt. final consumption expenditure</td>
<td>50</td>
</tr>
<tr>
<td>f. Consumption of fixed capital</td>
<td>15</td>
</tr>
<tr>
<td>g. Net domestic capital formation</td>
<td>30</td>
</tr>
<tr>
<td>h. Net factor income from abroad</td>
<td>5</td>
</tr>
<tr>
<td>i. Net imports</td>
<td>10</td>
</tr>
</tbody>
</table>

Ans: (a) + (e) + (g) + (-i) = NDP
200 + 50 + 30 -10
280 -10 = 270 crores
NPNP = NDP + NFIFA
270 + 5 = 275
NPNP = 275 crores

GNDI = NNP + NFIFA + Net indirect taxes + Net current transfers from abroad + Depreciation (comp of fixed capital)
NNPMP – net in tax = 275 – 20 = 255 crores
GNDI = 255 + 20 + 5 + (-10) + 15
= 295 – 10 = 285 crores
GNDI = 285 crores

3. Calculate Gross Domestic Product at Market Price by
   (a) Production Method and (b) Income Method

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Intermediate consumption by</td>
<td>500</td>
</tr>
<tr>
<td>i) Primary sector</td>
<td>500</td>
</tr>
<tr>
<td>ii) Secondary sector</td>
<td>400</td>
</tr>
<tr>
<td>iii) Tertiary sector</td>
<td>400</td>
</tr>
<tr>
<td>b. Value of output by</td>
<td>1000</td>
</tr>
<tr>
<td>i) Primary sector</td>
<td>1000</td>
</tr>
<tr>
<td>ii) Secondary sector</td>
<td>900</td>
</tr>
<tr>
<td>iii) Tertiary sector</td>
<td>700</td>
</tr>
<tr>
<td>c. Rent</td>
<td>10</td>
</tr>
<tr>
<td>d. Compensation of employees</td>
<td>400</td>
</tr>
<tr>
<td>e. Mixed income</td>
<td>550</td>
</tr>
<tr>
<td>f. Operating surplus</td>
<td>300</td>
</tr>
<tr>
<td>h. Net factor income from abroad</td>
<td>(-)20</td>
</tr>
<tr>
<td>i. Interest</td>
<td>5</td>
</tr>
<tr>
<td>j. Consumption of fixed capital</td>
<td>40</td>
</tr>
<tr>
<td>k. Net indirect taxes</td>
<td>10</td>
</tr>
</tbody>
</table>
Ans: GDP MP by production method
(b) (i) + (ii) + (iii) – a (i) + (ii) + (iii) = value added
(1000+ 900 + 700) – (500 -400-400)
2600 – 1300 = 1300 crores Value added at MP (GDP MP)

Income method
Compensation of employees + operating surplus + mixed income = NDP FC
= 400 + 300 + 550 = 1250 crores
GDP MP = NDP FC + conspn of fixed capital + net In. tax
= 1250+ 40 + 10
GDP MP =1300

4. Calculate Net National Disposable Income from the following data.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Gross domestic product at MP</td>
<td>1000</td>
</tr>
<tr>
<td>b. Net factor income from abroad</td>
<td>(-) 20</td>
</tr>
<tr>
<td>c. Net indirect taxes</td>
<td>120</td>
</tr>
<tr>
<td>d. Consumption of fixed capital</td>
<td>100</td>
</tr>
<tr>
<td>e. Net current transfers from abroad</td>
<td>50</td>
</tr>
</tbody>
</table>

Ans: NNDI = GDP MP – consumption of fixed capital + Net FIFA + Net current transfer from abroad
= 1000 - 100 + 50 + (-20)
= 880 + 50 = 930 crores

5. Calculate Gross National Disposable Income from the following.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) National Income</td>
<td>2000</td>
</tr>
<tr>
<td>b) Net current transfers from rest of the world</td>
<td>200</td>
</tr>
<tr>
<td>c) Consumption of fixed capital</td>
<td>100</td>
</tr>
<tr>
<td>d) Net factor income from abroad</td>
<td>(-) 50</td>
</tr>
<tr>
<td>e) Net indirect taxes</td>
<td>25</td>
</tr>
</tbody>
</table>

Ans: GNDI = (a) + (b) + (c) + (e)
= 2000 + 200 + 100 + 250
GNDI = 2550 crores

6. ESTIMATE NATIONAL INCOME BY
(a) EXPENDITURE METHOD (b) INCOME METHOD FROM THE FOLLOWING DATA

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. in crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Private final consumption expenditure</td>
<td>210</td>
</tr>
<tr>
<td>2. Govt: final consumption expenditure</td>
<td>50</td>
</tr>
<tr>
<td>3. Net domestic capital formation</td>
<td>40</td>
</tr>
<tr>
<td>4. Net exports</td>
<td>(-) 5</td>
</tr>
<tr>
<td>5. Wages &amp; Salaries</td>
<td>170</td>
</tr>
<tr>
<td>6. Employer’s contribution</td>
<td>10</td>
</tr>
<tr>
<td>7. Profit</td>
<td>45</td>
</tr>
<tr>
<td>8. Interest</td>
<td>20</td>
</tr>
<tr>
<td>9. Indirect taxes</td>
<td>30</td>
</tr>
<tr>
<td>10. Subsidies</td>
<td>05</td>
</tr>
<tr>
<td>11. Rent</td>
<td>10</td>
</tr>
</tbody>
</table>
12. Factor income from abroad 03
13. Consumption of fixed capital 25
14. Royalty 15

Ans: National Income (NNP FC)

Expenditure Method

\[ (1) + (2) + (3) + (4) = NDP_{MP} \]
\[ 210 + 50 + 40 + (-5) = 295 \]

\[ NNP_{FC} = NDP_{MP} + \text{factor Income from abroad} - \text{net Indirect tax (Indirect tax – subsidy)} \]
\[ 295 + 3 – (30 -5) \]
\[ 295 + 3 - 25 \]
\[ = 298 - 25 = 273 \]

\[ NNP_{FC}= 273 \text{ crores} \]

Income method:

\[ (5) + (6) + (7) + (8) + (11) + (15) \]
\[ 170 + 10 + 45 + 20 + 10 + 15 \]
\[ = 270 \text{ (NDP}_{FC} \text{)} \]

\[ NDP_{FC} = NDP_{FC} + FIFA \]
\[ = 270 + 3= 273 \text{ crores} \]

7. FROM THE FOLLOWING DATA CALCULATE
   (a) NATIONAL INCOME (b) PERSONAL DISPOSABLE INCOME.

   1. Profit 500
   2. Rent 200
   3. Private income 2000
   4. Mixed income of self-employed 800
   5. Compensation of employers 1000
   6. Consumption of fixed capital 100
   7. Net factor income from abroad -(50)
   8. Net retained earnings of private employees’ 150
   9. Interest 250
   10. Net exports 200
   11. Co-operation 100
   12. Net indirect tax 160
   13. Direct taxes paid by houses hold’s 120
   14. Employers contribution to social security scheme. 60

Ans: NNP FC (N.I) = (5) + (9) + (4) + (1) + (2)
\[ 1000 + 250+ 800 + 500 + 200 \]
\[ NDP_{FC} = 2750 \text{ crores} \]
\[ NNP_{FC} = NDP_{FC} + (7) \]
\[ = 2750 + (-50) \]
\[ NNP_{Fc} = 2700 \text{ crores} \]

\[ PDI = (3) – (8) – (11) – (13) \]
\[ 2000 – 150 – 100 -120 \]
\[ PDI = 2000 – 370 = 1630 \text{ crores} \]

8. CALCULATE NATIONAL INCOME AND GROSS NATIONAL DISPOSABLE INCOME FROM THE FOLLOWING DATA.
   Net indirect tax 05
Net domestic fixed capital formation 100
Net exports (-) 20
Gov.: final consumption expenditure 200
Net current transfer from abroad 15
Private final consumption expenditure 600
Change in stock 10
Net factor from abroad 05
Gross domestic fixed capital formation 125

Ans: National Income (NNP
FC
) = (4) + (6) + (2) + (7) + (3) = NDP
MP

= 200 + 600 + 100 + 10 + (-20)
= 910 -20 = 890
NDP
MP
= 890 crores
NNP
FC
= NDP
MP
+ (8) – (1)
= 890 + 5 -5
NNP
FC
= 890
Depreciation = (9) – (2)
125 – 100 = 25 crores
GNDI = NNP
FC
+ Net Indirect Tax + Net Current transfers from abroad + depreciation
= 890 = 05+ 15 + 25
GNDI = 935 crores

9. CALCULATE NNP AT MARKET PRICE BY PRODUCTION METHOD AND INCOME METHOD

1. Intermediate consumption
   (a) primary sector 500
   (b) Secondary sector 400
   (c) tertiary sector 300

2. Value of output of
   (a) primary sector 1,000
   (b) Secondary sector 900
   (c) tertiary sector 700

3. Rent 10
4. Emoluments of employers 400
5. Mixed income 650
6. Operating surplus 300
7. Net factor income from abroad -20
8. Interest 05
9. Consumptive of fixed capital 40
10. Net indirect tax 10

Ans: NNP
MP
by production method

(2) Value of output – (1) Intermediate conspn = value added at MP
(2) a + b+ c – (1) a + b + c
1000 + 900 + 700 – 500 + 400 + 300
2600 – 1200
1400 = GDP
MP
\[ \text{NNP}_\text{MP} = \text{GDP}_\text{MP} - (9) + (7) \]
\[ = 1400 - 40 + (-20) \]
\[ \text{NNP}_\text{MP} = 1340 \]

Income Method:
\[ \text{NNP}_\text{MP} = (4) + (5) + (6) + (10) + (7) \]
\[ = 400 + 650 + 300 + 10 + (-20) \]
\[ \text{NNP}_\text{MP} = 1350 + 10 - 20 \]

10. **CALCULATE GNP AT FACTOR COST BY INCOME METHOD AND EXPENDITURE METHOD.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount in crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Private final consumption expenditure</td>
<td>1000</td>
</tr>
<tr>
<td>2. Net domestic capital formation</td>
<td>200</td>
</tr>
<tr>
<td>3. Profit</td>
<td>400</td>
</tr>
<tr>
<td>4. Compensation of employers</td>
<td>800</td>
</tr>
<tr>
<td>5. Rent</td>
<td>250</td>
</tr>
<tr>
<td>6. Gov.: final consumption expenditure</td>
<td>500</td>
</tr>
<tr>
<td>7. Consumption of fixed capital</td>
<td>60</td>
</tr>
<tr>
<td>8. Interest</td>
<td>150</td>
</tr>
<tr>
<td>9. Net current transfer from row</td>
<td>(-)80</td>
</tr>
<tr>
<td>10. Net factor income from abroad</td>
<td>(-)10</td>
</tr>
<tr>
<td>11. Net exports</td>
<td>(-)20</td>
</tr>
<tr>
<td>12. Net indirect taxes</td>
<td>80</td>
</tr>
</tbody>
</table>

Ans: GNP FC by Income method
\[ \text{GNP FC} = 4 + 3 + 5 + 8 + 10 + 7 \]
\[ = 800 + 400 + 250 + 150 + (-10) + 60 \]
\[ \text{GNP FC} = 1650 \text{ crores} \]

GNP FC by Expenditure Method
\[ \text{GNP FC} = 1 + 2 + 6 + 10 + 11 - 12 + 7 \]
\[ = 1000 + 200 + 500 + (-10) + (-20) - 80 + 60 \]
\[ = 1700 - 110 + 60 \]
\[ \text{GNP FC} = 1650 \text{ crores} \]

11. **CALCULATE PRIVATE INCOME AND PERSONAL DISPOSABLE INCOME FROM THE FOLLOWING DATA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount in crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. National income</td>
<td>5050</td>
</tr>
<tr>
<td>2. Income from property and entrepreneurship to govt. administrative department</td>
<td>500</td>
</tr>
<tr>
<td>3. Saving of non-department public enterprises</td>
<td>100</td>
</tr>
<tr>
<td>4. Corporation tax</td>
<td>80</td>
</tr>
<tr>
<td>5. Current transfer from govt: administrative depart</td>
<td>200</td>
</tr>
<tr>
<td>6. Net factor income from abroad</td>
<td>-50</td>
</tr>
<tr>
<td>7. Direct personal tax</td>
<td>150</td>
</tr>
<tr>
<td>8. Indirect taxes</td>
<td>220</td>
</tr>
<tr>
<td>9. Current transfer from Raw</td>
<td>80</td>
</tr>
<tr>
<td>10. Saving of private corporate sector</td>
<td>500</td>
</tr>
</tbody>
</table>

Ans: Private Income = 1 – 2 - 3 + 5 + 9
5050 – 500 – 100 + 200 + 80
5430 – 500
Private Income = 4930 crores
PDI = Private Income – 4 -10 -7
4930 -80 -500 -150
PDI = 4200 crores

12. Calculate private income
1. Income from domestic product accruing to private sector 250
2. Net current transfer from raw 40
3. Net current transfer from govt: administrative dept 10
4. National debt interest 20
5. Net factor income from abroad 05
Ans: Private Income = 1 + 2+ 3 + 4 + 5
250 + 40 + 10 + 20 + 5
= 325 crores

13. Calculate net national disposable income and personal income from the following data

<table>
<thead>
<tr>
<th>Description</th>
<th>Rs. In crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Net indirect taxes</td>
<td>90</td>
</tr>
<tr>
<td>2. Compensation of employers</td>
<td>400</td>
</tr>
<tr>
<td>3. Personal taxes</td>
<td>100</td>
</tr>
<tr>
<td>4. Operating surplus</td>
<td>200</td>
</tr>
<tr>
<td>5. Corporation profit tax</td>
<td>80</td>
</tr>
<tr>
<td>6. Mixed income of self-employed</td>
<td>500</td>
</tr>
<tr>
<td>7. National debt interest</td>
<td>70</td>
</tr>
<tr>
<td>8. Saving of nondepartmental enterprises</td>
<td>40</td>
</tr>
<tr>
<td>9. Current transfer from govt</td>
<td>60</td>
</tr>
<tr>
<td>10. Income from property and entrepreneurship to govt administrative</td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>30</td>
</tr>
<tr>
<td>11. Net current transfer from RAW</td>
<td>20</td>
</tr>
<tr>
<td>12. Net factor income from abroad</td>
<td>-50</td>
</tr>
<tr>
<td>13. Saving of private corporate sector</td>
<td>20</td>
</tr>
</tbody>
</table>

Ans: NDPfc = (2) + (4) + (6)
= 400 + 200 + 500 = 1100 crores
NNDI = NDP fc + (12) + (1) + (11)
=1100 + (-50) + 90 + 20
NNDI = 1210 – 50
= 1160 crores

Personal Income
Ans:
Private Income = NDP FC –(8) – (10)
1160 -40 – 30=1090 crores
1090 + 7 + 9 +11 +12
1090 + 70 + 60 + 20 + (-50) = 1190 crores
Personal income = Private Income – Corporation Profit Tax – Savings of private corporate sectors
1190 – 80 – 20= 1090 crores
14. CALCULATE FROM THE FOLLOWING DATA (A) PRIVATE INCOME (B) PERSONAL INCOME (C) PERSONAL DISPOSABLE INCOME.

**RS IN CRORES**

1. Factor income from NDP accruing to private sector 300
2. Income from entrepreneurship and property
3. Accruing to govt administrative departmental 70
4. Savings of non-departmental enterprises 60
5. Factor income from abroad 20
6. Consumption of fixed capital 35
7. Current transfer from rest of the world 15
8. Corporation taxes 25
9. Factor income to abroad 30
10. Current transfer from govt governmental admin depart 40
11. Direct taxes paid by household 20
12. National dept interest 05
13. saving of private corporate sector 80

Ans Private Income = 1 + 5 + 7 -9 + 10 + 12
300 + 20 + 15 -30 + 40 + 05
Private Income = 350 crores

Personal Income = Private income – 8 – 13
= 350 – 25 – 80
Personal Income = 245 crores

PDI = Personal Income - 11
245 – 20
PDI = 225 crores

15. From the following data, calculate:
   (a) Gross national Disposable Income
   (b) Private Income
   (c) Personal Disposable Income

   (Rs. In Crores)

(1) Net national product at factor cost 700
(2) Indirect taxes 60
(3) Subsidies 10
(4) Consumption of fixed capital 40
(5) Income from property and entrepreneurship
   Accruing to government administrative departments 50
(6) Current transfers from rest of the world 45
(7) Profits 100
(8) Direct tax paid by households 50
(9) Savings of private corporate sector 60
(10) Saving of non-departmental enterprises 25
(11) Current transfer from govt: administrative departments 70
(12) A factor income abroad 20
(13) Factor income to abroad 30
(14) Corporation tax 35

Ans GNDI = 1 + 2 -3 + 6 + 4
700 + 60 – 10 + 45 + 40= 805 -10 + 40 GNDI = 835 crores

b) Private Income = 1 – 5 -10 + 6 +11
Private Income = 740 crores
c) PDI = Private Income – 14 – 9 – 8
740 – 35 – 60 – 50
PDI = 594 crores

16. Calculate Gross National Disposable Income from the following data:

<table>
<thead>
<tr>
<th>(Rs. In Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) National income</td>
</tr>
<tr>
<td>(2) Net current transfer from rest of the world</td>
</tr>
<tr>
<td>(3) Consumption of fixed capital</td>
</tr>
<tr>
<td>(4) Net factor income from abroad</td>
</tr>
<tr>
<td>(5) Net indirect taxes</td>
</tr>
</tbody>
</table>

Ans: GNDI = 1 + 5 + 2 + 3
2000 + 250 + 200 + 100
GNDI = 2550 crores

17. Calculate Net National Disposable Income from the following data:

<table>
<thead>
<tr>
<th>(Rs. In Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Gross national product at factor cost</td>
</tr>
<tr>
<td>(2) Net current transfer from rest of the world</td>
</tr>
<tr>
<td>(3) Net indirect taxes</td>
</tr>
<tr>
<td>(4) Consumption of fixed capital</td>
</tr>
<tr>
<td>(5) Net factor income from abroad</td>
</tr>
</tbody>
</table>

Ans: NNDI = 1 + 2 + 3 -4
800 + 50 + 70 -60
= 860 crores

NUMERICALS TO BE CALCULATED BY STUDENTS

1. Calculate Net National Disposable Income from the following data:

<table>
<thead>
<tr>
<th>(Rs. In Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Gross domestic product at market price</td>
</tr>
<tr>
<td>(ii) Net factor income from abroad</td>
</tr>
<tr>
<td>(iii) Net indirect taxes</td>
</tr>
<tr>
<td>(iv) Consumption of fixed capital</td>
</tr>
<tr>
<td>(v) Net current transfer from rest of the world</td>
</tr>
</tbody>
</table>

2. Calculate Gross National Disposable Income from the following data:

<table>
<thead>
<tr>
<th>(Rs. In Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) National income (or NNPfc)</td>
</tr>
<tr>
<td>(ii) Net indirect taxes</td>
</tr>
<tr>
<td>(iii) Net factor income from abroad</td>
</tr>
<tr>
<td>(iv) Net current transfer from rest of the world</td>
</tr>
<tr>
<td>(v) Consumption of fixed capital</td>
</tr>
</tbody>
</table>

3. Calculate Gross National Disposable Income and Net National Disposable Income from the following data:

<table>
<thead>
<tr>
<th>(Rs. In Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) National income (or NNPfc)</td>
</tr>
<tr>
<td>(ii) Net indirect taxes</td>
</tr>
<tr>
<td>(iii) Net factor income from abroad</td>
</tr>
<tr>
<td>(iv) Net current transfer from rest of the world</td>
</tr>
<tr>
<td>(v) Consumption of fixed capital</td>
</tr>
</tbody>
</table>
(i) Consumption of fixed capital 30
(ii) Net national product at market price 240
(iii) Net Indirect taxes 40
(iv) Net current transfers from rest of the world (-)20
(v) Net factor income from abroad (-) 10

4. Find Out $G_{MP}$, $NDP_{FC}$ And Gross National Disposable Income.

(Rs. In Crores)
(i) National income 520
(ii) Net factor income from abroad 10
(iii) Indirect taxes 40
(iv) Subsidies 10
(v) Consumption of fixed capital 50
(vi) Net current transfer received from abroad 20

5. Calculate $NNP_{FC}$, net National Disposable Income and Gross National Disposable Income from following data:

(Rs. In Crores)
(i) $GNP_{MP}$ 1000
(ii) Net Indirect taxes 100
(iii) Net current transfer received from rest of the world (-)20
(iv) Subsidies 25
(v) Consumption of fixed capital 50
(vi) Net factor income paid to the rest of the world (-)10

6. Find Out (a) Personal Income and (b) Personal Disposable Income from following data:

(Rs. In Crores)
1. Private income 48,800
(ii) Interest on national debit 1,000
(iii) Net factor income from abroad 300
(iv) Corporate Savings 800
(v) Corporation tax 210
(vi) Personal income tax 540

7. From The Following Data Calculate:

Private Income and (b) Personal disposable income.

(Rs. In Crores)
(i) Income from Domestic product accruing to the private sector 4,000
(ii) Savings of non-departmental public enterprises 200
(iii) Current transfer from government administrative departments 150
(iv) Savings of private corporate sector 400
(v) Current transfers from rest of the world 50
(vi) Net factor income from abroad (-) 4
(vii) Corporation tax 60
(viii) Direct Personal tax 140

8. Calculate (a) Personal Income (b) Personal Disposable Income from following data:

(Rs. In Crores)
(i) Income from property and entrepreneurship accruing to
   Government administrative department 500
(ii) Savings of non-departmental public enterprises 100
(iii) Corporation tax 80
(iv) Income from Domestic product accruing to the private sector 4,500
(v) Current transfer from government administrative departments 200
(vi) Net factor income from abroad (-)50
(vii) Direct Personal tax 150
(viii) Indirect taxes 220
(ix) Current transfers from rest of the world 80
(x) Savings of private corporate sector 500

9. From the following data calculate National Income by
   (i) Income method and (ii) Expenditure method.
   (Rs. In Crores)

(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
(vi) Net domestic capital formation 770
(vii) Consumption of fixed capital 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

10. From the following data, calculate Gross national product at Market Price by
    (i) Income method. (ii) Expenditure method:
    (Rs. In Crores)

(i) Mixed income of self-employed 400
(ii) Compensation of employees 500
(iii) Private final consumption expenditure 900
(iv) Net factor income from abroad (-)20
(v) Net indirect taxes 100
(vi) Consumption of fixed capital 120
(vii) Net domestic capital formation 280
(viii) Net exports (-)30
(ix) Profits 350
(x) Rent 100
(xi) Interest 150
(xii) Government final consumption expenditure 450

11. Calculate (a) National Income and (b) Gross National Disposable Income from the
    following data
    (Rs. In Crores)

(i) Net factor income from abroad (-)20
(ii) Government final consumption expenditure 200
(iii) Subsidies 10
(iv) Private final consumption expenditure 800
(v) Net current transfers from the rest of the world 30
(vi) Net domestic fixed capital formation 100
(vii) Indirect taxes 80
(viii) Consumption of fixed capital 40
(ix) Change in stock (-)10
(x) Net exports (-)50

12. From the following data, calculate ‘gross value added at factor cost’
   (Rs. In Crores)
   (i) Sales 500
   (ii) Change in stock 30
   (iii) Subsidies 40
   (iv) Consumption of fixed capital 60
   (v) Purchases of intermediate products 350
   (vi) Profit 70

13. From the following data, calculate:
    (a) National income, and (b) Personal disposable income
       (Rs. In Crores)
       (i) Compensation of employees 1,200
       (ii) Rent 400
       (iii) Profit 800
       (iv) Consumption of fixed capital 300
       (v) Mixed income of self-employed 1,000
       (vi) Private income 3,600
       (vii) Net factor income from abroad (-)50
       (viii) Net trained earnings of private enterprises 200
       (ix) Interest 250
       (x) Net indirect taxes 350
       (xi) Net exports (-)60
       (xii) Direct taxes paid by households 150
       (xiii) Corporation tax 100

14. From the following data calculate national income by
    (a) Income method and (b) Expenditure method.
       (Rs. In crores)
       (i) Private final consumption expenditure 2,000
       (ii) Net capital formation 400
       (iii) Change in stock 50
       (iv) Compensation of employees 1,900
       (v) Rent 200
       (vi) Interest 150
       (vii) Operating surplus 720
       (viii) Net indirect tax 400
       (ix) Employers’ contribution to social security schemes 100
       (x) Net exports 20
       (xii) Net factor income from abroad (-)20
15. Find gross national product at market price by income method and expenditure method.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Rs. CRORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Mixed income of the self-employed</td>
<td>400</td>
</tr>
<tr>
<td>b. Compensation of employees</td>
<td>500</td>
</tr>
<tr>
<td>c. Private final consumption expenditure</td>
<td>900</td>
</tr>
<tr>
<td>d. Net factor income from abroad</td>
<td>(-20)</td>
</tr>
<tr>
<td>e. Net indirect taxes</td>
<td>100</td>
</tr>
<tr>
<td>f. Consumption of fixed capital</td>
<td>20</td>
</tr>
<tr>
<td>g. Net domestic capital formation</td>
<td>280</td>
</tr>
<tr>
<td>h. Net exports</td>
<td>(-30)</td>
</tr>
<tr>
<td>i. Rent</td>
<td>100</td>
</tr>
<tr>
<td>j. Interest</td>
<td>150</td>
</tr>
<tr>
<td>k. Government final consumption expenditure</td>
<td>450</td>
</tr>
</tbody>
</table>

**FREQUENTLY ASKED CBSE BOARD QUESTIONS**

1. Give two examples of macro economics (1)
2. Differentiate between micro and macroeconomics (3)
3. Distinguish between intermediate goods and final goods. (3)
4. Distinguish between domestic product and national product (3)
5. What do you understand by net factor income from abroad? Explain (3)
6. While estimating national income how will you treat the following? Give reasons for your answer (4)
   a) Imputed rent of self occupied houses.
   b) Interest received on debentures
   c) Financial help received by flood victims
   d) Capital gains
7. Distinguish between transfer payments and factor payments. Give an example of each. (4)
8. From the following data calculate national income by income method and expenditure method (6)

**Rs in Crores**

| a) Interests                                           | 150        |
| b) Rent                                                | 250        |
| c) Govt. final consumption expenditure                | 600        |
| d) Private final consumption expenditure               | 1200       |
| e) Profit                                              | 640        |
| f) Compensation of employees                           | 1000       |
| g) Net factor income from abroad                       | 30         |
| h) Net indirect taxes                                  | 60         |
| i) Net exports                                         | (-40)      |
| j) Depreciation                                        | 50         |
| k) Net domestic capital formation                      | 340        |