Chapter-1 Methods of Estimating National Income

Short Answer Type Questions   **(3/4 Marks)**

Q1. Calculate *NI* from the following data:

Items	₹ (in crores)
1. Private Income	1,000
2. Interest on national debt	30
3. Current transfer of govt. administrative departments	20
4. Current transfer from rest of the world	15
5. Income from property and entrepreneurship accruing to government enterprises	10
6. Savings of non-departmental government enterprises	5

Ans. National Income = Private Income − Interest on national debt − Current transfer of govt. administrative departments − Current transfer from rest of the world + Income from property and entrepreneurship accruing to government enterprises + Savings of non-departmental government enterprises

= 1,000 − 30 − 20 − 15 + 10 + 5

= ₹ 950 crores.

Q2. Calculate value of output from the following data:

Items	₹ (in lakhs)
1. Net value added at factor cost	100
2. Intermediate consumption	75
3. Excise duty	20
4. Subsidy	5
5. Depreciation	10

Ans. Value of output = Net value added at factor cost + Intermediate consumption + Excise duty − Subsidy + Depreciation

= 100 + 75 + 20 − 5 + 10

= ₹ 200 lakhs.

Q3. Calculate intermediate consumption from the following data:

Items	₹ (in lakhs)
1. Value of output	200
2. Net value added at factor cost	80
3. Sales tax	15
4. Subsidy	5
5. Depreciation	20

Ans. Intermediate consumption = Value of output − Net value added at factor − Sales tax + Subsidy − Depreciation

= 200 − 80 − 15 + 5 − 20

= ₹ 90 lakhs.

Q4. Calculate Sales from the following data:

Items	₹ (in lakhs)
1. Net value added at factor cost	300
2. Intermediate consumption	200
3. Indirect tax	20
4. Depreciation	30
5. Change in stocks	(−)50

Ans. Sales = Net value added at factor cost + Intermediate consumption + Indirect tax + Depreciation − Change in stocks

$$= 300 + 200 + 20 + 30 - (-50)$$

$$= ₹ 600 \text{ lakhs.}$$

Q5. Calculate Net Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Depreciation	20
2. Intermediate cost	90
3. Subsidy	5
4. Sales	140
5. Exports	7
6. Change in stock	(−)10
7. Imports of raw materials	3

Ans. NVA_{FC} = Sales + Change in stock − Intermediate cost − Depreciation + Subsidy

$$= 140 + (-10) - 90 - 20 + 5$$

$$= ₹ 25 \text{ lakhs.}$$

Q6. Calculate Gross Value Added at market price from the following data:

Items	₹ (in lakhs)
1. Depreciation	15
2. Sales in the domestic market	250
3. Exports	50
4. Opening stock	20
5. Purchase of raw material	150
6. Closing stock	30
7. Import of raw material	25

Ans. GVA_{MP} = Sales in the domestic market + Exports − Opening stock − Purchase of raw material + Closing stock

$$= 250 + 50 - 20 - 150 + 30$$

$$= ₹ 160 \text{ lakhs.}$$

Q7. Calculate Gross Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Sales tax	20
2. Sales	400
3. Purchase of raw material	250
4. Excise duty	30

5. Change in stocks   (–)40
6. Import of raw material   12
7. Depreciation   9

Ans. GVA_{FC} = Sales – Purchase of raw material – Sales tax – Excise duty + Change in stocks

= 400 – 250 – 20 – 30 + (– 40)

= ₹ 60 lakhs.

Q8. Calculate value of output from the following data:

Items	₹ (in lakhs)
1. Subsidy	10
2. Intermediate consumption	150
3. Net addition to stocks	(–)13
4. Depreciation	30
5. Excise duty	20
6. Net value added at factor cost	250

Ans. Value of output = Net value added at factor cost + Intermediate consumption – Subsidy + Depreciation + Excise duty

= 250 + 150 – 10 + 30 + 20

= ₹ 440 lakhs.

Q9. Calculate Sales from the following data:

Items	₹ (in lakhs)
1. Net value added at factor cost	300
2. Net addition to stocks	(–)20
3. Sales tax	30
4. Depreciation	10
5. Intermediate consumption	100
6. Subsidy	5

Ans. Sales = Net value added at factor cost + Intermediate consumption – Net addition to stocks + Sales tax + Depreciation – Subsidy

= 300 + 100 – (– 20) + 30 + 10 – 5

= ₹ 455 lakhs.

Q10. Calculate Net Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Purchases of raw material	300
2. Import duty	20
3. Excise duty	30
4. Net addition to stocks	50
5. Value of output	500
6. Depreciation	10

Ans. NVA_{FC} = Value of output – Purchases of raw material – Import duty – Excise duty – Depreciation

= 500 – 300 – 20 – 30 – 10

= ₹ 140 lakhs.

Q 11. From the following information about firm 'X', calculate Net Value Added at factor cost:

Items	₹ (in lakhs)
1. Purchase of raw material	500
2. Gross capital formation	200
3. Subsidies	60
4. Opening stock	50
5. Sales	800
6. Net capital formation	180
7. Closing stock	40

Ans. NVA_{FC} = Sales – Purchase of raw material + Change in stocks – Depreciation + Subsidies

= 800 – 500 + (40 – 50) – (200 – 180) + 60

= ₹ 330 lakhs.

Q 12. From the following data calculate Net Value Added at factor cost:

Items	₹ (in lakhs)
1. Sales	500
2. Subsidies	30
3. Purchase of machine installed in the factory	400
4. Purchase of raw material	250
5. Change in stock	(–)20
6. Consumption of fixed capital	40

Ans. NVA_{FC} = Sales – Purchase of raw material + Change in stock – Consumption of fixed capital + Subsidies

= 500 – 250 + (– 20) – 40 + 30

= ₹ 220 lakhs.

Q 13. From the following data calculate Net Value Added at factor cost:

Items	₹ (in lakhs)
1. Sales	700
2. Change in stock	50
3. Exports	30
4. Consumption of fixed capital	40
5. Subsidies	20
6. Purchase of raw material	400

Ans. NVA_{FC} = Sales + Change in stock – Purchase of raw material – Consumption of fixed capital + Subsidies

= 700 + 50 – 400 – 40 + 20

= ₹ 330 lakhs.

Q 14. Calculate Net Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Sales	700
2. Purchase of machine for installation in the factory	100
3. Subsidies	50
4. Change in stock	(–)30
5. Purchase of raw material	400

6. Rent   60

7. Consumption of fixed capital   20

Ans. NVA_{FC} = Sales − Purchase of raw material + Change in stock − Consumption of fixed capital + Subsidies

$$= 700 - 400 + (-30) - 20 + 50$$

$$= ₹\ 300\ \text{lakhs.}$$

Q 15. Calculate Net Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Sales	800
2. Purchase of raw material from domestic market	400
3. Import of raw material	100
4. Subsidies	30
5. Consumption of fixed capital	40
6. Change in stock	50
7. Rent	70

Ans. NVA_{FC} = Sales − Purchase of raw material from domestic market − Import of raw material + Change in stock − Consumption of fixed capital + Subsidies

$$= 800 - 400 - 100 + 50 - 40 + 30$$

$$= ₹\ 340\ \text{lakhs.}$$

Q 16. Calculate Net Value Added at factor cost from the following data:

Items	₹ (in lakhs)
1. Sales	800
2. Purchase of machine for installation in the factory	500
3. Purchase of raw material	450
4. Subsidies	50
5. Consumption of fixed capital	60
6. Wages and salaries	200
7. Change in stock	40

Ans. NVA_{FC} = Sales − Purchase of raw material + Change in stock − Consumption of fixed capital + Subsidies

$$= 800 - 450 + 40 - 60 + 50$$

$$= ₹\ 380\ \text{lakhs.}$$

Q 17. Calculate net value added at factor cost from the following data:

Items	₹ (in crores)
1. Purchase of machinery to be used in the production unit	100
2. Sales	200
3. Intermediate costs	90
4. Indirect taxes	12
5. Change in stock	10
6. Excise duty	6
7. Stock of raw material	5

Ans. NVA_{FC} = Sales – Intermediate costs + Change in stock – Indirect taxes

$\qquad$ = 200 – 90 + 10 – 12

$\qquad$ = ₹ 108 crores.

Q18. From the following data relating to a firm, calculate its net value added at factor cost:

Items	₹ (in crores)
1. Subsidy	40
2. Sales	800
3. Depreciation	30
4. Exports	100
5. Closing stock	20
6. Opening stock	50
7. Intermediate purchases	500
8. Purchase of machinery for own use	200
9. Import of raw material	60

Ans. NVA_{FC} = Sales – Intermediate purchases + Closing stock – Opening stock– Depreciation + Subsidy

$\qquad$ = 800 – 500 + 20 – 50 – 30 + 40

$\qquad$ = ₹ 280 Crores.

Q19. Calculate gross fixed capital formation from the following data:

Items	₹ (in crores)
1. Private final consumption expenditure	1000
2. Government final consumption expenditure	500
3. Net exports	(–) 50
4. Net factor income from abroad	20
5. Gross domestic product at market price	2500
6. Opening stock	300
7. Closing stock	200

Ans. Gross fixed capital formation = Gross domestic product at market price – Private final consumption expenditure – Government final consumption expenditure – Net exports – Closing stock + Opening stock

$\qquad$ = 2500 – 1000 – 500 + 50 – 200 + 300 = ₹ 1150 crores.

Q20. Calculate GVA_{FC}:

Items	₹ (in lakh)
1. Consumption of fixed capital	5
2. Sales	100
3. Subsidies	2
4. Closing stock	10
5. Purchase of raw materials	50
6. Opening stock	15
7. Indirect taxes	10

Ans. GVA_{FC} = Sales – Purchase of raw materials + Closing stock – Opening stock – Indirect taxes + Subsidies

$\qquad$ = 100 – 50 + 10 – 15 – 10 + 2

$\qquad$ = ₹ 37 lakhs.

Q21. *A* sells raw material worth ₹ 200 to *B*. *B* sells the processed goods worth ₹ 300 to *C*. *C* sells final goods worth ₹ 400 to consumer households. Find out Gross Value Added at MP.

Ans. GVA_{MP} is ₹ 400, as the final goods sold to the final consumers by *C* is of ₹ 400, while the transactions made by *A* to *B* and *B* to *C* are intermediate transactions.

Q22. Industry *A* is an agricultural unit which sells its annual output of rice to Industry *B* for ₹ 200 crores. Industry *B* is a processing unit which prepares flour and sells it to Industry *C* for ₹ 255 crores. Industry *C* prepares ready to eat food items and sells it to the distribution agency for ₹ 325 crores. The distribution agency provides the product to the households and gets ₹ 350 crores for the entire consignment. Determine the Value Added by each industry.

Ans.

Transactions	Output Sold	Intermediate Consumption	Value Added
A sells product to *B*	200	—	200
B sells product to *C* *B* purchases from *A*	255	200	55
C sells to distributors *C* purchases from *B*	325	255	70
Distributors sell to households Distributors purchases from *C*	350	325	25
Total Value Added			**350**

Q23. Calculate Gross Value Added at Factor Cost.

(i) Units of output sold (units) — 1,000
(ii) Price per unit of output — ₹ 30
(iii) Depreciation — ₹ 1,000
(iv) Intermediate cost — ₹ 12,000
(v) Closing stock — ₹ 3,000
(vi) Opening stock — ₹ 2,000
(vii) Excise — ₹ 2,500
(viii) Sales tax — ₹ 3,500

Ans. $GVA_{FC} = (i \times ii) + (v - vi) - iv - vii - viii$

$= (1,000 \times 30) + (3,000 - 2,000) - 12,000 - 2,500 - 3,500 = ₹ 13,000$

Q24. Calculate Net Value Added at Factor Cost:

(i) Consumption of fixed capital (₹) — 600
(ii) Import duty (₹) — 400
(iii) Output sold (units) — 2,000
(iv) Price per unit of output (₹) — 10
(v) Net change in stocks (₹) — (–) 50
(vi) Intermediate cost (₹) — 10,000
(vii) Subsidy (₹) — 500

Ans. $NVA_{FC} = (iv \times iii) + v - vi - ii + vii - i$

$= (10 \times 2000) + (-50) - 10000 - 400 + 500 - 600$

$= 20000 - 50 - 10000 - 400 + 500 - 600$

$= ₹ 9450$

Q25. Find Net Value Added at Market Price:

(i) Output sold (units)	800
(ii) Price per unit of output (₹)	20
(iii) Excise (₹)	1,600
(iv) Import duty (₹)	400
(v) Net change in stocks (₹)	(−) 500
(vi) Depreciation (₹)	1,000
(vii) Intermediate Cost (₹)	8,000

Ans. $NVA_{MP} = (i \times ii) + v - vii - vi$

$= (800 \times 20) + (-500) - 8000 - 1000$

$= 16000 - 500 - 8000 - 1000$

$= ₹ 6500$

Q26. Find Net Value Added at Market Price:

(i) Depreciation (₹)	700
(ii) Output sold (units)	900
(iii) Price per unit of output (₹)	40
(iv) Closing stock (₹)	1,000
(v) Opening stock (₹)	800
(vi) Sales tax (₹)	3,000
(vii) Intermediate cost (₹)	20,000

Ans. $NVA_{MP} = (ii \times iii) + (iv - v) - (vii) - (i)$

$= 900 \times 40 + [1,000 - 800] - 20,000 - 700$

$= ₹ 15,500$

Q27. Find Gross Value Added at Factor Cost:

(i) Units of output sold	2,000
(ii) Price per unit of output (₹)	20
(iii) Depreciation (₹)	2,000
(iv) Change in stock (₹)	(−) 500
(v) Intermediate costs (₹)	15,000
(vi) Subsidy (₹)	3,000

Ans. $GVA_{FC} = (ii \times i) + (iv) - (v) + (vi)$

$= (20 \times 2000) - 500 - 15000 + 3000$

$= ₹ 27,500$

Q28. Find out Net Value Added at Factor Cost:

(i) Price per unit of output (₹)	25
(ii) Output sold (units)	1,000
(iii) Excise duty (₹)	5,000
(iv) Depreciation (₹)	1,000
(v) Change in stocks (₹)	(−) 500
(vi) Intermediate costs (₹)	7,000

Ans. $NVA_{FC} = (25 \times 1000) + (-500) - 7000 - 5000 - 1000$

$= ₹ 11,500$

Q29. Find out Net Value Added at Market Price:

(i) Intermediate cost (₹)	10,000
(ii) Change in Stock (₹)	1,000
(iii) Output sold (units)	750
(iv) Price per unit of output (₹)	40
(v) Import duty (₹)	2,000
(vi) Consumption of fixed capital (₹)	3,000

Ans. NVA_{MP} = (iv × iii) + (ii) − (i) − (vi)

$\qquad$ = (40 × 750) + 1,000 − 10,000 − 3,000

$\qquad$ = ₹ 18,000

Q30. Find Net Value Added at Factor Cost:

(i) Intermediate cost (₹)	15,000
(ii) Output sold (units)	9,000
(iii) Price per unit of output (₹)	4
(iv) Consumption of fixed capital (₹)	2,000
(v) Excise duty (₹)	4,000
(vi) Change in stock (₹)	(−) 1,000

Ans. NVA_{FC} = (9000 × 4) + (−1,000) − 15,000 − 4,000 − 2000

$\qquad$ = ₹ 14,000

Q31. Find Gross Value Added at Factor Cost:

(i) Import duty (₹)	1,000
(ii) Excise (₹)	2,000
(iii) Output sold (units)	6,000
(iv) Price per unit of output (₹)	6
(v) Change in stock (₹)	600
(vi) Intermediate cost (₹)	16,000
(vii) Subsidy (₹)	500

Ans. GVA_{FC} = [6000 × 6] + 600 − 16000 + 500 − 1000 − 2000

$\qquad$ = ₹ 18,100

Q32. Calculate "Sales" from the following data: (₹ in lakhs)

(i) Net value added at factor cost	560
(ii) Depreciation	60
(iii) Change in stock	(−)30
(iv) Intermediate cost	1000
(v) Exports	200
(vi) Indirect taxes	60

Ans. Sales = [(i) + (ii) + (vi) + (iv)] − (iii)

= [560 + 60 + 60 + 1000] − (− 30)

= ₹ 1710 lakhs

Q33. Calculate "Sales" from the following data : (₹ in lakhs)

    (i) Intermediate costs   700

    (ii) Consumption of fixed capital   80

    (iii) Change in stock   (−) 50

    (iv) Subsidy   60

    (v) Net value added at factor cost   1300

    (vi) Exports   50

Ans.   Sales = (v + ii − iv + i) − iii

= 1300 + 80 − 60 + 700 − (− 50)

= ₹ 2070 lakh.

Q34. Calculate 'Sales' from the following data :

                                     (₹ in lakhs)

    (i) Subsidies   200

    (ii) Opening stock   100

    (iii) Closing stock   600

    (iv) Intermediate consumption   3,000

    (v) Consumption of fixed capital   700

    (vi) Profit   750

    (vii) Net value added at factor cost   2,000

Ans.   Sales = (vii) − [(iii) − (ii)] + (iv) + (v) − (i)

= 2000 − [600 − 100] + 3000 + 700 − 200

= ₹ 5000 lakh.

Q35. From the following data calculate "Gross Value Added at Factor Cost".

                                       (₹ in lakhs)

    (i) Sales   8,000

    (ii) Change in stock   100

    (iii) Subsidies   200

    (iv) Consumption of fixed capital   300

    (v) Intermediate consumption   5,500

    (vi) Rent   500

Ans. GVA_{FC} = (i) + (ii) − (v) + (iii)

= 8000 + 100 − 5500 + 200

= ₹ 2800 lakhs

Long Answer Type Questions

(6 Marks)

Q1. Calculate Gross Domestic Product at Market Price:

Items	₹ (in crores)
1. Net value added at market price by:	
(a) Primary sector	50
(b) Secondary sector	100
(c) Tertiary sector	200
2. Net exports	(−)100
3. Net indirect taxes	(−)400
4. Value of intermediate consumption in:	
(a) Primary sector	60
(b) Secondary sector	80
(c) Tertiary sector	200
5. Consumption of fixed capital in:	
(a) Primary sector	10
(b) Secondary sector	20
(c) Tertiary sector	30

Ans. GDP_{MP} = Net value added at market price + Consumption of fixed capital

= (50 + 100 + 200) + (10 + 20 + 30)

= ₹ 410 crores.

Q2. Calculate *NI* by (a) Income Method and (b) Expenditure Method:

Items	₹ (in crores)
1. Private final consumption expenditure	240
2. Mixed income of self-employed	500
3. Gross domestic fixed capital formation	600
4. Opening stock	40
5. Compensation of employees	400
6. Closing stock	60
7. Government final consumption expenditure	150
8. Operating surplus	100
9. Consumption of fixed capital	25
10. Net indirect taxes	35
11. Net factor income from abroad	50
12. Exports	100
13. Imports	50

Ans. (a) *NI* by Income Method = Compensation of employees + Operating surplus + Mixed income of self-employed + Net factor income from abroad

= 400 + 100 + 500 + 50

= ₹ 1,050 crores.

(b) *NI* by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Exports − Imports + Gross domestic fixed capital formation + Closing stock − Opening stock − Consumption of fixed capital − Net indirect taxes + Net factor income from abroad

= 240 + 150 + 100 − 50 + 600 + 60 − 40 − 25 − 35 + 50

= ₹ 1,050 crores.

Q3. From the data, calculate (a) *NI* by Income Method and (b) *NI* by Expenditure Method:

Items	₹ (in crores)
1. Govt. final expenditure	790
2. Indirect taxes	880
3. Gross fixed capital formation	1,330
4. Mixed income of the self-employed	2,930
5. Subsidies	110
6. Change in stock	320
7. Rent, interest and profit	960
8. Consumption of fixed capital	410
9. Private final consumption expenditure	5,220
10. Import of goods and services	570
11. Export of goods and services	480
12. Net factor income from abroad	(−)50
13. Compensation of employees	2,500

Ans. (a) *NI* by Income Method = Compensation of employees + Rent, interest and profit + Mixed income of the self-employed + Net factor income from abroad

= 2,500 + 960 + 2,930 + (− 50)

= ₹ 6,340 crores.

(b) *NI* by Expenditure Method = Private final consumption expenditure + Govt. final expenditure + Export of goods and services − Import of goods and services + Gross fixed capital formation + Change in stock − Consumption of fixed capital − Indirect taxes + Subsidies + Net factor income from abroad

= 5,220 + 790 + 480 − 570 + 1,330 + 320 − 410 − 880 + 110 + (− 50)

= ₹ 6,340 crores.

Q4. From the following data calculate National Income through (a) Income Method and (b) Expenditure Method:

Items	₹ (in crores)
1. Compensation of employees	5,200
2. Government consumption expenditure	1,500
3. Net indirect taxes	1,400
4. Operating surplus	2,000
5. Net exports	(−)400
6. Gross fixed capital formation	2,500
7. Private final consumption expenditure	12,000
8. Net increase in stock	400
9. Net factor income from abroad	400
10. Consumption of fixed capital	1,000
11. Mixed income of self-employed	6,400

Ans. (a) *NI* by Income Method = Compensation of employees + Operating surplus + Mixed income of self employed + Net factor income from abroad

= 5,200 + 2,000 + 6,400 + 400

= ₹ 14,000 crores.

(b) NI by Expenditure Method = Private final consumption expenditure + Government consumption expenditure + Net exports + Gross fixed capital formation + Net increase in stock − Consumption of fixed capital − Net indirect taxes + Net factor income from abroad

= 12,000 + 1,500 + (− 400) + 2,500 + 400 − 1,000 − 1,400 + 400

= ₹ 14,000 crores.

Q 5. Calculate national income by (a) Production Method and (b) Income Method:

Items	₹ (in crores)
1. Value of output of:	
(a) Primary sector	1,000
(b) Secondary sector	800
(c) Tertiary sector	600
2. Intermediate consumption of:	
(a) Primary sector	400
(b) Secondary sector	300
(c) Tertiary sector	100
3. Emoluments of employees	500
4. Rent	40
5. Consumption of fixed capital	80
6. Indirect taxes	30
7. Net factor income from abroad	10
8. Subsidies	10
9. Interest	50
10. Operating surplus	200
11. Mixed income	800

Ans. (a) NI by Production Method = Value of output of (Primary sector + Secondary sector + Tertiary sector) − Intermediate consumption of (Primary sector + Secondary sector + Tertiary sector) − Consumption of fixed capital − Indirect taxes + Subsidies + Net factor income from abroad

= (1,000 + 800 + 600) − (400 + 300 + 100) − 80 − 30 + 10 + 10

= ₹ 1,510 crores.

(b) NI by Income Method = Emoluments of employees + Operating surplus + Mixed income + Net factor income from abroad

= 500 + 200 + 800 + 10

= ₹ 1,510 crores.

Q 6. Calculate Gross National Product at Market Price by

(a) Income Method and (b) Expenditure Method:

Items	₹ (in crores)
1. Net exports	10
2. Rent	20
3. Private final consumption expenditure	400
4. Interest	30
5. Dividends	45
6. Undistributed profits	5

7. Corporation tax	10
8. Government final consumption expenditure	100
9. Net domestic capital formation	50
10. Compensation of employees	400
11. Consumption of fixed capital	10
12. Net indirect taxes	50
13. Net factor income from abroad	(–)10

Ans. (a) GNP_{MP} by Income Method = Compensation of employees + Rent + Interest + Dividends + Undistributed profits + Corporation tax + Consumption of fixed capital + Net indirect taxes + Net factor income from abroad

$$= 400 + 20 + 30 + 45 + 5 + 10 + 10 + 50 + (– 10)$$

$$= ₹ 560 \text{ crores.}$$

(b) GNP_{MP} by expenditure method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation + Consumption of fixed capital + Net factor income from abroad

$$= 400 + 100 + 10 + 50 + 10 + (– 10) = ₹ 560 \text{ crores.}$$

Q7. Calculate National Income by (a) Income Method and (b) Expenditure Method:

Items	₹ (in crores)
1. Wages and salaries	500
2. Government final consumption expenditure	120
3. Royalty	20
4. Interest	40
5. Households final consumption expenditure	600
6. Change in stocks	10
7. Indirect tax	100
8. Rent	50
9. Final consumption expenditure of private non-profit institutions serving households	30
10. Net domestic fixed capital formation	60
11. Profit after tax	100
12. Corporation tax	20
13. Net exports	(–)20
14. Subsidies	30
15. Net factor income from abroad	(–)5

Ans. (a) NI by Income Method = Wages and salaries + Royalty + Interest + Rent + Profit after tax + Corporation tax + Net factor income from abroad

$$= 500 + 20 + 40 + 50 + 100 + 20 + (– 5)$$

$$= ₹ 725 \text{ crores.}$$

(b) NI by Expenditure Method = Households final consumption expenditure + Final consumption expenditure of private non-profit institutions serving households + Government final consumption expenditure + Net exports + Net domestic fixed capital formation + Change in stocks – Indirect tax + Subsidies + Net factor income from abroad

$$= 600 + 30 + 120 + (– 20) + 60 + 10 – 100 + 30 + (– 5)$$

$$= ₹ 725 \text{ crores.}$$

Q8. From the following data, calculate National Income by (a) Income method and (b) Expenditure method:

Items	₹ (in crores)
1. Compensation of employees	1,200
2. Net factor income from abroad	(–)20
3. Net indirect tax	120
4. Profits	800
5. Private final consumption expenditure	2,000
6. Net domestic capital formation	770
7. Consumption of fixed capital	130
8. Rent	400
9. Interest	620
10. Mixed income of self-employed	700
11. Net exports	(–)30
12. Government final consumption expenditure	1,100

Ans. (a) NI by Income Method = Compensation of employees + Profits + Rent + Interest + Mixed income of self-employed + Net factor income from abroad

= 1,200 + 800 + 400 + 620 + 700 + (– 20)

= ₹ 3,700 crores.

(b) NI by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation – Net indirect tax + Net factor income from abroad

= 2,000 + 1,100 + (– 30) + 770 – 120 + (– 20)

= ₹ 3,700 crores.

Q9. Calculate Net National Product at market price from the following data:

Items	₹ (in crores)
1. Income from domestic product accruing to private sector	2,000
2. Interest on national debt	125
3. Net factor income earned from abroad	(–)350
4. Government final consumption expenditure	500
5. Consumption of fixed capital	200
6. Net indirect taxes	100
7. Net export of goods and services	(–)200
8. Net value added in stock	150
9. Fixed capital formation	250

Ans. NNP_{MP} = Income from domestic product accruing to private sector + Government final consumption expenditure + Net export of goods and services + Fixed capital formation + Net value added in stock – Consumption of fixed capital + Net factor income earned from abroad

= 2,000 + 500 + (– 200) + 250 + 150 – 200 + (– 350)

= ₹ 2,150 crores.

Q 10. Calculate (*a*) Net Domestic Product at market price, and (*b*) Net National Product at factor cost from the following data:

Items	₹ (in crores)
1. Subsidies	25
2. Depreciation	50
3. Net exports	(–)15
4. Net change in stocks	20
5. Indirect taxes	60
6. Net factor income from abroad	(–) 5
7. Private final consumption expenditure	300
8. Government final consumption expenditure	60
9. Gross domestic capital formation	125

Ans. (*a*) NDP_{MP} = Private final consumption expenditure + Government final consumption expenditure
+ Gross domestic capital formation + Net exports – Depreciation

= 300 + 60 + 125 + (– 15) – 50

= ₹ 420 crores.

(*b*) NNP_{FC} = NDP_{MP} – Indirect taxes + Subsidies + Net factor income from abroad

= 420 – 60 + 25 + (– 5)

= ₹ 380 crores.

Q 11. Calculate Net Domestic Product at factor cost from the following data:

Items	₹ (in crores)
1. Value of output	500
2. Consumption of fixed capital	20
3. Value of intermediate consumption	200
4. Net indirect taxes	20

Ans. NDP_{FC} = Value of output – Value of intermediate consumption – Consumption of fixed capital
– Net indirect taxes

= 500 – 200 – 20 – 20

= ₹ 260 crores.

Q 12. Calculate National Income from the following data:

Items	₹ (in crores)
1. Operating surplus	200
2. Wages and salaries	700
3. Net factor income from abroad	(–)10
4. Contribution to social security schemes by employees	100
5. Rent and royalty	50

Ans. National Income = Wages and salaries + Operating surplus + Net factor income from abroad

= 700 + 200 + (– 10)

= ₹ 890 crores.

Q 13. Determine the value of National Income from the following data:

Items	₹ (in crores)
1. Value of sales	21,000
2. Changes in stocks	9,000
3. Depreciation	2,000
4. Wages	7,000

5. Compensation of employees in kind	3,000
6. Profits	3,000
7. Interest	1,000
8. Rent	1,000

Ans. National Income = Wages + Compensation of employees in kind + Profits + Interest + Rent

$$= 7,000 + 3,000 + 3,000 + 1,000 + 1,000$$

$$= ₹ \ 15,000 \ \text{crores.}$$

Q 14. Calculate National Income (NNP_{FC}) by Income and Expenditure Methods.

Items	₹ (in crores)
1. Compensation of employees	250
2. Imports	20
3. Mixed income	50
4. Gross fixed capital formation	120
5. Private final consumption expenditure	550
6. Consumption of fixed capital	10
7. Net factor income from abroad	20
8. Indirect taxes	100
9. Change in stocks	20
10. Subsidies	20
11. Operating surplus	350
12. Exports	10
13. Government final consumption expenditure	60

Ans. (a) NNP_{FC} by Income Method = Compensation of employees + Mixed income + Operating surplus + Net factor income from abroad

$$= 250 + 50 + 350 + 20 = ₹ \ 670 \ \text{crores.}$$

(b) NNP_{FC} by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Exports − Imports + Gross fixed capital formation + Change in stocks − Consumption of fixed capital − Indirect taxes + Subsidies + Net factor income from abroad.

$$= 550 + 60 + 10 - 20 + 120 + 20 - 10 - 100 + 20 + 20$$

$$= ₹ \ 670 \ \text{crores.}$$

Q 15. Calculate (i) Gross Value Added at Market Price by the primary, secondary, and the tertiary sector and (ii) National Income.

Items	₹ (in crores)
1. Value of output of Primary Sector	800
2. Value of output of Secondary Sector	200
3. Value of output of Tertiary Sector	300
4. Value of intermediate inputs purchased by Primary Sector	400
5. Value of intermediate inputs purchased by Secondary Sector	100
6. Value of intermediate inputs purchased by Tertiary Sector	50
7. Indirect taxes paid by all sectors	50
8. Consumption of fixed capital of all sectors	80

9. Factor income from rest of the world	10
10. Factor income paid to non-residents	20
11. Subsidies received by all sectors	20

Ans. (i) (a) GVA_{MP} by Primary Sector = Value of output of Primary Sector − Value of intermediate inputs purchased by Primary Sector = 800 − 400 = ₹ 400 crores.

(b) GVA_{MP} by Secondary Sector = Value of output of Secondary Sector − Value of intermediate inputs purchased by Secondary Sector = 200 − 100

= ₹ 100 crores.

(c) GVA_{MP} by Tertiary Sector = Value of output of Tertiary Sector − Value of intermediate inputs purchased by Tertiary Sector = 300 − 50 = ₹ 250 crores.

(ii) National Income = GVA_{MP} − Consumption of fixed capital of all sectors − Indirect taxes paid by all sectors + Subsidies received by all sectors + Factor income from rest of the world − Factor income paid to non-residents

= (400 + 100 + 250) − 80 − 50 + 20 + 10 − 20

= ₹ 630 crores.

Q 16. Estimate National Income from the following data:

Items	₹ (in crores)
1. Opening stock	50
2. Closing stock	60
3. Consumption of fixed capital	10
4. Private final consumption expenditure	500
5. Net exports	(−)5
6. Net factor income from abroad	(−)10
7. Compensation of employees paid by general Government	100
8. Direct purchases of non-durable goods from abroad by general government	10
9. Net purchase of goods and services by general Govt. in domestic market	100
10. Net capital formation	60
11. Net indirect taxes	50

Ans. National Income = Private final consumption expenditure + Direct purchases of non-durable goods from abroad by general government + Net purchase of goods and services by general Govt. in domestic market + Net exports + Net capital formation + Closing stock − Opening stock − Consumption of fixed capital − Net indirect taxes + Net factor income from abroad

= 500 + 10 + 100 + (− 5) + 60 + 60 − 50 − 10 − 50 + (− 10)

= ₹ 605 crores

Q 17. Calculate National Income by Income Method:

Items	₹ (in crores)
1. Salaries and wages	1,997
2. Transfer payment by Govt.	25
3. Rent	132

4.	Indirect taxes	200
5.	Subsidies	89
6.	Compensation of workers in kind	95
7.	Depreciation	81
8.	Net income increase in assets abroad	52
9.	Interest	92
10.	Gross expenditure on goods and services	574
11.	Personal expend. on consumer goods and services	1,805
12.	Corporate profit tax	10
13.	Income of the self-employed	264
14.	Undistributed corporate profit	26
15.	Dividends	201
16.	Social security contributions by employers	54
17.	Gross investment	107

Ans. National Income = Salaries and wages + Compensation of workers in kind + Social security contributions by employers + Rent + Interest + Corporate profit tax + Undistributed corporate profit + Dividends + Net income increase in assets abroad + Income of the self-employed

= 1,997 + 95 + 54 + 132 + 92 + 10 + 26 + 201 + 52 + 264

= ₹ 2,923 crores.

Q 18. Calculate (a) GNP at Market Price and (b) NNP at Factor Cost; using Expenditure Method:

Items	₹ (in crores)
1. Private consumption expend.	1,000
2. Private fixed investment (gross)	500
3. Change in inventories	400
4. Govt. consumption expend.	300
5. Govt. fixed investment	200
6. Consumption of pvt. fixed capital	100
7. Consumption of govt. fixed capital (gross)	50
8. Indirect taxes	200
9. Economic subsidy	150
10. Net exports	100
11. Net factor income from abroad	(–)50

Ans. (a) GNP_{MP} = Private consumption expend. + Govt. consumption expend. + Net exports + Private fixed investment (gross) + Govt. fixed investment + Change in inventories + Net factor income from abroad

= 1,000 + 300 + 100 + 500 + 200 + 400 + (– 50)

= ₹ 2,450 crores.

(b) NNP_{FC} = GNP_{MP} – Consumption of pvt. fixed capital – Consumption of govt. fixed capital (gross) – Indirect taxes + Economic subsidy

= 2,450 – 100 – 50 – 200 + 150

= ₹ 2,250 crores.

Q19. Calculate: (a) NI by income method, (b) NI by Expenditure Method.

Items	₹ (in crores)
1. Wages and salaries	3,065
2. Interest	700
3. Compensation of employees in kind	65
4. Rent	400
5. Undistributed profits	110
6. Dividends	240
7. Net Income from abroad	110
8. Social security contribution by employers	60
9. Direct taxes of firms	150
10. Private consumption	2,000
11. Public consumption	1,200
12. Gross domestic investment	1,500
13. Net investment abroad	270
14. Net indirect taxes	100
15. Depreciation	80
16. Transfer payment	130
17. Direct personal taxes	75

Ans. (a) NI by Income Method = Wages and salaries + Compensation of employees in kind + Social security contribution by employers + Interest + Rent + Undistributed profits + Dividends + Net Income from abroad + Direct taxes of firms

= 3,065 + 65 + 60 + 700 + 400 + 110 + 240 + 110 + 150

= ₹ 4,900 crores

(b) NI by Expenditure Method = Private consumption + Public consumption + Gross domestic investment + Net investment abroad − Net indirect taxes − Depreciation + Net Income from abroad

= 2,000 + 1,200 + 1,500 + 270 − 100 − 80 + 110

= ₹ 4,900 crores.

Q20. Calculate NNP_{FC} by Expenditure Method:

Items	₹ (in crores)
1. Expenditure by households	400
2. Expenditure by Govt.	100
3. Gross domestic capital formation	110
4. Change in stocks	(−)10
5. Depreciation	40
6. Net indirect taxes	10
7. Exports	160
8. Imports	110
9. Net factor income from abroad	nil

Ans. NNP_{FC} = Expenditure by households + Expenditure by Govt. + Gross domestic capital formation + Exports − Imports − Depreciation − Net indirect taxes + Net factor income from abroad

= 400 + 100 + 110 + 160 − 110 − 40 − 10 + 0

= ₹ 610 crores.

Q 21. Calculate "gross national product at factor cost" from the following data by (a) income method, and (b) expenditure method:

Items	₹ (in crores)
1. Private final consumption expenditure	1000
2. Net domestic capital formation	200
3. Profits	400
4. Compensation of employees	800
5. Rent	250
6. Government final consumption expenditure	500
7. Consumption of fixed capital	60
8. Interest	150
9. Net current transfers from rest of the world	(–) 80
10. Net factor income from abroad	(–) 10
11. Net exports	(–) 20
12. Net indirect taxes	80

Ans. (a) GNP_{FC} by Income Method = Compensation of employees + Rent + Profits + Interest + Consumption of fixed capital + Net factor income from abroad

= 800 + 250 + 400 + 150 + 60 + (– 10)

= ₹ 1,650 crores.

(b) GNP_{FC} by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation + Consumption of fixed capital – Net indirect taxes + Net factor income from abroad

= 1,000 + 500 + (–20) + 200 + 60 – 80 + (– 10)

= ₹ 1,650 crores.

Q 22. From the following data calculate gross national product at factor cost by (a) income method and (b) expenditure method:

Items	₹ (in crores)
1. Net domestic capital formation	500
2. Compensation of employees	1850
3. Consumption of fixed capital	100
4. Government final consumption expenditure	1100
5. Private final consumption expenditure	2600
6. Rent	400
7. Dividend	200
8. Interest	500
9. Net exports	(–) 100
10. Profits	1100
11. Net factor income from abroad	(–) 50
12. Net indirect taxes	250

Ans. (a) GNP_{FC} by Income Method = Compensation of employees + Rent + Interest + Profit + Consumption of fixed capital + Net factor income from abroad

= 1850 + 400 + 500 + 1100 + 100 + (– 50)

= ₹ 3,900 crores.

(b) GNP_{FC} by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation + Consumption of fixed capital – Net indirect taxes + Net factor income from abroad

$$= 2600 + 1100 + (-100) + 500 + 100 - 250 + (-50)$$

$$= ₹ \ 3,900 \text{ crores.}$$

Q23. From the following data, calculate "national income" by (a) income method and (b) expenditure method:

Items	₹ (in crores)
1. Interest	150
2. Rent	250
3. Government final consumption expenditure	600
4. Private final consumption expenditure	1200
5. Profits	640
6. Compensation of employees	1000
7. Net factor income to abroad	30
8. Net indirect taxes	60
9. Net exports	(–) 40
10. Consumption of fixed capital	50
11. Net domestic capital formation	340

Ans. (a) National Income by Income Method = Compensation of employees + Interest + Rent + Profits – Net factor income to abroad

$$= 1,000 + 150 + 250 + 640 - 30$$

$$= ₹ \ 2,010 \text{ crores.}$$

(b) National Income by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation – Net indirect taxes – Net factor income to abroad

$$= 1,200 + 600 + (-40) + 340 - 60 - 30$$

$$= ₹ \ 2,010 \text{ crores.}$$

Q24. From the following data, calculate "national income" by (a) income method and (b) expenditure method:

Items	₹ (in crores)
1. Net domestic capital formation	360
2. Interest	200
3. Rent	300
4. Private final consumption expenditure	1300
5. Government final consumption expenditure	730
6. Net exports	(–) 20
7. Net indirect taxes	70
8. Net current transfers from rest of the world	80
9. Consumption of fixed capital	60
10. Net factor income from abroad	(–) 50
11. Profits	600
12. Compensation of employees	1200

Ans. (*a*) National Income by Income Method = Compensation of employees + Interest + Rent + Profits + Net factor income from abroad

= 1,200 + 200 + 300 + 600 + (– 50)

= ₹ 2,250 crores.

(*b*) National Income by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation – Net indirect taxes + Net factor income from abroad

= 1,300 + 730 + (–20) + 360 – 70 + (– 50)

= ₹ 2,250 crores.

Q25. From the following data, calculate "national income" by (*a*) income method and (*b*) expenditure method:

Items	₹ (in crores)
1. Government final consumption expenditure	100
2. Subsidies	10
3. Rent	200
4. Wages and salaries	600
5. Indirect tax	60
6. Private final consumption expenditure	800
7. Gross domestic capital formation	120
8. Social security contributions by employers	55
9. Royalty	25
10. Net factor income paid to abroad	30
11. Interest	20
12. Consumption of fixed capital	10
13. Profit	130
14. Net exports	70
15. Change in stock	50

Ans. (*a*) National Income by Income Method = Wages and salaries + Social security contributions by employers + Rent + Royalty + Interest + Profit – Net factor income paid to abroad

= 600 + 55 + 200 + 25 + 20 + 130 – 30

= ₹ 1,000 crores.

(*b*) National Income by Expenditure Method = Private final consumption expenditure + Government final consumption expenditure + Net exports + Gross domestic capital formation – Consumption of fixed capital – Indirect tax + Subsidies – Net factor income paid to abroad

= 800 + 100 + 70 + 120 – 10 – 60 + 10 – 30

= ₹ 1,000 crores.

Q26. There are only two producing sectors *A* and *B* in an economy. Calculate: (*a*) Gross value added at market price by each sector, (*b*) National income.

Items	₹ (in crores)
1. Net factor income from abroad	20
2. Sales by *A*	1000

3. Sales by B	2000
4. Change in stock of B	(−) 200
5. Closing stock of A	50
6. Opening stock of A	100
7. Consumption of fixed capital by A and B	180
8. Indirect taxes paid by A and B	120
9. Purchases of raw materials etc. by A	500
10. Purchases of raw materials etc. by B	600
11. Exports by B	70

Ans. (a) Gross Value Added at Market Price

Sector A = Sales by A + Closing stock A − Opening stock of A − Purchases of raw materials etc. by A

= 1,000 + 50 − 100 − 500

= ₹ 450 crores.

Sector B = Sales by B + Change in stock of B − Purchases of raw materials etc. by B + Exports by B

= 2000 + (− 200) − 600 + 70

= ₹ 1,270 crores.

(b) National Income = GVA_{MP} $(A + B)$ − Consumption of fixed capital by A and B − Indirect taxes paid by A and B + Net factor income from abroad

= (450 + 1,270) − 180 − 120 + 20

= ₹ 1,440 crores.

Q27. There are only two producing sectors A and B in an economy. Calculate (a) Gross value added at market price by A and B, (b) National income:

Items	₹ (in crores)
1. Net factor income from abroad	20
2. Sales by A	500
3. Sales by B	600
4. Indirect tax by A and B	80
5. Depreciation by A and B	30
6. Exports by A	45
7. Net change in stock of A	10
8. Net change in stock of B	(−) 10
9. Intermediate consumption of A	200
10. Intermediate consumption of B	300

Ans. (a) Gross Value Added at Market Price

Sector A = Sales by A + Net change in stock of A − Intermediate consumption of A

= 500 + 10 − 200

= ₹ 310 crores.

Sector B = Sales by B + Net change in stock of B − Intermediate consumption of B

= 600 + (−10) − 300

= ₹ 290 crores.

(b) National Income $= GVA_{MP}(A + B)$ – Depreciation by A and B – Indirect tax by A and B + Net factor income from abroad

$$= (310 + 290) - 30 - 80 + 20$$

$$= ₹ 510 \text{ crores.}$$

Q28. From the following data, calculate (a) Gross Domestic Product at Factor Cost and (b) Factor Income to Abroad:

Items	₹ (in crores)
1. Compensation of employees	800
2. Profits	200
3. Dividends	50
4. Gross national product at market price	1,400
5. Rent	150
6. Interest	100
7. Gross domestic capital formation	300
8. Net fixed capital formation	200
9. Change in stock	50
10. Factor income from abroad	60
11. Net indirect taxes	120

Ans. (a)

$$NDP_{FC} = 800 + 200 + 150 + 100$$

$$= ₹ 1250 \text{ crores.}$$

$$GDCF = NFCF + \text{Depreciation} + \text{Changes in stock}$$

$\therefore$ Depreciation $= 300 - 200 - 50$

$$= ₹ 50 \text{ crores.}$$

$$GDP_{FC} = NDP_{FC} + \text{Depreciation}$$

$$= 1250 + 50$$

$$= ₹ 1300 \text{ crores.}$$

(b)

$$GDP_{FC} = GNP_{MP} - NFIA - NIT$$

$$1300 = 1400 - (60 - x) - 120$$

$$1300 + 120 = 1340 + x$$

$$1420 - 1340 = x$$

$\therefore$ factor income to abroad $= ₹ 80$ crores

Q29. Calculate (a) Gross domestic product at market price and (b) Factor income from abroad from the following data:

Items	₹ (in crores)
1. Profits	500
2. Exports	40
3. Compensation of employees	1,500
4. Gross national product at factor cost	2,800
5. Net current transfer from rest of the world	90
6. Rent	300
7. Interest	400
8. Factor income to abroad	120
9. Net indirect taxes	250

10. Net domestic capital formation   650
11. Gross fixed capital formation   700
12. Change in stock   50

Ans. (a) GDP_{MP} = ?

NDP_{FC} = 500 + 1500 + 300 + 400

NDP_{FC} = ₹ 2700 crores.

NDCF + Dep" = GFCF + Δ in stock

650 + Dep" = 700 + 50

⇒   Dep" = 750 − 650

∴   Dep" = ₹ 100.

GDP_{MP} = NDP_{FC} + Dep" + NIT

= 2700 + 100 + 250

GDP_{MP} = ₹ 3050 crores.

(b) GDP_{MP} = GNP_{FC} − NFIA + NIT

∵ NFIA = Factor income from abroad − factor income to abroad

3050 = 2800 − (x − 120) + 250

3050 = 2800 − x + 120 + 250

∴   x = 3170 − 3050 = 120

Factor income from abroad = ₹ 120 crores.

Q30. Calculate (a) Gross domestic product at factor cost, and (b) Factor income to abroad, from the following data:

Items	₹ (in crores)
1. Gross national product at factor cost	3,750
2. Compensation of employees	2,000
3. Net exports	(−) 50
4. Profit	700
5. Net domestic capital formation	1,000
6. Opening stock	150
7. Closing stock	200
8. Gross fixed capital formation	1,050
9. Interest	600
10. Rent	400
11. Factor income from abroad	20

Ans. (a) GDP_{FC} = ?

NDP_{FC} = 2000 + 700 + 600 + 400

NDP_{FC} = 3700 crores.

Dep" = GFCF + Δ in stock − NDCF

= 1050 + (200 − 150) − 1000 = 50 + 50

Dep" = ₹ 100 crores.

GDP_{FC} = NDP_{FC} + Dep"

= ₹ 3700 + 100

GDP_{FC} = ₹ 3800 crores.

(b)
$$GDP_{FC} = GNP_{FC} - NFIA$$
$$3800 = 3750 - (20 - x)$$
$$3800 = 3750 - 20 + x$$
$$3800 - 3730 = x$$

∴ Factor income to abroad = ₹ 70 crores

Q 31. Calculate Gross National Product at Factor Cost by (i) income method, and (ii) expenditure method, from the following data:

	(₹ crore)
(i) Private final consumption expenditure	800
(ii) Government final consumption expenditure	300
(iii) Compensation of employees	600
(iv) Net imports	50
(v) Gross domestic capital formation	150
(vi) Consumption of fixed capital	20
(vii) Net indirect taxes	100
(viii) Net factor income from abroad	(−) 70
(ix) Dividend	150
(x) Rent	120
(xi) Interest	80
(xii) Undistributed profits	80
(xiii) Social security contributions by employers	60
(xiv) Corporate tax	50

Ans. (i) GNP at f.c. by income method
$$= (iii) + (x) + (xi) + (ix) + (xiv) + (xii) + (viii) + (vi)$$
$$= 600 + 120 + 80 + 150 + 50 + 80 - 70 + 20$$
$$= ₹\ 1030\ crore$$

(ii) GNP_{FC} by expenditure method
$$= (i) + (ii) - (iv) + (v) - (vii) + (viii)$$
$$= 800 + 300 - 50 + 150 - 100 - 70$$
$$= ₹\ 1030\ crore$$

Q 32. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers from Abroad:

	(₹ crore)
(i) Net indirect tax	35
(ii) Private final consumption expenditure	500
(iii) Net national disposable income	750
(iv) Closing stock	10
(v) Government final consumption expenditure	150
(vi) Net domestic fixed capital formation	100
(vii) Net factor income to abroad	(−) 15
(viii) Net imports	20
(ix) Opening stock	10
(x) Consumption of fixed capital	50

Ans. (a) GNP_{MP}
$$= (ii) + (v) + (vi + iv - ix + x) - (viii) - (vii)$$
$$= 500 + 150 + (100 + 10 - 10 + 50) - 20 - (-15)$$
$$= ₹\ 795\ crore$$

(b) $NCTFA$ $=$ $(iii) - (GNP_{MP} - x)$

$\quad\quad\quad = 750 - 795 + 50$

$\quad\quad\quad = ₹\ 5$ crore

Q 33. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers to Abroad:

	(₹ crore)
(i) Private final consumption expenditure	1000
(ii) Depreciation	100
(iii) Net national disposable income	1500
(iv) Closing Stock	20
(v) Government final consumption expenditure	300
(vi) Net indirect tax	50
(vii) Opening stock	20
$(viii)$ Net domestic fixed capital formation	110
(ix) Net exports	15
(x) Net factor income to abroad	(–) 10

Ans. (a) GNP_{MP} $=$ $(i) + (v) + (viii) + [iv - vii] + (ix) - (x) + (ii)$

$\quad\quad\quad\quad = 1,000 + 300 + 110 + [20 - 20] + 15 - (-10) + 100$

$\quad\quad\quad\quad = ₹\ 1,535$ crore

(b) Net Current Transfers to Abroad $= NNDI - NNP_{MP}$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad = 1,500 - [1,535 - 100]$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad = 1,500 - 1,435$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad = ₹\ 65$ crore

Q 34. From the following data calculate Gross National Product at Factor Cost by (i) income method, and (ii) expenditure method.

	(₹ crore)
(i) Government final consumption expenditure	200
(ii) Private final consumption expenditure	400
(iii) Profits	160
(iv) Net indirect taxes	60
(v) Rent	70
(vi) Interest	50
(vii) Compensation of employees	300
$(viii)$ Exports	65
(ix) Imports	95
(x) Gross domestic capital formation	80
(xi) Consumption of fixed capital	10
(xii) Net factor income to abroad	50

Ans. (i) GNP_{FC} by income method

$\quad\quad\quad = (v) + (vi) + (vii) + (iii) - (xii) + (xi)$

$\quad\quad\quad = 70 + 50 + 300 + 160 - 50 + 10$

$\quad\quad\quad = ₹\ 540$ crore

(ii) GNP_{FC} by expenditure method

$$= (i) + (ii) - (iv) + (viii - ix) + (x) - (xii)$$
$$= 200 + 400 - 60 + (65 - 95) + 80 - 50$$
$$= ₹ 540 \text{ crore}$$

Q 35. Calculate National Income by *(i)* income method and *(ii)* expenditure method from the following data:

		(₹ crore)
(i)	Profit	200
(ii)	Private final consumption expenditure	440
(iii)	Government final consumption expenditure	250
(iv)	Compensation of employees	350
(v)	Gross domestic capital formation	90
(vi)	Consumption of fixed capital	20
(vii)	Net exports	(–) 20
(viii)	Interest	60
(ix)	Rent	70
(x)	Net factor income to abroad	50
(xi)	Net indirect taxes	60

Ans. *(i)* NI by expenditure method

$$= (ii) + (iii) + (v) - (vi) + (vii) - (x) - (xi)$$
$$= 440 + 250 + 90 - 20 + (-20) - 50 - 60$$
$$= ₹ 630 \text{ crore}$$

(ii) National income by income method

$$= (i) + (iv) + (viii) + (ix) - (x)$$
$$= 200 + 350 + 60 + 70 - 50$$
$$= ₹ 630 \text{ crore}$$

Q 36. Calculate National Income by (i) income method and (ii) expenditure method from the following data:

		(₹ crore)
(i)	Government final consumption expenditure	2000
(ii)	Net domestic capital formation	600
(iii)	Consumption of fixed capital	70
(iv)	Net exports	60
(v)	Net indirect taxes	200
(vi)	Private final consumption expenditure	4000
(vii)	Net factor income to abroad	60
(viii)	Compensation of employees	3660
(ix)	Profits	1500
(x)	Rent	500
(xi)	Interest	800
(xii)	Dividend	300

Ans. (i) NI by income method

$$= (viii) + (ix) + (x) + (xi) - (vii)$$

$$= 3660 + 1500 + 500 + 800 - 60$$

$$= ₹ 6400 \text{ crore}$$

(ii) NI by expenditure method

$$= (i) + (vi) + (ii) + (iv) - (vii) - (v)$$

$$= 2000 + 4000 + 600 + 60 - 60 - 200$$

$$= ₹ 6400 \text{ crore}$$

Q 37. Find out (a) Gross National Product at Market Price and (b) Net Current Transfers from Abroad.

	(₹ crore)
(i) Net national disposable income	1,100
(ii) Net indirect tax	120
(iii) Private final consumption expenditure	750
(iv) Government final consumption expenditure	250
(v) Net domestic fixed capital formation	200
(vi) Net imports	(−) 40
(vii) Net factor income to abroad	(−) 20
(viii) Depreciation	50
(ix) Change in stock	10

Ans. (a) $GNP_{MP} = 750 + 250 + 200 + 10 - (-20) + 50 - (-40)$

$$= ₹ 1,320 \text{ crore}$$

(b) *Net Current Transfer from Abroad*

$$= NNDI - NNP_{MP}$$

$$= 1,100 - [1320 - 50]$$

$$= ₹ (-) 170 \text{ crore}$$

Q 38. Calculate "Gross National Product at Market Price" from the following data :

	(₹ in crores)
(i) Compensation of employees	2000
(ii) Interest	500
(iii) Rent	700
(iv) Profits	800
(v) Employer's contribution to social security schemes	200
(vi) Dividends	300
(vii) Consumption of fixed capital	100
(viii) Net indirect taxes	250
(ix) Net exports	70
(x) Net factor income to aborad	150
(xi) Mixed income of self-employed	1,500

Ans.
$$GNP_{MP} = (i) + (ii) + (iii) + (iv) + (vii) + (viii) - (x) + (xi)$$
$$= 2000 + 500 + 700 + 800 + 100 + 250 - 150 + 1500$$
$$= ₹ 5700 \text{ crores}$$

Q 39. Calculate 'National Income' from the following data :

		(₹ in crores)
(i)	Net exports	(–) 300
(ii)	Compensation of employees	6000
(iii)	Rent	400
(iv)	Dividend	200
(v)	Consumption of fixed capital	300
(vi)	Change in stock	50
(vii)	Profits	800
(viii)	Net factor income to abroad	(–) 80
(ix)	Net indirect taxes	600
(x)	Interest	500

Ans.
$$NI = (ii) + [(iii) + (x) + (vii)] - (viii)$$
$$= 6000 + 400 + 500 + 800 - (- 80)$$
$$= ₹ 7780 \text{ crores}$$

Q 40. Calculate National Income from the following data:

		(₹ in crores)
(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	50
(vii)	Net factor income from abroad	(–) 40
(viii)	Consumption of fixed capital	20
(ix)	Net imports	30

Ans.
$$NI = (i) + (iii) + (v) - (ix) - (viii) + (vii) - (iv)$$
$$= 900 + 400 + 250 - 30 - 20 + (- 40) - 100$$
$$= ₹ 1360 \text{ crore.}$$

Chapter-2 Concepts of Related Aggregates and Disposable Income

Short Answer Type Questions (3/4 Marks)

Q1. Calculate Gross National Disposable Income.

Items	₹ (in crores)
1. National Income	2,000
2. Net current transfers from ROW	200
3. Consumption of fixed capital	100
4. NFIA	– 50
5. Net Indirect Taxes	50

Ans. GNDI = National Income + Net current transfers from ROW + Consumption of fixed capital + Net Indirect Taxes

= 2000 + 200 + 100 + 50 = ₹ 2,350 crores.

Q2. Calculate Private Income:

Items	₹ (in crores)
1. National debt interest	10
2. Personal disposable income	150
3. Personal taxes	50
4. Corporate profit tax	25
5. Retained earnings of private corporations	5

Ans. Private Income = Personal disposable income + Personal taxes + Corporate profit tax + Retained earnings of private corporations

= 150 + 50 + 25 + 5 = ₹ 230 crores.

Q3. Calculate Personal Income:

Items	₹ (in crores)
1. Retained earnings of private corporations	20
2. Miscellaneous receipts of government adminis. deptt.	50
3. Personal disposable income	200
4. Personal tax	30
5. Corporate profit tax	10

Ans. Personal Income = Personal disposable income + Personal tax + Miscellaneous receipts of government administrative department

= 200 + 30 + 50 = ₹ 280 crores.

Q4. Calculate Personal Income:

Items	₹ (in crores)
1. Personal disposable income	300
2. Miscellaneous receipts of govt. adminis. deptt.	50
3. Corporate profit tax	10
4. Retained earnings of private corperations	20
5. Personal tax	30

Ans. Personal Income = Personal disposable income + Miscellaneous receipts of government administrativ department + Personal tax

= 300 + 50 + 30 = ₹ 380 crores.

Q5. Calculate Personal Disposable Income:

Items	₹ (in crores)
1. Private income	3000
2. Net retained earnings of private enterprises	600
3. Direct taxes paid by households	300
4. Corporation tax	350
5. National debt interest	250

Ans. Personal Disposable Income = Private income − Net retained earnings of private enterprises − Corporation tax − Direct taxes paid by households

= 3,000 − 600 − 350 − 300 = ₹ 1,750 crores.

Q6. Calculate Net National Disposable Income:

Items	₹ (in crores)
1. Government final consumption expenditure	60
2. Net imports	10
3. Change in stock	5
4. Consumption of fixed capital	20
5. Private final consumption expenditure	250
6. Net factor income from abroad	(−) 5
7. Net domestic capital formation	40
8. Net current transfers from abroad	10
9. Net indirect tax	15

Ans. NNDI = Private final consumption expenditure + Government final consumption expenditure + Net domestic capital formation − Net imports + Net factor income from abroad + Net current transfers from abroad

= 250 + 60 + 40 − 10 + (− 5) + 10 = ₹ 345 crores.

Q7. Calculate Private Income:

Items	₹ (in crores)
1. Personal disposable income	200
2. National debt interest	20
3. Personal taxes	50
4. Corporate profit tax	30
5. Retained earnings of private corporations	10

Ans. Private Income = Personal disposable income + Personal taxes + Corporate profit tax + Retained earnings of private corporations

= 200 + 50 + 30 + 10 = ₹ 290 crores.

Long Answer Type Questions (6 Marks)

Q1. Calculate Net National Product at Factor Cost and Gross National Disposable Income from the following:

Items	₹ (in crores)
1. Saving of non-departmental enterprises	50
2. Income from property and entrepreneurship accruing to the government administrative departments	70
3. Personal tax	90
4. National debt interest	20
5. Retained earnings of private corporate sector	10

6. Current transfer payments by government	40
7. Consumption of fixed capital	60
8. Corporation tax	30
9. Net indirect-tax	80
10. Net current transfers from rest of the world	(–)10
11. Personal disposable income	1000

Ans. (i) NNP_{FC} = Personal disposable income + Personal tax + Retained earnings + Corporation tax – Net current transfers from ROW – Current transfer payments by government – National debt interest – Savings of non-dept. enterprises + Income from property and entrepreneurship

= 1000 + 90 + 10 + 30 – (–10) – 20 – 40 + 50 + 70

NNP_{FC} = ₹ 1200 crores.

(ii) GNDI = NNP_{FC} + NIT + Net current transfers from ROW + Consumption of fixed capital

= 1200 + 80 + (–10) + 60

GNDI = ₹ 1330 crores.

Q 2. Calculate from the following data (a) Net national disposable income, (b) Private income and (c) Personal disposable income:

Items	₹ (in crores)
1. National income	800
2. Indirect taxes	70
3. Subsidies	10
4. Savings of non-departmental enterprises	30
5. National debt interest	50
6. Net factor income from abroad	(–)20
7. Consumption of fixed capital	40
8. Current transfers from rest-of-the-world	45
9. Income from property and entrepreneurship accruing to government administrative departments	60
10. Direct taxes paid by households	40
11. Profits	100
12. Savings of private corporate sector net of retained earnings of foreign companies	80
13. Current transfers from government administrative	90
14. Corporation tax	25

Ans. (a) NNDI = National income + Indirect taxes – Subsidies + Current transfers from rest-of-the-world

= 800 + 70 – 10 + 45

= ₹ 905 crores.

(b) Private Income = National income – Savings of non-departmental enterprises – Income from property and entrepreneurship accruing to government administrative departments + National debt interest + Current transfers from rest-of-the-world + Current transfers from government administrative.

= 800 – 30 – 60 + 50 + 45 + 90

= ₹ 895 crores.

(c) Personal Disposable Income = Private Income – Savings of private corporate sector net of retained earnings of foreign companies – Corporation tax – Direct taxes paid by households

$$= 895 - 80 - 25 - 40$$

$$= ₹ 750 \text{ crores.}$$

Q3. From the following data, calculate (a) Personal disposable income and (b) National income:

Items	₹ (in crores)
1. Private income	4,000
2. Mixed income of self-employed	1,200
3. Net factor income from abroad	(–)50
4. Compensation of employees	1,300
5. Net retained earnings of private enterprises	200
6. Profit	800
7. Rent	600
8. Corporation tax	400
9. Interest	700
10. Net indirect taxes	500
11. Net exports	(–)100
12. Direct taxes paid by households	150
13. Consumption of fixed capital	180

Ans. (a) Personal Disposable Income = Private income – Corporation tax – Net retained earnings of private enterprises – Direct taxes paid by households

$$= 4,000 - 400 - 200 - 150$$

$$= ₹ 3,250 \text{ crores.}$$

(b) National Income = Compensation of employees + Profit + Rent + Interest + Mixed income of self-employed + Net factor income from abroad

$$= 1,300 + 800 + 600 + 700 + 1,200 + (-50)$$

$$= ₹ 4,550 \text{ crores.}$$

Q4. Calculate (a) Net domestic product at factor cost, and (b) Personal income from the following data:

Items	₹ (in crores)
1. Private final consumption expenditure	700
2. Savings of non-departmental enterprises	20
3. Net domestic fixed capital formation	100
4. Undistributed profits	5
5. Change in stock	10
6. Corporation tax	35
7. Net exports	40
8. Income from property and entrepreneurship accruing to the government administrative departments	30
9. National debt interest	40
10. Government final consumption expenditure	150
11. Current transfers from government	25

	(−)10
12. Net factor income from abroad	10
13. Net current transfers from the rest of the world	60
14. Net indirect taxes	35
15. Personal taxes	

Ans. (a) NDP_{FC} = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic fixed capital formation + Change in stock − Net indirect taxes

= 700 + 150 + 40 + 100 +10 − 60

= ₹ 940 crores.

(b) Personal Income = NDP_{FC} + Net factor income from abroad + National debt interest + Current transfers from government + Net current transfers from the rest of the world − Undistributed profits − Corporation tax − Savings of non-departmental enterprises − Income from property and entrepreneurship accruing to the government administrative departments

= 940 + (− 10) + 40 + 25 + 10 − 5 − 35 − 20 − 30

= ₹ 915 crores.

Q5. From the following data calculate:

(a) Private income, and (b) Personal disposable income.

Items	₹ (in crores)
1. Income from domestic product accruing to the private sector	4,000
2. Savings of non-departmental public enterprises	200
3. Current transfers from government administrative departments	150
4. Savings of private corporate sector	400
5. Current transfers from rest of the world	50
6. Net factor income from abroad	(−)40
7. Corporation tax	60
8. Direct personal taxes	140

Ans. (a) Private Income = Income from domestic product accruing to the private sector + Current transfers from government administrative departments + Current transfers from rest of the world + Net factor income from abroad

= 4,000 + 150 + 50 + (− 40)

= ₹ 4,160 crores.

(b) Personal Disposable Income = Private income − Savings of private corporate sector − Corporation tax − Direct personal taxes

= 4,160 − 400 − 60 − 140

= ₹ 3,560 crores.

Q6. Calculate (a) Private income, and (b) Personal disposable income from the following data:

Items	₹ (in crores)
1. Income from property and entrepreneurship accruing to government administrative departments	500
2. Savings of non-departmental public enterprises	100

3. Corporation tax	80
4. Income from domestic product accruing to private sector	4,500
5. Current transfer from government administrative departments	200
6. Net factor income from abroad	(–)50
7. Direct personal taxes	150
8. Indirect tax	220
9. Current transfers from rest of the world	80
10. Savings of private corporate sector	500

Ans. (a) Private Income = Income from domestic product accruing to private sector + Current transfer from government administrative departments + Net factor income from abroad + Current transfers from rest of the world

= 4,500 + 200 + (– 50) + 80

= ₹ 4,730 crores.

(b) Personal Disposable Income = Private income – Corporation tax – Savings of private corporate sector – Direct personal taxes

= 4,730 – 80 – 500 – 150

= ₹ 4,000 crores.

Q7. Calculate (a) private income and (b) personal disposable income from the following data:

Items	₹ (in crores)
1. Savings of private corporate sector	500
2. Current transfers from rest of the world	60
3. Corporation tax	80
4. Current transfers from government administrative departments	170
5. Direct personal taxes	150
6. Income from domestic product accruing to private sector	4,500
7. Savings of non-departmental public enterprises	250
8. Net factor income from abroad	(–)30
9. Net exports	(–)50

Ans. (a) Private Income = Income from domestic product accruing to private sector + Current transfers from rest of the world + Current transfers from government administrative departments + Net factor income from abroad

= 4,500 + 60 + 170 + (– 30)

= ₹ 4,700 crores.

(b) Personal Disposable Income = Private income – Savings of private corporate sector – Corporation tax – Direct personal taxes

= 4,700 – 500 – 80 – 150

= ₹ 3,970 crores.

Q8. Calculate Personal Disposable Income from the following data:

Items	₹ (in crores)
1. Net current transfers from rest of the world	3
2. Private Income	200

	30
3. Personal taxes	5
4. National debt interest	20
5. Corporate profit tax	10
6. Undistributed profits	

Ans. Personal Disposable Income = Private Income − Corporate profit tax − Undistributed profits − Personal taxes

= 200 − 20 − 10 − 30

= ₹ 140 crores.

Q9. Calculate (a) Personal Disposable Income (b) Personal Income, (c) Private Income from the following data:

Items	₹ (in crores)
1. Direct tax paid by the households	6,500
2. Corporation tax	1,500
3. Household final consumption expenditure	24,500
4. Interest on national debt	2,000
5. Savings of private corporate sector	3,500
6. Household savings	7,500

Ans. (a) Personal Disposable Income = Household final consumption expenditure + Household savings

= 24,500 + 7,500

= ₹ 32,000 crores.

(b) Personal Income = PDI + Direct tax paid by the households

= 32,000 + 6,500

= ₹ 38,500 crores.

(c) Private Income = Personal income + Corporation tax + Savings of private corporate sector

= 38,500 + 1,500 + 3,500

= ₹ 43,500 crores.

Q10. Calculate 'private income' from the following data:

Items	₹ (in crores)
1. National debt interest	30
2. Gross national product at market price	400
3. Current transfers from government	20
4. Net indirect taxes	40
5. Net current transfers from the rest of the world	(−)10
6. Net domestic product at factor cost accruing to government	50
7. Consumption of fixed capital	70

Ans. Private Income = Gross national product at market price − Consumption of fixed capital − Net indirect taxes + National debt interest + Current transfers from government − Net domestic product at factor cost accruing to government + Net current transfers from the rest of the world

= 400 − 70 − 40 + 30 + 20 − 50 + (− 10)

= ₹ 280 crores.

Q11. Calculate Personal Income from the following:

Items	₹ (in crores)
1. Undistributed profits of corporations	20
2. Net domestic product accruing to the private sector	500
3. Corporation tax	55
4. Net factor income from abroad	(–)10
5. Net current transfers from government	15
6. National debt interest	40
7. Net current transfers from the rest of the world	15

Ans. Personal Income = Net domestic product accruing to the private sector + Net factor income from abroad + Net current transfers from government + National debt interest + Net current transfers from the rest of the world – Undistributed profits of corporations – Corporation tax

$$= 500 + (-10) + 15 + 40 + 15 - 20 - 55$$
$$= ₹ 485 \text{ crores.}$$

Q12. Calculate Personal Disposable Income from the following data:

Items	₹ (in crores)
1. Personal taxes	60
2. Net National Product a factor cost accruing to the private sector	600
3. Undistributed profits	10
4. National debt interest	50
5. Corporation tax	100
6. Net current transfers from the rest of the world	(–)20
7. Current transfers from government	30

Ans. Personal Disposable Income = Net National Product a factor cost accruing to the private sector + National debt interest + Net current transfers from the rest of the world + Current transfers from government – Undistributed profits – Corporation tax – Personal taxes

$$= 600 + 50 + (-20) + 30 - 10 - 100 - 60$$
$$= ₹ 490 \text{ crores.}$$

Q13. Calculate 'net national disposable income' from the following data:

Items	₹ (in crores)
1. Net domestic product at factor cost	500
2. Net indirect tax	50
3. Net factor income from abroad	(–)20
4. Net exports	(–)30
5. Net current transfers from rest of the world	40

Ans. NNDI = Net domestic product at factor cost + Net factor income from abroad + Net indirect tax + Net current transfers from rest of the world

$$= 500 + (-20) + 50 + 40$$
$$= ₹ 570 \text{ crores.}$$

Q14. Calculate 'net national disposable income' from the following data:

Items	₹ (in crores)
1. Net current transfers from the rest of the world	20
2. Net domestic product at factor cost	800

		70
3. Net indirect taxes		60
4. Net domestic capital formation		(–)10
5. Net factor income from abroad		

Ans. NNDI = Net domestic product at factor cost + Net factor income from abroad + Net indirect taxes + Net current transfers from the rest of the world

= 800 + (– 10) + 70 + 20

= ₹ 880 crores.

Q 15. Calculate Net Domestic Product at Factor Cost and Gross National Disposable Income from the following data:

Items	₹ (in crores)
1. Net current transfers from abroad	(–)5
2. Private final consumption expenditure	250
3. Net factor income from abroad	15
4. Govt. final consumption expenditure	50
5. Consumption of fixed capital	25
6. Net exports	(–)10
7. Subsidies	10
8. Net domestic capital formation	30
9. Indirect tax	20

Ans. (a) NDP_{FC} = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + Net domestic capital formation – Indirect tax + Subsidies

= 250 + 50 + (– 10) + 30 – 20 + 10

= ₹ 310 crores.

(b) GNDI = NDP_{FC} + Net factor income from abroad + Consumption of fixed capital + Indirect tax – Subsidies + Net current transfers from abroad

= 310 + 15 + 25 + 20 – 10 + (– 5)

= ₹ 355 crores.

Q 16. Calculate Gross National Product at Market Price and Net National Disposable Income from the following data:

Items	₹ (in crores)
1. Net current transfers to abroad	(–)5
2. Profit	70
3. Consumption of fixed capital	30
4. Rent	40
5. Indirect tax	20
6. Interest	100
7. Royalty	10
8. Compensation of employees	600
9. Subsidy	5
10. Net factor income from abroad	(–)25

Ans. (a) GNP_{MP} = Compensation of employees + Profit + Rent + Interest + Royalty + Consumption of fixed capital + Indirect tax – Subsidy + Net factor income from abroad

= 600 + 70 + 40 + 100 + 10 + 30 + 20 – 5 + (– 25)

= ₹ 840 crores.

(b) $NNDI$ = GNP_{MP} − Consumption of fixed capital − Net current transfers to abroad

= 840 − 30 − (− 5)

= ₹ 815 crores.

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

Items	₹ (in crores)
1. Net current transfers to abroad	15
2. Net exports	(−)20
3. Private final consumption expenditure	400
4. Net factor income to abroad	10
5. Government final consumption expenditure	100
6. Indirect tax	30
7. Net domestic capital formation	50
8. Change in stocks	7
9. Subsidy	5

Ans. (a) National Income = Private final consumption expenditure + Government final consumption expenditure + Net exports + Net domestic capital formation − Indirect tax + Subsidy − Net factor income to abroad

= 400 + 100 + (− 20) + 50 − 30 + 5 − 10

= ₹ 495 crores.

(b) $NNDI$ = National Income + Indirect tax − Subsidy − Net current transfers to abroad

= 495 + 30 − 5 − 15

= ₹ 505 crores

Q 18. Calculate National Income and Private Income from the following data:

Items	₹ (in crores)
1. Net current transfers to the rest of the world	10
2. Private final consumption expenditure	600
3. National debt interest	15
4. Net exports	(−)20
5. Current transfers from government	5
6. Net domestic product at factor cost accruing to government	25
7. Govt. final consumption expenditure	100
8. Net Indirect tax	30
9. Net domestic capital formation	70
10. Net factor income from abroad	10

Ans. (a) National Income = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + Net domestic capital formation − Net Indirect tax + Net factor income from abroad

= 600 + 100 + (− 20) + 70 − 30 + 10

= ₹ 730 crores.

(b) Private Income = National income − Net domestic product at factor cost accruing to government + National debt interest + Current transfers from government − Net current transfers to the rest of the world

= 730 − 25 + 15 + 5 − 10

= ₹ 715 crores.

Q19. Calculate Gross National Product at Market Price and Personal Income from the following data:

Items	₹ (in crores)
1. Corporation tax	35
2. Wages and salaries	200
3. National debt interest	25
4. Operating surplus	400
5. Net current transfers from abroad	15
6. Net factor income from abroad	(–)10
7. Consumption of fixed capital	20
8. Social security contribution by employees	30
9. Net indirect tax	40
10. Net domestic product at factor cost accruing to the private sector	500
11. Current transfers from government	5

Ans. (a) GNP_{MP} = Wages and salaries + Operating surplus + Consumption of fixed capital + Net indirect tax + Net factor income from abroad

= 200 + 400 + 20 + 40 + (– 10)

= ₹ 650 crores.

(b) Personal Income = Net domestic product at factor cost accruing to the private sector – Corporation tax + National debt interest + Net current transfers from abroad + Current transfers from government + Net factor income from abroad

= 500 – 35 + 25 + 15 + 5 + (– 10) = ₹ 500 crores.

Q20. Calculate Net National Product at Market Price and Private Income from the following data:

Items	₹ (in crores)
1. Net factor income from abroad	(–)5
2. Private final consumption expenditure	100
3. Personal tax	20
4. Gross national disposable income	170
5. Govt. final consumption expenditure	20
6. Corporation tax	15
7. Gross domestic capital formation	30
8. Personal disposable income	70
9. Net exports	(–)10
10. Saving of private corporate sector	5
11. Net national disposable income	145

Ans. (a) NNP_{MP} = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + Gross domestic capital formation – [Gross national disposable income – Net national disposable income] + Net factor income from abroad

= 100 + 20 + (– 10) + 30 – (170 – 145) + (– 5)

= ₹ 110 crores.

(b) Private Income = Personal disposable income + Personal tax + Saving of private corporate sector + Corporation tax

= 70 + 20 + 5 + 15

= ₹ 110 crores.

Q21. Calculate National Income and Gross National Disposable Income from the following data:

Items	₹ (in crores)
1. Net indirect tax	5
2. Net domestic fixed capital formation	100
3. Net imports	(−)20
4. Govt. final consumption expenditure	200
5. Net current transfers from abroad	15
6. Private final consumption expenditure	600
7. Change in stocks	10
8. Net factor income from abroad	5
9. Gross Domestic fixed capital formation	125

Ans. (a) National Income = Private final consumption expenditure + Govt. final consumption expenditure − Net imports + Net domestic fixed capital formation + Change in stocks − Net indirect tax + Net factor income from abroad

$$= 600 + 200 - (-20) + 100 + 10 - 5 + 5$$
$$= ₹ \ 930 \ crores.$$

(b) GNDI = National Income + (Gross Domestic fixed capital formation − Net domestic fixed capital formation) + Net indirect tax + Net current transfers from abroad

$$= 930 + (125 - 100) + 5 + 15$$
$$= ₹ \ 975 \ crores.$$

Q22. Calculate Net Domestic Product at factor cost and Net National Disposable Income from the following data:

Items	₹ (in crores)
1. Net indirect tax	60
2. Wages and salaries	600
3. Net current transfers from abroad	(−)10
4. Rent	50
5. Interest	200
6. Profit	150
7. Net factor income from abroad	(−)20
8. Royalty	40
9. Social security contributions by employers	100

Ans. (a) NDP_{FC} = Wages and salaries + Social security contributions by employers + Rent + Interest + Profit + Royalty

$$= 600 + 100 + 50 + 200 + 150 + 40$$
$$= ₹ \ 1,140 \ crores$$

(b) NNDI = NDP_{FC} + Net factor income from abroad + Net indirect tax + Net current transfers from abroad

$$= 1140 + (-20) + 60 + (-10)$$
$$= ₹ \ 1,170 \ crores$$

Q23. Calculate National Income and Private Income from the following data:

Items	₹ (in crores)
1. Current transfers by government	25
2. Net domestic product at factor cost accruing to the government	90

3. Govt. final consumption expenditure   200

4. Net exports   (–)50

5. National debt interest   60

6. Net domestic capital formation   100

7. Consumption of fixed capital   30

8. Net factor income paid to abroad   20

9. Private final consumption expenditure   600

10. Net indirect tax   40

11. Net current transfers from abroad   (–)10

Ans. (a) National Income = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + Net domestic capital formation – Net indirect tax – Net factor income paid to abroad

= 600 + 200 + (– 50) + 100 – 40 – 20

= ₹ 790 crores.

(b) Private Income = National Income – Net domestic product at factor cost accruing to the government + National debt interest + Current transfers by government + Net current transfers from abroad

= 790 – 90 + 60 + 25 + (– 10)

= ₹ 775 crores.

Q24. From the following data calculate (i) Gross National Product at factor cost and (ii) Net National Disposable Income:

Items	₹ (in crores)
1. Net indirect tax	800
2. Net domestic fixed capital formation	500
3. Consumption of fixed capital	100
4. Private final consumption expenditure	5000
5. Govt. final consumption expenditure	2000
6. Net factor income to abroad	50
7. Net exports	(–)50
8. Change in stock	(–)30
9. Current transfers from rest of the world	70
10. Compensation of employees	2500
11. Current transfers to rest of the world	40

Ans. (i) GNP_{FC} = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + [Net domestic fixed capital formation + Change in stock + Consumption of fixed capital] – Net indirect tax – Net factor income to abroad

= 5,000 + 2,000 + (– 50) + 500 + (– 30) + 100 – 800 – 50

= ₹ 6,670 crores.

(ii) $NNDI$ = GNP_{FC} – Consumption of fixed capital + Net indirect tax + Current transfer from rest of the world – Current transfers to rest of the world

= 6670 – 100 + 800 + 70 – 40

= ₹ 7,400 crores.

Q25. From the following data calculate (a) Net Domestic Product at factor cost and (b) Gross National Disposable Income:

Items	₹ (in crores)
1. Net current transfers to the rest of the world	(–)60
2. Net factor income from abroad	(–)40
3. Government final consumption expenditure	2000
4. Private final consumption expenditure	6000
5. Net domestic fixed capital formation	800
6. Gross domestic capital formation	950
7. Change in stock	50
8. Net exports	(–)50
9. Profits	1000
10. Net indirect tax	700

Ans. (a) NDP_{FC} = Private final consumption expenditure + Govt. final consumption expenditure + Net exports + Gross domestic capital formation – Depreciation – Net indirect taxes

= 6000 + 2000 + (– 50) + 950 – [950 – (800 + 50)] – 700

= 6000 + 2000 – 50 + 950 – 100 – 700

= ₹ 8,100 crores

(b) $GNDI$ = NDP_{FC} + Net factor income from abroad + Depreciation + NIT – Net current transfers to ROW

= 8100 + (– 40) + 100 + 700 – (– 60)

= ₹ 8,920 crores

Q26. From the following data calculate (a) Net National Product at factor cost and (b) Gross National Disposable Income:

Items	₹ (in crores)
1. Gross domestic capital formation	210
2. Change in stock	(–)30
3. Private final consumption expenditure	3000
4. Government final consumption expenditure	1000
5. Net exports	(–)20
6. Net factor income from abroad	(–)10
7. Net domestic fixed capital formation	200
8. Net current transfers from rest of the world	30
9. Interest on public debt	15
10. Personal tax	25
11. Net indirect tax	170
12. Undistributed profits	250

Ans. (a) NNP_{FC} = Private final consumption expenditure + Government final consumption expenditure + Net exports + Gross domestic capital formation – Depreciation – Net indirect taxes + NFIA

= 3000 + 1000 + (– 20) + 210 – [210 – (200 + (– 30))] – 170 + (– 10)

= ₹ 3,970 crores.

(b) $GNDI$ = NNP_{FC} + Depreciation + Net indirect tax + Net current transfers from ROW

= 3970 + 40 + 170 + 30

= ₹ 4,210 crores.

Q27. From the following data calculate (a) Gross National Product at market price and (b) Net National Disposable Income:

Items	₹ (in crores)
1. Compensation of employees	4000
2. Rent	800
3. Profits	1500
4. Undistributed profits	400
5. Mixed income of self-employed	1800
6. Net exports	(−)30
7. Net domestic capital formation	900
8. Gross domestic fixed capital formation	1000
9. Change in stock	50
10. Interest	900
11. Net indirect tax	500
12. Net current transfers from rest of the world	60
13. Net factor income to abroad	(−)80

Ans. (a) GNP_{MP} = Compensation of employees + Rent + Profits + Interest + Mixed income + Depreciation + Net indirect taxes − Net factor income to abroad

= 4000 + 800 + 1500 + 900 + 1800 + [1000 + 50 − 900] + 500 − (− 80)

= ₹ 9,730 crores.

(b) $NNDI$ = GNP_{MP} − Depreciation + Net current transfers from ROW

= 9730 − 150 + 60

= ₹ 9,640 crores.

Q28. Calculate Gross National Disposable Income and Personal Income from the given data.

Items	₹ (in crores)
1. Personal tax	120
2. Net indirect tax	100
3. Corporation tax	90
4. National income	1000
5. Net factor income from abroad	5
6. Consumption of fixed capital	50
7. National debt interest	70
8. Retained earnings of private corporate sector	40
9. Net current transfers to the rest of the world	(−) 20
10. Current transfers from government	30
11. Share of government in national income	80

Ans. (a) $GNDI$ = National income + Consumption of fixed capital + Net indirect tax − Net current transfers to the rest of the world

= 1,000 + 50 + 100 − (− 20)

= ₹ 1,170 crores.

(b) Personal Income = National income − Share of government in national income + National debt interest + Current transfers from government − Net current transfers to the rest of the world − Corporation tax − Retained earnings of private corporate sector

= 1,000 − 80 + 70 + 30 − (−20) − 90 − 40

= ₹ 910 crores.

Q 29. Calculate GNP_{MP} and Personal Disposable Income from the following data:

Items	₹ (in crores)
1. Subsidy	20
2. Net factor income from abroad	(–) 60
3. Consumption of fixed capital	50
4. Personal tax	110
5. Savings of private corporations	40
6. Dividend	20
7. Indirect tax	100
8. Corporational tax	90
9. Net national disposable income	1000
10. National debt interest	30
11. Net current transfers from abroad	20
12. Current transfers from government	50
13. Private income	700
14. Private final consumption expenditure	380
15. Misc. receipts of govt. administrative department	30

Ans. (*a*) GNP_{MP} = Net national disposable income + Consumption of fixed capital – Net current transfers from abroad

$$= 1,000 + 50 - 20$$
$$= ₹ 1,030 \text{ crores.}$$

(*b*) Personal Disposable Income = Private income – Savings of private corporations – Corporational tax – Personal tax – Misc. receipts of govt. administrative department

$$= 700 - 40 - 90 - 110 - 30$$
$$= ₹ 430 \text{ crores.}$$

Q 30. Calculate National Income, and Gross National Disposable Income:

Items	₹ (in crores)
1. Exports	80
2. Private final consumption expenditure	600
3. Net current transfers to the rest of the world	(–) 5
4. Government final consumption expenditure	100
5. Subsidies	20
6. Indirect tax	80
7. Net domestic fixed capital formation	150
8. Net factor income from abroad	(–) 10
9. Closing stock	60
10. Opening stock	10
11. Net imports	50
12. Consumption of fixed capital	50

Ans. (*a*) National Income = Private final consumption expenditure + Government final consumption expenditure – Net imports + Net domestic fixed capital formation + Closing stock – Opening stock – Indirect tax + Subsidies + Net factor income from abroad

$$= 600 + 100 - 50 + 150 + 60 - 10 - 80 + 20 + (-10)$$
$$= ₹ 780 \text{ crores.}$$

(b) GNDI = National income + Consumption of fixed capital + Indirect tax − Subsidies − Net current transfers to the rest of the world

$$= 780 + 50 + 80 − 20 − (−5)$$

$$= ₹ \ 895 \ crores.$$

Q31. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (in crores)
1. Net current transfers from abroad	10
2. Wages and salaries	800
3. Net indirect tax	140
4. Social security contributions by employers	100
5. Consumption of fixed capital	80
6. Rent	200
7. Net factor income to abroad	20
8. Royalty	50
9. Personal tax	90
10. Corporation tax	50
11. Profits before tax	150
12. Interest	300

Ans. (a) GNP_{MP} = Wages and salaries + Social security contribution by employers + Rent + Royalty + Profits before tax + Interest + Consumption of fixed capital + Net indirect tax − Net factor income to abroad

$$= 800 + 100 + 200 + 50 + 150 + 300 + 80 + 140 − 20$$

$$= ₹ \ 1,800 \ crores.$$

(b) $NNDI$ = GNP_{MP} − Consumption of fixed capital + Net current transfers from abroad

$$= 1800 − 80 + 10$$

$$= ₹ \ 1,730 \ crores.$$

Q32. Calculate Gross National Product at Market Price and Net National Disposable Income:

Items	₹ (in crores)
1. Net current transfers from abroad	(−) 10
2. Compensation of employees	800
3. Net indirect tax	50
4. Social security contributions by employers	80
5. Consumption of fixed capital	30
6. Rent	300
7. Net factor income to abroad	10
8. Interest paid by production units	400
9. Royalty	40
10. National debt interest	14
11. Profit after tax	250
12. Retained earnings	20
13. Corporation tax	50

Ans. (a) GNP_{MP} = Compensation of employees + Rent + Royalty + Interest paid by production units + [Profit after tax + Corporation tax] + Consumption of fixed capital + Net indirect tax – Net factor income to abroad

= 800 + 300 + 40 + 400 + [250 + 50] + 30 + 50 – 10

= ₹ 1,910 crores.

(b) $NNDI$ = GNP_{MP} – Consumption of fixed capital + Net current transfers from abroad

= 1910 – 30 + (–10)

= ₹ 1,870 crores.

Q33. Find National Income and Net National Disposable Income:

Items	₹ (in crores)
1. Exports	25
2. Government final consumption expenditure	300
3. Net current transfers to the rest of the world	(–) 10
4. Net domestic fixed capital formation	200
5. Net factor income to abroad	20
6. Private final consumption expenditure	1000
7. Net indirect tax	30
8. Opening stock	60
9. Net imports	30
10. Closing stock	50

Ans. (a) National Income = Private final consumption expenditure + Government final consumption expenditure – Net imports + Net domestic fixed capital formation + Closing stock – Opening stock – Net indirect tax – Net factor income to abroad

= 1,000 + 300 – 30 + 200 + 50 – 60 – 30 – 20 = ₹ 1,410 crores.

(b) $NNDI$ = National Income + Net indirect tax – Net current transfers to the rest of the world

= 1,410 + 30 – (–10)

= ₹ 1,450 crores.

Q 34. Calculate National Income and Gross National Disposable Income from the following:

Items	₹ (in crores)
(i) Net current transfers to the rest of the world	(–)5
(ii) Private final consumption expenditure	500
(iii) Consumption of fixed capital	20
(iv) Net factor income to abroad	(–)10
(v) Government final consumption expenditure	200
(vi) Net indirect tax	100
(vii) Net domestic fixed capital formation	120
(viii) Net imports	30
(ix) Change in stocks	(–)20

Ans.

$N.I.$ = (ii) + (v) + (vii) + (ix) – (viii) – (vi) – (iv)

= 500 + 200 + 120 + (–20) – 30 – 100 – (–10)

= ₹ 680 crore

$$GNDI = N.I. + (iii) + (vi) - (i)$$
$$= 680 + 20 + 100 - (-5)$$
$$= ₹ 805 \text{ crore.}$$

Q 35. Calculate Net National Product at Market Price and Gross National Disposable Income

Items	₹ (in arab)
(i) Consumption of fixed capital	40
(ii) Change in stocks	(−)10
(iii) Net imports	20
(iv) Gross domestic fixed capital formation	100
(v) Private final consumption expenditure	800
(vi) Net current transfers to the rest of the world	5
(vii) Government final consumption expenditure	250
(viii) Net factor income to abroad	40
(ix) Net indirect tax	130

Ans.
$$NNP_{MP} = (v) + (vii) + (iv) + (ii) - (i) - (iii) - (viii)$$
$$= 800 + 250 + 100 + (-10) - 40 - 20 - 40$$
$$= ₹ 1040 \text{ Arab.}$$

$$GNDI = GNP_{MP} - \text{Net Current Transfer to the rest of the world}$$
$$= NNP_{MP} + (i) - (vi)$$
$$= 1040 + 40 - 5$$
$$= ₹ 1075 \text{ Arab.}$$

Q 36. Calculate (a) 'Gross National Product at Market Price' and (b) 'Personal Disposable Income' from the following:

Items	₹ (in crores)
(i) Net factor income to abroad	10
(ii) Private income	1700
(iii) Operating surplus	300
(iv) Corporation tax	150
(v) Undistributed profits	30
(vi) Mixed income	500
(vii) Consumption of fixed capital	100
(viii) Personal taxes	200
(ix) Compensation of employees	1200
(x) Net indirect tax	250

Ans. (a)
$$GNP_{MP} = (ix) + (iii) + (vi) + (x) + (vii)$$
$$= 1200 + 300 + 500 + 250 + 100$$
$$= ₹ 2350 \text{ Crores.}$$

(b)
$$PDI = (ii) - (iv) - (v) - (viii)$$
$$= 1700 - 150 - 30 - 200$$
$$= ₹ 1320 \text{ Crores.}$$

Q 37. Calculate (a) 'Net National Product at Market Price' and (b) 'Private Income' from the following:

Items	₹ (in crores)
(i) Net current transfers to abroad	30
(ii) Mixed income	600
(iii) Subsidies	20
(iv) Operating surplus	200
(v) National debt interest	70
(vi) Net factor income to abroad	10
(vii) Compensation of employees	1400
(viii) Indirect tax	100
(ix) Domestic product accruing to government	350
(x) Current transfers by government.	50

Ans. (a) NNP_{MP} = (vii) + (iv) + (ii) + (viii–iii) – (vi)

= 1400 + 200 + 600 + (100 – 20) – 10

= ₹ 2270 Crores.

(b) Private Income

= NDP_{FC} – Income from domestic product accruing to public sector – Net current transfers to abroad – Net factor income to abroad

= [2270 – (viii–iii) + vi] – (ix) – (i) – (vi)

= [2270 – (100 – 20) + 10] – 350 – 30 – 10

= ₹ 1810 Crores.

Q 38. Calculate (a) 'Net Domestic Product at Factor Cost' and (b) 'Private Income' from the following:

Items	₹ (in crores)
(i) Domestic product accruing to government	300
(ii) Wages and salaries	1000
(iii) Net current transfers to abroad	(–)20
(iv) Rent	100
(v) Interest paid by the production units	130
(vi) National debt interest	30
(vii) Corporation tax	50
(viii) Current transfers by government	40
(ix) Contribution to social security schemes by employers	200
(x) Dividends	100
(xi) Undistributed profits	20
(xii) Net factor income to abroad	0

Ans. (a) NDP_{FC} = (ii + ix) + (iv) + (v) + (vii + x + xi)

= 1000 + 200 + 100 + 130 +(50 + 100 + 20)

= ₹ 1600 crores

(b) Pvt. Income = NDP_{FC} – (i) – (iii) + (vi) – (xii)

= 1600 – 300 – (–20) + 30 – 0

= ₹ 1350 crores

Q 39. Calculate National Income and Personal Disposable Income from the following:

Items	₹ (in crores)
(i) Personal tax	150
(ii) Net imports	(−)10
(iii) Private final consumption expenditure	700
(iv) Private income	600
(v) Undistributed profit	20
(vi) Net domestic capital formation	120
(vii) Government final consumption expenditure	200
(viii) Net factor income to abroad	(−)5
(ix) Corporation tax	100
(x) Net indirect tax	105

Ans. (a) NI
$$= (iii) + (vii) + (vi) - (ii) - (x) - (viii)$$
$$= 700 + 200 + 120 - (-10) - (105) - (-5)$$
$$= 900 + 120 + 10 - 105 + 5$$
$$= 1020 + 10 - 105 + 5$$
$$= 1020 + 15 - 105$$
$$= 1035 - 105$$
$$= ₹ 930 \text{ crores}$$

(b) PDI
$$= (iv) - (ix) - (v) - (i)$$
$$= 600 - 100 - 20 - 150$$
$$= ₹ 330 \text{ crores}$$

Q 40. Find out (a) national income and (b) net national disposable income:

	(₹ crore)
(i) Factor income from abroad	15
(ii) Private final consumption expenditure	600
(iii) Consumption of fixed capital	50
(iv) Government final consumption expenditure	200
(v) Net current transfers to abroad	(−) 5
(vi) Net domestic fixed capital formation	110
(vii) Net factor income to abroad	10
(viii) Net imports	(−) 20
(ix) Net indirect tax	70
(x) Change in stocks	(−) 10

Ans. (a) N.I.
$$= (ii) + (iv) + (vi) + (x) - (viii) - (ix) - (vii)$$
$$= 600 + 200 + 110 + (-10) - (-20) - 70 - 10$$
$$= 600 + 200 + 110 - 10 + 20 - 70 - 10$$
$$= ₹ 840 \text{ crore}$$

(b) NNDI = N.I. + (ix) – (v)

= 840 + 70 – (–5)

= ₹ 915 crore

Q 41. Find out (a) Net National Product at Market Price and (b) Gross National Disposable Income:

	(₹ crore)
(i) Net current transfers from abroad	(–) 10
(ii) Wages and Salaries	1,000
(iii) Net factor income to abroad	(–) 20
(iv) Social security contributions by employers	100
(v) Net Indirect Tax	80
(vi) Rent	300
(vii) Consumption of fixed capital	120
(viii) Corporation Tax	50
(ix) Dividend	200
(x) Undistributed profits	60
(xi) Interest	400

Ans. (a) NNP_{MP} = (ii + iv) + (vi) + (xi) + (viii + ix + x) + (v) – (iii)

= (1000 + 100) + 300 + 400 + (50 + 200 + 60) + 80 – (– 20)

= ₹ 2210 crore

(b) GNDI = NNP_{MP} + (vii) + (i)

= 2210 + 120 + (– 10)

= ₹ 2320 crore

Q 42. Find out (i) National Income and (ii) Net National Disposable Income:

	(₹ crore)
(i) Net imports	(–) 10
(ii) Net domestic fixed capital formation	100
(iii) Private final consumption expenditure	600
(iv) Consumption of fixed capital	60
(v) Change in stocks	(–) 50
(vi) Government final consumption expenditure	200
(vii) Net factor income to abroad	20
(viii) Net current transfers to abroad	30
(ix) Net indirect tax	70
(x) Factor income from abroad	10

Ans. (i) NI = 600 + 200 + 100 + (– 50) – (– 10) – 20 – 70

= ₹ 770 crore

(ii) NNDI = NNP_{MP} – Net Current transfer to abroad.

= 770 + 70 – 30

= ₹ 810 crore

Q 43. Find out (*i*) Net National Product at Market Price and (*ii*) Gross National Disposable Income form the following:

	(₹ crore)
(*i*) Undistributed profits	20
(*ii*) Compensation of employees	800
(*iii*) Rent	300
(*iv*) Dividend	100
(*v*) Royalty	40
(*vi*) Net current transfers to abroad	(–) 30
(*vii*) Corporation tax	50
(*viii*) Interest	400
(*ix*) Depreciation	70
(*x*) Net factor income from abroad	(–) 10
(*xi*) Net indirect tax	60

Ans. (*i*) NNP_{MP} = 800 + 300 + 40 + 400 + [100 + 50 + 20] + (– 10) + 60

= ₹ 1760 crore.

(*ii*) GNDI = GNP_{MP} – Net Current transfer to abroad

= [1760 + 70] – (– 30)

= ₹ 1860 crore.

[Note: Profit = Dividend + Corporation Tax + Undistributed Profit]

Q 44. Find (*a*) Net National Product at Market Price and (*b*) Gross National Disposable Income:

	(₹ crore)
(*i*) Wages and Salaries	700
(*ii*) Rent	100
(*iii*) Net current transfers to abroad	10
(*iv*) Net indirect tax	70
(*v*) Royalty	50
(*vi*) Profits	300
(*vii*) Net factor income to abroad	(–) 20
(*viii*) Consumption of fixed capital	120
(*ix*) Social security contribution by employers	60
(*x*) Social security contribution by employees	40
(*xi*) Interest	400

Ans. (*a*) NNP_{MP} = (*i*) + (*ii*) + (*v*) + (*vi*) + (*ix*) + (*xi*) + (*iv*) – (*vii*)

= 700 + 100 + 50 + 300 + 60 + 400 + 70 – (–20)

= ₹ 1,700 crore

(*b*) GNDI = GNP_{MP} + Net Current Transfers received from Abroad

= NNP_{MP} + (*viii*) – (*iii*)

= 1,700 + 120 – 10

= ₹ 1,810 crore

Q 45. Find out (*a*) National Income and (*b*) Net National Disposable Income:

		(₹ crore)
(*i*)	Net domestic fixed capital formation	200
(*ii*)	Factor income from abroad	30
(*iii*)	Change in stock	(–) 20
(*iv*)	Net indirect tax	120
(*v*)	Net current transfers to abroad	(–) 10
(*vi*)	Private final consumption expenditure	800
(*vii*)	Consumption of fixed capital	100
(*viii*)	Government final consumption expenditure	300
(*ix*)	Net factor income to abroad	40
(*x*)	Net imports	(–) 50

Ans. (*a*) NI $= 300 + 800 + 200 + (-20) - (-50) - 40 - 120$

$= ₹ 1,170$ crore

(*b*) NNDI $= NNP_{MP} +$ *Net current transfers from ROW*

$= [1170 + 120] - (-10)$

$= ₹ 1300$ crore

Q 46. Calculate net national disposable income from the following data: (₹ in crores)

(*i*)	Gross domestic product at market price	2000
(*ii*)	Net current transfers to rest of the world	(–)200
(*iii*)	Net indirect taxes	150
(*iv*)	Net factor income to abroad	60
(*v*)	National debt interest	70
(*vi*)	Consumption of fixed capital	200
(*vii*)	Current transfers from Government	150

Ans. $NNDI = (i) - (iv) - (ii) - (vi)$

$= 2000 - 60 - (-200) - 200$

$= ₹ 1940$ crore.

Q 47. Calculate "Gross National Disposable Income" from the following data :

		(₹ in crores)
(*i*)	Net domestic product at factor cost	3,000
(*ii*)	Interest taxes	300
(*iii*)	Net current transfers from rest of the world	250
(*iv*)	Current transfers from the government	100
(*v*)	Net factors income to abroad	150
(*vi*)	Consumption of fixed capital	200
(*vii*)	Subsidies	

Ans. Gross National Disposable income $= (i) + (vi) + (ii) - (vii) - (v) + (iii)$

$= 3000 + 200 + 300 - 100 - 150 + 250$

$= ₹ 3500$ crores

❑❑

Very Short Answer Type Questions

Q1. If the value of MPS is 0.25, what is the value of multiplier?

Ans.
$$K = \frac{1}{MPS}$$
$$= \frac{1}{0.25}$$
$$= 4$$

Q2. If the value of MPS is 0.2, what is the value of multiplier?

Ans.
$$K = \frac{1}{MPS}$$
$$= \frac{1}{0.2}$$
$$= 5$$

Q3. If the value of MPS is 0.1, what is the value of multiplier?

Ans.
$$K = \frac{1}{MPS}$$
$$= \frac{1}{0.1}$$
$$= 10$$

Q4. If value of MPC is 0.8, find out the multiplier.

Ans.
$$K = \frac{1}{1 - MPC}$$
$$= \frac{1}{1 - 0.8}$$
$$= \frac{1}{0.2}$$
$$= 5$$

Q5. If the value of MPC is 0.9, find out value of multiplier.

Ans.
$$K = \frac{1}{1 - MPC}$$
$$= \frac{1}{1 - 0.9}$$
$$= \frac{1}{0.1} = 10$$

Q6. If $MPS = 1$, calculate the value of multiplier.

Ans.
$$K = \frac{1}{MPS}$$

$$= \frac{1}{1}$$

$$= 1$$

Q7. What is the value of MPC, when $MPS = 0$?

Ans.
$$MPC + MPS = 1$$

$$\Rightarrow \qquad MPC + 0 = 1$$

$$\Rightarrow \qquad MPC = 1$$

Q8. If disposable income is ₹ 100 and consumption expenditure is ₹ 80, find out APS.

Ans.
$$APS = \frac{S}{Y}$$

$$= \frac{Y - C}{100}$$

$$= \frac{100 - 80}{100} = \frac{20}{100} = 0.2 = 20\%$$

Q9. If disposable income is ₹ 1,000 and consumption expenditure is ₹ 700, find out APS.

Ans.
$$S = Y - C$$

$$= 1000 - 700 = 300$$

$$APS = \frac{S}{Y} = \frac{300}{1000} = 0.3 = 30\%$$

Q10. If disposable income is ₹ 500 and saving ₹ 100, find out APC.

Ans.
$$C = Y - S$$

$$= 500 - 100 = 400$$

$$\therefore \qquad APC = \frac{C}{Y}$$

$$= \frac{400}{500} = 0.8 = 80\%$$

Q11. If disposable income is ₹ 1,000 and saving is ₹ 250, find out APC.

Ans.
$$C = Y - S$$

$$= 1000 - 250 = 750$$

$$\therefore \qquad APC = \frac{C}{Y}$$

$$= \frac{750}{1000} = 0.75 = 75\%$$

Q 12. If *MPS* is one, how much is *MPC*?

Ans.
$$MPC + MPS = 1$$
$$\Rightarrow \quad MPC + 1 = 1$$
$$\Rightarrow \quad MPC = 0$$

Q 13. If *APC* = 0.75, how much is *APS*?

Ans.
$$APC + APS = 1$$
$$\Rightarrow \quad 0.75 + APS = 1$$
$$\Rightarrow \quad APS = 1 - 0.75 = 0.25 = 25\%$$

Q 14. In an economy marginal propensity to consume is 0.75. If investment expenditure is increased by ₹ 500 crore, calculate the total increase in income and consumption expenditure.

Ans.
$$MPC = 0.75$$
$$\Delta I = 500$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\Rightarrow \quad \frac{\Delta Y}{500} = \frac{1}{1 - 0.75} \quad \Rightarrow \quad \Delta Y = \frac{500}{0.25} = ₹\ 2000 \text{ crores}$$

Total increase in consumption expenditure = $MPC \times \Delta Y$
$$= 0.75 \times 2000 = ₹\ 1500 \text{ crores.}$$

Q 15. In an economy investment expenditure is increased by ₹ 400 crore and marginal propensity to consume is 0.8. Calculate the total increase in income and savings.

Ans.
$$\Delta I = ₹\ 400 \text{ crore}$$
$$MPC = 0.8$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\Rightarrow \quad \frac{\Delta Y}{400} = \frac{1}{1 - 0.8} \quad \Rightarrow \quad \Delta Y = \frac{400}{0.2} = ₹\ 2000 \text{ crores}$$

∴ Total increase in savings = $(1 - MPC) \Delta Y$
$$= (1 - 0.8)(2000) = 0.2 \times 2000$$
$$= ₹\ 400 \text{ crores.}$$

Q 16. In an economy, the marginal propensity to save is 0.25. Investment is increased by ₹ 200 crore. Calculate the total increase in income and consumption expenditure.

Ans.
$$MPS = 0.25$$
$$\Delta I = 200$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{\Delta Y}{200} = \frac{1}{0.25} \quad \Rightarrow \quad \Delta Y = \frac{200}{0.25} = ₹\ 800 \text{ crores}$$

∴ Total increase in consumption expenditure = $(MPC) \cdot \Delta Y$
$$= (0.75)(800) = ₹\ 600 \text{ crores.}$$

Q17. If marginal propensity to save is 0.1 and increase in national income is ₹ 500 crore, calculate increase in investment.

Ans.
$$MPS = 0.1$$
$$\Delta Y = 500$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{500}{\Delta I} = \frac{1}{0.1}$$
$$\Rightarrow \quad \Delta I = 500 \times 0.1 = ₹ \ 50 \text{ crores.}$$

Q18. By increase in investment of ₹ 100 crore, national income of a country increases by ₹ 250 crore. Find out the marginal propensity to consume.

Ans.
$$\Delta I = 100$$
$$\Delta Y = 250$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{250}{100} = \frac{1}{MPS}$$
$$\Rightarrow \quad MPS = \frac{100}{250} = 0.4$$
$$\therefore \quad MPC = 1 - MPS = 1 - 0.4 = 0.6$$

Q19. If increase in investment is ₹ 125 crore, national income of a country increases by ₹ 500 crore, calculate marginal propensity to save.

Ans.
$$\Delta I = 125$$
$$\Delta Y = 500$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{500}{125} = \frac{1}{MPS}$$
$$\Rightarrow \quad MPS = \frac{125}{500} = 0.25$$

Q20. Given MPC = 0.9 and increase in investment equal to ₹ 100 crore, calculate the value of multiplier and total increase in income.

Ans.
$$MPC = 0.9$$
$$\Delta I = 100$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\frac{\Delta Y}{100} = \frac{1}{1 - 0.9} \quad \Rightarrow \quad \Delta Y = \frac{100}{0.1} = ₹ \ 1000 \text{ crores}$$
$$\text{Multiplier} = \frac{1}{1 - MPC} = \frac{1}{1 - 0.9} = \frac{1}{0.1} = 10$$

Q21. An increase in investment in a country leads to increase in national income by ₹ 200 crore. If marginal propensity to consume is 0.75, what is the increase in investment?

Ans.
$$\Delta Y = 200$$
$$MPC = 0.75$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\frac{200}{\Delta I} = \frac{1}{1 - 0.75}$$
$$\Rightarrow \quad \Delta I = 200 \times 0.25 = ₹ \ 50 \ \text{crores.}$$

Q22. Given increase in investment of ₹ 100 crore, and marginal propensity to consume equal to 0.8, find out increase in national income.

Ans.
$$\Delta I = 100$$
$$MPC = 0.8$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\frac{\Delta Y}{100} = \frac{1}{1 - 0.8} \quad \Rightarrow \quad \Delta Y = \frac{100}{0.2} = ₹ \ 500 \ \text{crores.}$$

Q23. As a result of increase in investment by ₹ 75 crore, national income rises by ₹ 300 crore. Calculate the 'marginal propensity to save'.

Ans.
$$\Delta I = 75$$
$$\Delta Y = 300$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{300}{75} = \frac{1}{MPS}$$
$$\Rightarrow \quad MPS = \frac{75}{300} = 0.25$$

Q24. In an economy, marginal propensity to save is 0.10. How much increase in investment is required so that national income rises by ₹ 400 crore?

Ans.
$$MPS = 0.10$$
$$\Delta Y = 400$$
$$\therefore \quad \frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$
$$\Rightarrow \quad \frac{400}{\Delta I} = \frac{1}{0.10} \quad \Rightarrow \quad \Delta I = 400 \times 0.10 = ₹ \ 40 \ \text{crores.}$$

Q25. In an economy, marginal propensity to consume is 0.6. What will be the change in national income if investment increases by ₹ 50 crore?

Ans.
$$MPC = 0.6$$
$$\Delta I = 50$$

$$\therefore \quad \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad \frac{\Delta Y}{50} = \frac{1}{1 - 0.6} \quad \Rightarrow \quad \Delta Y = \frac{50}{0.4} = ₹ \ 125 \ \text{crores.}$$

Q26. In an economy investment increases by ₹ 120 crore. The value of investment multiplier is 4. Calculate the marginal propensity to consume.

Ans.
$$\Delta I = 120$$
$$K = 4$$
$$K = \frac{1}{MPS}$$
$$4 = \frac{1}{MPS}$$

$$\Rightarrow \quad MPS = \frac{1}{4} = 0.25 \quad \therefore \quad MPC = 1 - 0.25$$

$$= 0.75$$

Q27. In an economy investment increases by ₹ 600 crore. If marginal propensity to consume is 0.7, what is the increase in total national income?

Ans.
$$\Delta I = 600$$
$$MPC = 0.7$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad \frac{\Delta Y}{600} = \frac{1}{1 - 0.7} \quad \Rightarrow \quad \Delta Y = \frac{600}{0.3} = ₹ \ 2000 \ \text{crores.}$$

Q28. A ₹ 200 crore increase in investment leads to a rise in national income by ₹ 1,000 crore. Find out marginal propensity to consume.

Ans.
$$\Delta I = 200$$
$$\Delta Y = 1000$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \quad \frac{1000}{200} = \frac{1}{MPS} \quad \Rightarrow \quad MPS = \frac{200}{1000} = 0.2$$

$$\therefore \quad MPC = (1 - MPS) = (1 - 0.2) = 0.8$$

Q29. If the value of marginal propensity to consume is 0.25, calculate the value of multiplier.

Ans.
$$MPC = 0.25$$

$$K = \frac{1}{1 - MPC}$$

$$= \frac{1}{1 - 0.25}$$

$$= \frac{1}{0.75} = 1.3$$

Q30. In an economy, investment increases by ₹ 10 crore and as a result income increases by ₹ 50 crore, what is the value of multiplier?

Ans.
$$\Delta I = 10$$
$$\Delta Y = 50$$
$$K = \frac{\Delta Y}{\Delta I} = \frac{50}{10} = 5$$

Q31. If the value of MPS is 0.3, what is the value of MPC?

Ans.
$$MPS = 0.3$$
$$\therefore \quad MPC = 1 - MPS = 1 - 0.3 = 0.7$$

Q32. If investment multiplier is 1, what will be the value of MPC?

Ans. Multiplier = $\dfrac{1}{1-MPC}$.

If multiplier is 1, then MPC must be zero.

Q33. If the value of marginal propensity to save is 0.4, what will be the value of investment multiplier?

Ans. $K = \dfrac{1}{MPS} = \dfrac{1}{0.4} = 2.5$

Short Answer Type Questions
(3/4 Marks)

Q1. Explain the components of the equation: $C = 20 + 0.90Y$ and construct a schedule for consumption where income is ₹ 200, ₹ 250, ₹ 300, ₹ 350 and ₹ 400.

Ans.
$$C = 20 + 0.90Y$$
$$C = \text{Consumption expenditure}$$
$$20 = \text{Autonomous consumption}$$
$$0.9 = \text{Marginal propensity to consume}$$
$$Y = \text{Income}$$

Income	Consumption
200	20 + 0.90 × 200 = 200
250	20 + 0.90 × 250 = 245
300	20 + 0.90 × 300 = 290
350	20 + 0.90 × 350 = 335
400	20 + 0.90 × 400 = 380

Q2. The consumption function is $C = 20 + 0.9Y$. The value of income (in ₹) is given as 100, 200, 300, 400 and 500. Find out the consumption schedule and draw the consumption curve.

Ans.

Income	Consumption
100	20 + 0.9 × 100 = 110
200	20 + 0.9 × 200 = 200
300	20 + 0.9 × 300 = 290
400	20 + 0.9 × 400 = 380
500	20 + 0.9 × 500 = 470
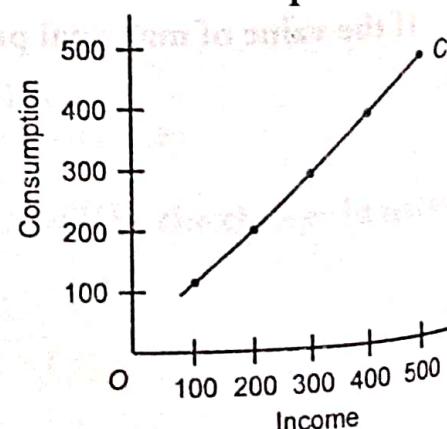
Q3. Suppose that consumption equals: $C = 40 + 0.75Y$, investment equals: $I = ₹ 60$ and $Y = C + I$. Find

   (i) The equilibrium level of income,

   (ii) The level of consumption at equilibrium and

   (iii) The level of saving at equilibrium.

Ans. (i)

$$Y = C + I$$
$$Y = 40 + 0.75Y + 60$$
$$\Rightarrow \quad Y - 0.75Y = 100$$
$$\Rightarrow \quad Y = \frac{100}{0.25} = ₹ 400$$

(ii)
$$C = 40 + 0.75 \times 400$$
$$= ₹ 340$$

(iii)
$$S = -40 + 0.25 \times 400$$
$$= ₹ 60$$

Q4. In a two-sector economy, the consumption and investment functions are as follows:

$$Y = C + I; \quad C = 50 + 0.8Y; \quad I = 50$$

Find (i) the equilibrium level of income; (ii) the level of consumption at equilibrium and (iii) the level of saving at equilibrium.

Ans. (i)

$$Y = 50 + 0.8Y + 50$$
$$\Rightarrow \quad Y - 0.8Y = 100$$
$$\Rightarrow \quad Y = \frac{100}{0.2} = ₹ 500$$

(ii)
$$C = 50 + 0.8 \times 500$$
$$= ₹ 450$$

(iii)
$$S = -50 + 0.2Y$$
$$= -50 + 0.2 \times 500$$
$$= ₹ 50$$

Q5. In a two-sector economy, the saving and investment functions are:

$$S = -10 + 0.2Y$$
$$I = -3 + 0.1Y$$

What will be the equilibrium level of income?

Ans.

$$S = I$$
$$\Rightarrow \quad -10 + 0.2Y = -3 + 0.1Y$$
$$\Rightarrow \quad 0.2Y - 0.1Y = -3 + 10$$
$$\Rightarrow \quad Y = \frac{7}{0.1} = ₹ 70$$

Q6. Derive the multiplier when MPC is (i) 0.90 (ii) 0.80 and (iii) 0.75.

Ans. (i) $K = \dfrac{1}{1 - MPC} = \dfrac{1}{1 - 0.90} = \dfrac{1}{0.10} = 10$

(ii) $K = \dfrac{1}{1 - MPC} = \dfrac{1}{1 - 0.80} = \dfrac{1}{0.20} = 5$

(iii) $K = \dfrac{1}{1 - MPC} = \dfrac{1}{1 - 0.75} = \dfrac{1}{0.25} = 4$

Q7. Derive the multiplier when MPS is

(i) 0.10

(ii) 0.20

(iii) 0.25.

Using these multiplier values, find the change in the equilibrium level of income that results from ₹ 20 crore decrease in investment.

Ans. (i) $K = \dfrac{1}{MPS} = \dfrac{1}{0.10} = 10 \quad \Rightarrow \quad \dfrac{\Delta Y}{\Delta I} = \dfrac{1}{MPS} = \dfrac{\Delta Y}{20} = 10 \quad \Rightarrow \quad \Delta Y = ₹\ 200$ crores.

(ii) $K = \dfrac{1}{0.20} = 5 \quad \Rightarrow \quad \Delta Y = 20 \times 5 = ₹\ 100$ crores.

(iii) $K = \dfrac{1}{0.25} = 4 \quad \Rightarrow \quad \Delta Y = 20 \times 4 = ₹\ 80$ crores.

Q8. As a result of increase in investment by ₹ 125 crores, national income increases by ₹ 500 crores. Calculate MPC.

Ans.
$$\Delta I = 125$$
$$\Delta Y = 500$$
$$\dfrac{\Delta Y}{\Delta I} = \dfrac{1}{MPS}$$

$\Rightarrow \qquad \dfrac{500}{125} = \dfrac{1}{MPS}$

$\Rightarrow \qquad MPS = \dfrac{125}{500} = 0.25$

$\therefore \qquad MPC = 1 - MPS = 1 - 0.25 = 0.75$

Q9. As a result of increase in investment national income rises by ₹ 600 crores. If marginal propensity to consume is 0.75, calculate the increase in investment.

Ans.
$$\Delta Y = 600$$
$$MPC = 0.75$$
$$\dfrac{\Delta Y}{\Delta I} = \dfrac{1}{1 - MPC}$$

$\Rightarrow \qquad \dfrac{600}{\Delta I} = \dfrac{1}{1 - 0.75}$

$\Rightarrow \qquad \Delta I = 600 \times 0.25 = ₹\ 150$ crores.

Q10. If *MPC* is 0.9, what is the value of multiplier? How much investment is needed to increase national income by ₹ 5000 crores? Calculate.

Ans.

$$MPC = 0.9 \quad \text{...given}$$

$$\therefore \quad K = \frac{1}{1 - MPC} = \frac{1}{1 - 0.9} = \frac{1}{0.1} = 10$$

$$\Delta Y = 5000 \quad \text{....given}$$

$$\therefore \quad \frac{\Delta Y}{\Delta I} = K$$

$$\Rightarrow \quad \frac{5000}{\Delta I} = 10 \quad \Rightarrow \quad \Delta I = \frac{5000}{10} = ₹ \ 500 \text{ crores.}$$

Q11. In an economy an increase in investment leads to increase in national income which is three times more than the increase in investment. Calculate *MPC*.

Ans.

$$K = 3 \quad \text{...given}$$

or

$$\frac{\Delta Y}{\Delta I} = 3$$

$$K = \frac{1}{MPS}$$

$$\Rightarrow \quad 3 = \frac{1}{MPS} \quad \Rightarrow \quad MPS = \frac{1}{3} = 0.33$$

$$\therefore \quad MPC = 1 - 0.33 = 0.67$$

Q12. If *MPS* is 0.2, how much new investment is required to make the national income rise by ₹ 600 crores? Calculate.

Ans.

$$MPS = 0.2$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \quad \frac{600}{\Delta I} = \frac{1}{0.2}$$

$$\Rightarrow \quad \Delta I = 600 \times 0.2 = ₹ \ 120 \text{ crores.}$$

Q13. Given *MPS* equal to 0.25, what will be the increase in national income if investment increases by ₹ 125 crores. Calculate.

Ans.

$$MPS = 0.25$$

$$\Delta I = 125$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \quad \frac{\Delta Y}{125} = \frac{1}{0.25} \quad \Rightarrow \quad \Delta Y = \frac{125}{0.25} = ₹ \ 500 \text{ crores.}$$

Q 14. It is planned to increase National Income by ₹ 1000 crores. How much increase in investment is required to achieve this goal? Assume that *MPC* is 0.6. Calculate.

Ans.

$$\Delta Y = ₹ \ 1000 \text{ crores}$$

$$MPC = 0.6$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \qquad \frac{1000}{\Delta I} = \frac{1}{1 - 0.6}$$

$$\Rightarrow \qquad \Delta I = 1000 \times 0.4 = ₹ \ 400 \text{ crores.}$$

Q 15. It is planned to make a new investment of ₹ 1000 crores in the economy. How much will be the increase in National Income if *MPS* is 0.4. Calculate.

Ans.

$$\Delta I = ₹ \ 1000 \text{ crores}$$

$$MPS = 0.4$$

$$K = \frac{1}{MPS} = \frac{1}{0.4}$$

$$\Delta Y = 1000 \times 2.5 = ₹ \ 2500 \text{ crores.}$$

Q 16. An increase in investment by ₹ 400 crores leads to increase in national income by ₹ 1600 crores. Calculate *MPC*.

Ans.

$$K = \frac{\Delta Y}{\Delta I} = \frac{1600}{400} = 4$$

$$K = \frac{1}{1 - MPC} \qquad \Rightarrow \qquad 4 = \frac{1}{1 - MPC}$$

$$4 = \frac{1}{MPS} \qquad \Rightarrow \qquad MPS = \frac{1}{4} = 0.25$$

$$MPC = 1 - MPS = 0.75$$

Q 17. Complete the following table:

Income	Saving	MPC	APS
0	− 12	—	—
20	− 6	—	—
40	0	—	—
60	6	—	—

Ans.

Income	S	$MPC = \dfrac{\Delta C}{\Delta Y}$	$APS = \dfrac{S}{Y}$	C	ΔC	ΔY
0	− 12	—	—	12	—	—
20	− 6	0.7	− 0.3	26	14	20
40	0	0.7	0	40	14	20
60	6	0.7	0.1	54	14	20

Rules:

1. $S = Y - C$

$\Rightarrow C = Y - S$

Q 18. Complete the following table:

Income	Saving	MPC	APC
0	− 6	---	---
20	− 3	---	---
40	0	---	---
60	3	---	---

Ans.

Income	ΔY	S	$C = Y - S$	ΔC	$MPC = \dfrac{\Delta C}{\Delta Y}$	$APC = \dfrac{C}{Y}$
0	—	− 6	6	—	—	—
20	20	− 3	23	17	0.85	1.15
40	20	0	40	17	0.85	1
60	20	3	57	17	0.85	0.95

Q 19. Complete the following table:

Income	Saving	MPS	APS
0	− 10	—	—
50	20	—	—
100	50	—	—
150	80	—	—

Ans.

Income	S	$APS = \dfrac{S}{Y}$	ΔS	ΔY	$MPS = \dfrac{\Delta S}{\Delta Y}$
0	− 10	—	—	—	—
50	20	0.4	30	50	0.6
100	50	0.5	30	50	0.6
150	80	0.5	30	50	0.6

Q20. Complete the following table:

Income	MPS	Saving	APS
0	—	– 90	—
100	0.6	—	—
200	0.6	—	—
300	0.6	—	—

Ans.

Income	MPS	Saving	$APS = \dfrac{S}{Y}$
0	—	– 90	—
100	0.6	– 30	– 0.3
200	0.6	30	$= \dfrac{30}{200} = 0.15$
300	0.6	90	0.3

Rules:
1. $S = -90 + 0.6Y$

Q21. Complete the following table:

Income	Saving	MPS	APC
0	15	—	—
50	50	—	—
100	85	—	—
150	120	—	—

Ans.

Income	Saving	ΔY	ΔS	$C = Y - S$	$MPS = \dfrac{\Delta S}{\Delta Y}$	$APC = \dfrac{C}{Y}$
0	– 15	—	—	15	—	—
50	20	50	35	30	0.7	$\dfrac{30}{50} = 0.6$
100	55	50	35	45	0.7	$\dfrac{45}{100} = 0.45$
150	90	50	35	60	0.7	$\dfrac{60}{150} = 0.4$

Q22. Complete the following table:

Income	MPS	Saving	APC
0	---	– 10	—
100	0.75	—	—
200	0.75	—	—
300	0.75	—	—

Ans.

Income	MPS	S	$APC = \dfrac{C}{Y}$	$C = Y - S$
0	—	− 10	—	10
100	0.75	65	0.35	35
200	0.75	140	0.35	70
300	0.75	215	0.28	85

Rules:

1. $S = -a + by$

Q23. Complete the following table:

Income	Consumption	MPS	APS
0	12	—	—
20	26	—	—
40	40	—	—
60	54	—	—

Ans.

Income (Y)	C	$S = Y - C$	ΔS	ΔY	$MPS = \dfrac{\Delta S}{\Delta Y}$	$APS = \dfrac{S}{Y}$
0	12	− 12	—	—	—	—
20	26	− 6	6	20	0.3	− 0.3
40	40	0	6	20	0.3	0
60	54	6	6	20	0.3	0.1

Q24. Complete the following table:

Income	Saving	APC	MPC
0	− 30	—	—
50	− 15	—	—
100	0	—	—
150	15	—	—

Ans.

Income (Y)	S	$APC = \dfrac{C}{Y}$	C	MPC
0	− 30	—	30	—
50	− 15	1.3	65	0.7
100	0	1.0	100	0.7
150	15	0.9	135	0.7

Rules:

1.
$$S = -30 + (1 - b)Y$$
$$\Rightarrow \quad 15 = -30 + (1 - b)150$$
$$\Rightarrow \quad 45 - 150 = -150b$$
$$\Rightarrow \quad \frac{105}{150} = b \quad \Rightarrow \quad b = 0.7$$

2. $C = 30 + bY.$

Q25. Complete the following table:

Income	Consumption	MPC	APS
0	40	—	—
—	120	0.8	—
—	200	0.8	—
—	280	0.8	—

Ans.

Income	C	MPC	$APS = \dfrac{S}{Y}$	S
0	40	—	—	−40
100	120	0.8	(−) 0.2	−20
200	200	0.8	0	0
300	280	0.8	0.7	20

Rules:

$$C = 40 + 0.8Y$$

Put values of C and get values of Y.

Q26. In an economy income increases by ₹ 10,000 as a result of a rise in investment expenditure by ₹ 1,000. Calculate:

(a) Investment multiplier

(b) Marginal propensity to consume.

Ans.
$$\Delta Y = 10,000$$
$$\Delta I = 1,000$$

(a) Investment Multiplier $= \dfrac{\Delta Y}{\Delta I} = \dfrac{10,000}{1000} = 10$

(b) For MPC, use the formula.

$$\text{Multiplier} = \frac{1}{1 - MPC} \quad \Rightarrow \quad 10 = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad 10(1 - MPC) = 1 \quad \Rightarrow \quad 10MPC = 9$$

$$MPC = \frac{9}{10} = 0.9$$

Q27. Complete the following table:

Income	Saving	MPC	APC
0	− 20	—	—
50	− 10	—	—
100	0	—	—
150	30	—	—
200	60	—	—

Ans.

Income	S	C = Y − S	ΔC	ΔY	$MPC = \dfrac{\Delta C}{\Delta Y}$	$APC = \dfrac{C}{Y}$
0	− 20	20	—	—	—	—
50	− 10	60	40	50	0.8	1.2
100	0	100	40	50	0.8	1.0
150	30	120	20	50	0.4	0.8
200	60	140	20	50	0.4	0.7

Q28. There is increase in investment of ₹ 100 crores in an economy. *MPC* is 1. What can you say about total increase in income? Calculate:

Ans.
$$\Delta I = ₹ \text{ 100 crores}$$
$$MPC = 1$$
$$\Delta Y = ?$$

$$\text{Multiplier} = K = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad K = \frac{1}{1 - 1} \quad \Rightarrow \quad K = \infty$$

$$K = \frac{\Delta Y}{\Delta I}$$

$$\Rightarrow \quad \infty = \frac{\Delta Y}{100} \quad \Rightarrow \quad \text{Total increase in income will be infinity}$$

Q29. There is increase in investment of ₹ 1000 crores in an economy. *MPC* is zero. What is the total increase in income? Calculate:

Ans.
$$\Delta I = ₹ \text{ 1000 crores}$$
$$MPC = 0$$
$$\Delta Y = ?$$
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \qquad \frac{\Delta Y}{1000} = \frac{1}{1-0}$$

$$\Rightarrow \qquad \Delta Y = 1000 \text{ crores.}$$

Q30. Investment increases by ₹ 500 crores in an economy. MPS is zero. What is the total increase in income? Calculate:

Ans.

$$\Delta I = ₹ \ 500 \text{ crores}$$

$$MPS = 0$$

$$\Delta I = ?$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \qquad \frac{\Delta Y}{500} = \frac{1}{0}$$

$$\Rightarrow \qquad \Delta Y = \frac{500}{0} = \infty$$

∴   There is infinite increase in income.

Q31. Investment in an economy increases by ₹ 1000 crores. Suppose MPS is zero. What can you say about increase in national income? Calculate.

Ans.

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \qquad \frac{\Delta Y}{1000} = \frac{1}{0}$$

⇒   Increase in national income will be infinity.

Q32. Investment in an economy increases by ₹ 400 crores. MPC is zero. Calculate the change in national income.

Ans.

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1-MPC}$$

$$\Rightarrow \qquad \frac{\Delta Y}{400} = \frac{1}{1-0}$$

$$\Rightarrow \qquad \Delta Y = ₹ \ 400 \text{ crores.}$$

Q33. Investment in an economy increases by ₹ 700 crores. Suppose MPS is 1. Calculate increase in national income.

Ans.

$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \qquad \frac{\Delta Y}{700} = \frac{1}{1}$$

$$\Rightarrow \qquad \Delta Y = ₹ \ 700 \text{ crores.}$$

Q34. State whether the following statements are true or false. Give reasons for your answer:

(a) When marginal propensity to consume is greater than marginal propensity to save, the value of investment multiplier will be greater than 5.

(b) The value of marginal propensity to save can never be negative.

Ans. (a) False, MPC can be greater than MPS when MPC has the value of $0.6, 0.7, 0.8, 0.9$ and 1. When MPC is 0.6, multiplier is less than 5. It is 2.5

(b) True, APS can be negative but MPS is always positive.

Q35. Giving reasons, state whether the following statements are true or false:

(a) When marginal propensity to consume is zero, the value of investment multiplier will also be zero.

(b) Value of average propensity to save can never be less than zero.

Ans. (a) False, when $MPC = 0$, investment multiplier is not zero, it is equal to one $\left(K = \dfrac{1}{1-MPC} = \dfrac{1}{1-0} = 1 \right)$.

When all income is saved, national income will increase just once.

(b) False, since savings can be negative, APS can be less than zero.

Q36. State whether the following statements are true or false. Give reasons for your answer.

(a) When investment multiplier is 1, the value of marginal propensity to consume is zero.

(b) The value of average propensity to save can never be greater than 1.

Ans. (a) True, when investment multiplier is one, it means national income will increase just once. Hence, MPC is zero.

(b) True, since $APC + APS = 1$. Thus, APS can maximum be one and never more than one.

Q37. If National income is ₹ 50 crore and Saving ₹ 5 crore, find out average propensity to consume. When income rises to ₹ 60 crore and saving to ₹ 9 crore, what will be the average propensity to consume and the marginal propensity to save?

Ans. (a) $Y = 50$

$S = 5 \Rightarrow C = Y - S = 50 - 5 = 45$

$\therefore APC = \dfrac{C}{Y} = \dfrac{45}{50} = 0.9$

(b) $Y_1 = 60 \qquad \therefore \Delta Y = 10$

$S_1 = 9 \qquad \therefore \Delta S = 4$

$APC = \dfrac{C}{Y} = \dfrac{60-9}{60} = \dfrac{51}{60} = 0.85$

$MPS = \dfrac{\Delta S}{\Delta Y} = \dfrac{4}{10} = 0.4$

Q38. Given that national income is ₹ 80 crore and consumption expenditure ₹ 64 crore, find out average propensity to save. When income rises to ₹ 100 crore and consumption expenditure to ₹ 78 crore, what will be the average propensity to consume and the marginal propensity to consume?

Ans. $Y = 80$

$C = 64$

(a) $APS = \dfrac{S}{Y} = \dfrac{80-64}{80} = \dfrac{16}{80} = 0.2$

(b) $Y_1 = 100$ $\therefore \Delta Y = 20$

$C_1 = 78$ $\therefore \Delta C = 14$

$$APC = \frac{C}{Y} = \frac{78}{100} = 0.78$$

$$MPC = \frac{\Delta C}{\Delta Y} = \frac{14}{20} = 0.7$$

Q39. In an economy the marginal propensity to save is 0.4. National income in the economy increases by ₹ 200 crore as a result of change in investment. Calculate the change in investment.

Ans. $MPS = 0.4$

$\Delta Y = 200$

$\Delta I = ?$

$$K = \frac{1}{MPS} = \frac{1}{0.4} = 2.5$$

$\therefore$ $\dfrac{\Delta Y}{\Delta I} = K$

$\Rightarrow$ $\Delta I = \dfrac{200}{2.5} = ₹\, 80 \text{ crore}$

Q40. In an economy the marginal propensity to consume is 0.75. Investment expenditure in the economy increases by ₹ 75 crore. Calculate the total increase in national income.

Ans. $MPC = 0.75$

$\Delta I = 75$

$$K = \frac{1}{1-MPC} = \frac{1}{1-0.75} = \frac{1}{0.25} = 4$$

$\therefore$ $\dfrac{\Delta Y}{\Delta I} = K$

$\Rightarrow$ $\Delta Y = 4 \times 75$

$= ₹\, 300 \text{ crores}$

Q41. An economy is in equilibrium. Its consumption function is C = 300 + 0.8 Y where C is consumption expenditure and Y is income and investment is ₹ 700. Find national income.

Ans. $C = 300 + 0.8Y$

$I = 700$

$Y = C + I$

$Y = 300 + 0.8Y + 700$

$Y - 0.8Y = 1000$

$$Y = \frac{1000}{0.2}$$

$= ₹\, 5000.$

Q42. Find national income from the following:

Autonomous consumption	=	₹ 100
Marginal propensity to consume	=	0.80
Investment	=	₹ 50

Ans.

$$Y = \overline{C} + MPC\,(Y) + I$$

$$Y = 100 + 0.8\,Y + 50$$

$$\Rightarrow \quad 0.2Y = 150$$

$$\Rightarrow \quad Y = ₹\,750$$

Q43. In an economy, a 20 per cent increase in investment results in a 100 per cent increase in income. Calculate the marginal propensity to consume.

Ans.

$$K = \frac{\Delta Y}{\Delta I}$$

$$= \frac{100}{20} = 5$$

$$\Rightarrow \quad K = \frac{1}{1-b}$$

$$\Rightarrow \quad 5 = \frac{1}{1-b}$$

$$\Rightarrow \quad 5\,(1-b) = 1$$

$$\Rightarrow \quad 5 - 5b = 1$$

$$\Rightarrow \quad 5b = 4$$

$$b \text{ or } MPC = \frac{4}{5} = 0.8$$

Q44. Complete the following table:

Income	Marginal propensity to consume	Savings	Average propensity to consume
100		40	0.60
200	....	90	....
....	....	125	0.50

Ans.

Income Y	Marginal propensity to consume $= \dfrac{\Delta C}{\Delta Y}$	Savings S	Average propensity to consume $= \dfrac{C}{Y}$	Consumption C = Y - S
100		40	0.60	60
200	$\dfrac{50}{100} = \boxed{0.5}$	90	$\dfrac{110}{200} = \boxed{0.55}$	110
$\boxed{250}$	$\dfrac{15}{50} = \boxed{0.3}$	125	0.50	125

Rough:

$$\left(\frac{Y-125}{Y}\right) = 0.50$$

$\Rightarrow \qquad Y - 125 = 0.50\,Y$

$\Rightarrow \qquad Y - 0.50\,Y = 125$

$\Rightarrow \qquad Y = \dfrac{125}{0.5}$

$\therefore \qquad Y = 250$

Q45. Find 'investment' from the following:

    (i) National Income   = ₹ 500

    (ii) Autonomous Consumption   = ₹ 100

    (iii) Marginal propensity to consume   = 0.75

Ans. $\qquad Y = \overline{C} + MPC\,(Y) + I$

$\Rightarrow \qquad 500 = 100 + 0.75 \times 500 + I$

$\Rightarrow \qquad I = ₹\,25$

Q46. In an economy, a 40 per cent increase in investment results in a 40 per cent increase in income. Calculate the marginal propensity to consume.

Ans. $\qquad\qquad\qquad \Delta I = 40\%$

$\qquad\qquad\qquad\qquad \Delta Y = 40\%$

$$K = \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$\Rightarrow \qquad \dfrac{0.40}{0.40} = \dfrac{1}{1 - MPC}$

$\Rightarrow \qquad 1 - MPC = 1$

$\Rightarrow \qquad MPC = 0$

Q47. Complete the following table:

Income	Savings	Marginal propensity to consume	Average propensity to consume
100	40		0.6
200	.....	0.5	.....
250	120	.....	.....

Ans.

Income Y	Savings S	C = Y - S	Marginal propensity to consume = $\dfrac{\Delta C}{\Delta Y}$	Average propensity to consume = $\dfrac{C}{Y}$
100	40	60		0.6
200	90	110	0.5	$\dfrac{110}{200} = 0.55$
250	120	130	$\dfrac{20}{50} = 0.4$	$\dfrac{130}{250} = 0.52$

Q48. Find consumption expenditure from the following:

    (i) Autonomous consumption   = ₹ 100

    (ii) Marginal propensity to consume   = 0.70

    (iii) National Income   = ₹ 1,000

Ans.

$$C = \overline{C} + MPC \, (Y)$$

$$= 100 + (0.70 \times 1000)$$

$$= 100 + 700$$

$$= ₹ \, 800$$

Q49. Complete the following table:

Income	Consumption expenditure	Average propensity to save	Marginal propensity to save
200	120	0.40	
400	220	.....	.....
.....	250	0.50	.....

Ans.	Income Y	Consumption expenditure C	$S = Y - C$	Average propensity to save $= \dfrac{S}{Y}$	Marginal propensity to save $= \dfrac{\Delta S}{\Delta Y}$
	200	120	80	0.40	
	400	220	180	$\dfrac{180}{400} = \boxed{0.45}$	$\dfrac{100}{200} = \boxed{0.5}$
	$\boxed{500}$	250	250	0.50	$\dfrac{70}{100} = \boxed{0.7}$

Q 50. Find Consumption Expenditure from the following:

National Income = ₹ 5,000

Autonomous Consumption = ₹ 1,000

Marginal propensity to consume = 0.80

Ans.
$$C = \overline{C} + MPC(Y)$$
$$C = 1,000 + 0.80 \times 5,000$$
$$= ₹ 5,000$$

Q 51. In an economy 20 per cent fall in investment results in 40 per cent fall in income. Calculate the value of marginal propensity to consume.

Ans.
$$K = \frac{\Delta Y}{\Delta I}$$
$$= \frac{40}{20}$$
$$= 2$$
$$K = \frac{1}{1 - b}$$
$$\Rightarrow \quad 2 = \frac{1}{1 - b}$$
$$\Rightarrow \quad b \text{ or } MPC = 0.5$$

Q 52. Complete the following table:

Income	Marginal propensity to save	Average propensity to save	Consumption expenditure
200		0.4	120
400	.....	.....	220
.....	.....	0.48	260

Ans.

Income Y	Marginal propensity to save $= \dfrac{\Delta S}{\Delta Y}$	Average propensity to save $= \dfrac{S}{Y}$	Consumptions expenditure C	$S = Y - C$
200		0.4	120	80
400	$\dfrac{100}{200} = \boxed{0.5}$	$\dfrac{180}{400} = \boxed{0.45}$	220	180
$\boxed{500}$	$\dfrac{60}{100} = \boxed{0.6}$	0.48	260	240

Q53. Find National Income from the following:

Autonomous Consumption = ₹ 100

Marginal propensity to consume = 0.60

Investment = ₹ 200

Ans.
$$Y = C + I$$
$$Y = [\overline{C} + bY] + I \text{ (where } b = \text{Marginal propensity to consume)}$$
$$Y = 100 + 0.60Y + 200$$
$$\Rightarrow \quad Y - 0.60\,Y = 300$$
$$Y = \frac{300}{0.4}$$
$$Y = ₹\,750$$

Q54. Marginal propensity to consume is zero. Calculate the change in income if investment falls by ₹ 1,000 crores.

Ans.
$$\Delta I = 1000 \text{ crores}$$
$$MPC = \text{zero}$$
$$\therefore \quad K = \frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$
$$\Rightarrow \quad \frac{\Delta Y}{1000} = \frac{1}{1 - 0}$$
$$\Rightarrow \quad \Delta Y = 1000$$

$\therefore$ Income also falls by ₹ 1000 crores.

Q55. Complete the following table:

Income	Consumption expenditure	Average propensity to save	Marginal propensity to save
400	240	0.4	
800	440	......	......
....	520	0.48	.....

Ans.

Income Y	Consumption expenditure C	S	Average propensity to save = $\frac{S}{Y}$	Marginal propensity to save = $\frac{\Delta S}{\Delta Y}$
400	240	160	0.4	
800	440	360	$\frac{360}{800}$ = 0.45	$\frac{200}{400}$ = 0.5
1000	520	480	0.48	$\frac{120}{200}$ = 0.6

Q56. Find Investment from the following:

National Income = ₹ 600

Autonomous Consumption = ₹ 150

Marginal propensity to consume = 0.70

Ans.
$$Y = C + I$$
$$Y = (\overline{C} + bY] + I$$
$$\Rightarrow \quad 600 = 150 + 0.70 \times 600 + I$$
$$I = ₹ 30$$

Q57. In an economy, income increases from ₹ 5,000 crore to ₹ 6,000 crore as a result of 20 per cent increase in investment. Calculate the value of investment multiplier.

Ans.
$$\Delta Y = 1000$$
$$\Delta I = 20\%$$
$$\Delta Y = \frac{1000}{5000} \times 100$$
$$= 20\%$$
$$\therefore \quad K = \frac{\Delta Y}{\Delta I}$$
$$\Rightarrow \quad K = \frac{20}{20}$$
$$\Rightarrow \quad K = 1$$

Q58. Complete the following table:

Income	Average propensity to save	Marginal propensity to consume	Consumption expenditure
1000	0.50		500
2000	0.55	.....	.....
2500	0.60	.....	.....

Ans.

Income Y	Average propensity to save $APS = \dfrac{S}{Y}$	Marginal propensity to consume $MPC = \dfrac{\Delta C}{\Delta Y}$	Consumptions expenditure C	Savings
1000	0.50		500	500
2000	0.55	$\dfrac{400}{1000} = \boxed{0.4}$	$2000 - 1100 = \boxed{900}$	1100
2500	0.60	$\dfrac{100}{500} = \boxed{0.2}$	$2500 - 1500 = \boxed{1000}$	$\dfrac{S}{2500} = 0.60 \Rightarrow S = 1500$

Q59. Find 'investment' from the following:

National income = ₹ 800

Autonomous consumption = ₹ 50

Marginal propensity to consume = 0.8

Ans.
$$Y = C + I$$
$$\Rightarrow \quad 800 = 50 + 0.8 \times 800 + I$$
$$\Rightarrow \quad 800 - 690 = I$$
$$\Rightarrow \quad I = ₹\ 110$$

Q60. Find consumption expenditure from the following:

Autonomous consumption = ₹ 150

Marginal propensity to consume = 0.75

National income = ₹ 1,000

Ans.
$$C = \overline{C} + bY$$
$$= 150 + 0.75 \times 1000$$
$$= ₹\ 900$$

Q61. Find National Income from the following:

Autonomous consumption = ₹ 200

Marginal propensity to consume = 0.70

Investment = ₹ 700

Ans.
$$Y = C + I$$
$$Y = 200 + 0.70\,Y + 700$$
$$0.3Y = 900$$
$$Y = ₹\ 3000$$

Long Answer Type Questions

Q1. In an economy, $C = 500 + 0.9Y$ and $I = 1000$ (where C = consumption, Y = income, I = investment). Calculate the following:

(i) Equilibrium level of income

(ii) Consumption expenditure at equilibrium level of income.

Ans. (i)

$$Y = C + I$$

$$\Rightarrow \quad Y = 500 + 0.9Y + 1000$$

$$\Rightarrow \quad Y - 0.9Y = 1500$$

$$\Rightarrow \quad Y = \frac{1500}{0.1} = ₹\,15000$$

(ii)

$$C = 500 + 0.9 \times 15000$$

$$= ₹\,14{,}000$$

Q2. In an economy, every time income rises, 75 per cent of the rise in income is spent on consumption. Now suppose in the same economy investment rises by ₹ 750 crores. Calculate the following:

(i) Change in income

(ii) Change in saving.

Ans.

$$MPC = 0.75$$

$$\Delta I = 750$$

(i)

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \quad \frac{\Delta Y}{750} = \frac{1}{1 - 0.75}$$

$$\Rightarrow \quad \Delta Y = \frac{750}{0.25} = ₹\,3000 \text{ crores.}$$

(ii)

$$\Delta S = (1 - MPC) \cdot \Delta Y$$

$$= (1 - 0.75) \times 3000$$

$$= 0.25 \times 3000$$

$$= ₹\,750 \text{ crores.}$$

Q3. In an economy, $C = 300 + 0.5Y$ and $I = ₹ 600$ crore (where C = consumption, Y = income, I = investment). Calculate the following:

(i) Equilibrium level of income

(ii) Consumption expenditure at equilibrium level of income.

Ans. (i)

$$Y = C + I$$

$$\Rightarrow \quad Y = 300 + 0.5Y + 600$$

$$\Rightarrow \quad Y - 0.5Y = 900$$

$$\Rightarrow \quad Y = \frac{900}{0.5} = ₹\ 1800 \text{ crore}$$

(ii)
$$C = 300 + 0.5 \times 1800$$

$$= ₹\ 1200 \text{ crores.}$$

Q4. In an economy, every time income rises, 20 per cent of rise in income is saved. Now suppose in the same economy investment rises by ₹ 200 crores. Calculate the following:

(i) Change in income

(ii) Change in consumption.

Ans.
$$MPS = 20\% = 0.2$$

$$\Delta I = 200$$

(i)
$$\frac{\Delta Y}{\Delta I} = \frac{1}{MPS}$$

$$\Rightarrow \quad \frac{\Delta Y}{200} = \frac{1}{0.2} \quad \Rightarrow \quad \Delta Y = \frac{200}{0.2} = ₹\ 1000 \text{ crores}$$

(ii)
$$\Delta C = MPC \times \Delta Y$$

$$= 0.8 \times 1000 = ₹\ 800 \text{ crores.}$$

Q5. In an economy, $C = 1000 + 0.5Y$ and $I = 2000$. Calculate the following:

(i) Equilibrium level of income

(ii) Savings at equilibrium level of income.

Ans. (i)
$$Y = C + I$$

$$\Rightarrow \quad Y = 1000 + 0.5Y + 2000$$

$$\Rightarrow \quad Y - 0.5Y = 3000$$

$$\Rightarrow \quad Y = \frac{3000}{0.5} = ₹\ 6000 \text{ crores.}$$

(ii)
$$S = -1000 + 0.5Y$$

$$= -1000 + 0.5 \times 6000$$

$$= ₹\ 2000 \text{ crores.}$$

Q6. In an economy, every time income rises, 60 per cent of rise in income is spent on consumption. Now suppose in the same economy investment rises by ₹ 600 crores. Calculate the following:

(i) Change in income

(ii) Change in saving.

Ans.
$$MPC = 60\% = 0.6$$

$$\Delta I = 600$$

(i)
$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - MPC}$$

$$\Rightarrow \qquad \frac{\Delta Y}{600} = \frac{1}{1-0.6}$$

$$\Rightarrow \qquad \Delta Y = \frac{600}{0.4} = ₹\ 1500\ \text{crores.}$$

(ii) $\qquad \Delta S = MPS \times \Delta Y$

$$= 0.4 \times 1500 = ₹\ 600\ \text{crores.}$$

Q7. In an economy, $C = 300 + 0.8Y$ and $I = 500$. Calculate the following:

(i) Equilibrium level of income

(ii) Consumption expenditure at equilibrium level of income.

Ans. (i) $\qquad Y = C + I$

$$\Rightarrow \qquad Y = 300 + 0.8Y + 500$$

$$\Rightarrow \qquad Y - 0.8Y = 800$$

$$\Rightarrow \qquad Y = \frac{800}{0.2} = ₹\ 4000\ \text{crores.}$$

(ii) $\qquad C = 300 + 0.8 \times 4000$

$$= ₹\ 3500\ \text{crores.}$$

Q8. In an economy, with every increase in income 10 per cent of the rise in income is saved. Suppose a fresh investment of ₹ 120 crores takes place in the economy. Calculate the following:

(i) Change in the income

(ii) Change in consumption.

Ans. $\qquad MPS = 10\% = 0.1$

$$\Delta I = 120$$

(i) $\qquad \dfrac{\Delta Y}{\Delta I} = \dfrac{1}{MPS}$

$$\Rightarrow \qquad \frac{\Delta Y}{120} = \frac{1}{0.1}$$

$$\Rightarrow \qquad \Delta Y = \frac{120}{0.1} = ₹\ 1200\ \text{crore}$$

(ii) $\qquad \Delta C = MPC \times \Delta Y$

$$= 0.9 \times 1200$$

$$= ₹\ 1080\ \text{crore}$$

Q9. In an economy, $C = 500 + 0.75Y$ and $I = ₹\ 800$ crores. Calculate the following:

(i) Equilibrium level of income

(ii) Consumption expenditure at equilibrium level of income.

Ans. (i) $\qquad Y = C + I$

$$\Rightarrow \qquad Y = 500 + 0.75Y + 800$$

$$\Rightarrow \qquad Y - 0.75Y = 1300$$

$$\Rightarrow \quad Y = \frac{1300}{0.25} = ₹\ 5200 \text{ crores}$$

(ii) $\qquad C = 500 + 0.75 \times 5200 = ₹\ 4400 \text{ crores.}$

Q10. In an economy, with every increase in income 70 per cent of the increased income is spent on consumption. Suppose a fresh investment of ₹ 300 crores takes place in the economy. Calculate the following:

(i) Change in the income

(ii) Change in saving.

Ans. $\qquad MPC = 70\% = 0.7$

$\qquad \Delta I = 300$

(i) $\qquad \dfrac{\Delta Y}{\Delta I} = \dfrac{1}{1 - MPC}$

$\Rightarrow \quad \dfrac{\Delta Y}{300} = \dfrac{1}{1 - 0.7} \quad \Rightarrow \quad \Delta Y = \dfrac{300}{0.3} = ₹\ 1000 \text{ crores.}$

(ii) $\qquad \Delta S = MPS \times \Delta Y = 0.3 \times 1000 = ₹\ 300 \text{ crores.}$

Q11. In an economy, $C = 100 + 0.9Y$ and $I = 700$ crore. Calculate the following:

(i) Equilibrium level of income

(ii) Consumption expenditure at equilibrium level of income.

Ans. (i) $\qquad Y = C + I$

$\Rightarrow \qquad Y = 100 + 0.9Y + 700$

$\Rightarrow \qquad Y - 0.9Y = 800$

$\Rightarrow \qquad Y = \dfrac{800}{0.1} = ₹\ 8000 \text{ crores.}$

(ii) $\qquad C = 100 + 0.9 \times 8000 = ₹\ 7300 \text{ crores.}$

Q12. In an economy, with every increase in income 15 per cent of the increased income is saved. Suppose a fresh investment of ₹ 600 crores takes place in the economy. Calculate the following:

(i) Change in income

(ii) Change in consumption.

Ans. $\qquad MPS = 15\% = 0.15$

$\qquad \Delta I = 600$

(i) $\qquad \dfrac{\Delta Y}{\Delta I} = \dfrac{1}{MPS}$

$\Rightarrow \qquad \dfrac{\Delta Y}{600} = \dfrac{1}{0.15}$

$\Rightarrow \qquad \Delta Y = \dfrac{600}{0.15} = ₹\ 4000 \text{ crores.}$

(ii) $\qquad \Delta C = MPC \times \Delta Y$

$\qquad = 0.85 \times 4000 = ₹\ 3400 \text{ crores.}$

Q 13. Given consumption function $C = 100 + 0.75Y$. (where C = consumption expenditure and Y = national income) and investment expenditure ₹ 1000, calculate:

    (*i*) Equilibrium level of national income.

    (*ii*) Consumption expenditure at equilibrium level of national income.

Ans.

$$C = 100 + 0.75Y$$
$$I = ₹ 1000$$

(*i*)
$$Y = C + I$$
$$\Rightarrow \quad Y = 100 + 0.75Y + 1000$$
$$\Rightarrow \quad Y - 0.75Y = ₹ 1100$$
$$\Rightarrow \quad Y = \frac{1100}{0.25} = ₹ 4400$$

(*ii*)
$$C = 100 + 0.75Y$$
$$= 100 + 0.75(4400)$$
$$= ₹ 3400.$$

Q 14. In an economy $S = -50 + 0.5Y$ is the saving function (where S = saving and Y = national income) and investment expenditure is 7000. Calculate:

    (*i*) Equilibrium level of national income.

    (*ii*) Consumption expenditure at equilibrium level of national income.

Ans.

$$S = -50 + 0.5Y$$
$$I = ₹ 7000$$

(*i*)
$$Y = C + I \quad ...(C = a + bY)$$
$$\Rightarrow \quad Y = (50 + 0.5Y) + 7000$$
$$\Rightarrow \quad Y - 0.5Y = 7050$$
$$\Rightarrow \quad Y = \frac{7050}{0.5} = ₹ 14100$$

(*ii*)
$$C = 50 + 0.5Y$$
$$= 50 + 0.5 \times 14100$$
$$= ₹ 7100.$$

Q 15. From the following information about an economy, calculate:

    (*i*) Its equilibrium level of national income, and (*ii*) savings at equilibrium level of national income. Consumption function: $C = 200 + 0.9Y$, Investment expenditure : $I = 3000$.

Ans.

$$C = 200 + 0.9Y$$
$$I = ₹ 3000$$

(*i*)
$$Y = C + I$$
$$Y = (200 + 0.9Y) + 3000$$
$$\Rightarrow \quad Y - 0.9Y = ₹ 3200$$
$$\Rightarrow \quad Y = \frac{3200}{0.1} = ₹ 32000$$

(ii)
$$S = -200 + [1 - 0.9]Y$$
$$S = -200 + 0.1Y$$
$$S = -200 + 0.1 \times 32000$$
$$= ₹ 3000$$

Q 16. $C = 100 + 0.75Y$ is a consumption function and investment expenditure is 800. On the basis of this information calculate:

(i) Equilibrium level of national income.

(ii) Savings at equilibrium level of national income.

Ans.
$$C = 100 + 0.75Y$$
$$I = 800$$

(i)
$$Y = C + I$$
$$\Rightarrow \quad Y = (100 + 0.75Y) + 800$$
$$\Rightarrow \quad Y - 0.75Y = 900$$
$$\Rightarrow \quad Y = \frac{900}{0.25} = ₹ 3600$$

(ii)
$$S = -100 + 0.25Y$$
$$S = -100 + 0.25 \times 3600$$
$$= ₹ 800$$

Q 17. Given below is the consumption function in an economy:

$$C = 100 + 0.5Y$$

With the help of a numerical example show that in this economy as income increases APC will decrease.

Ans. $C = 100 + 0.5Y$

Income (Y)	C	$APC = \dfrac{C}{Y}$
100	150	1.5
200	200	1.0
300	250	0.8
400	300	0.7

$$C = 100 + 0.5 \times 100 = 150$$
$$C = 100 + 0.5 \times 200 = 200$$
$$C = 100 + 0.5 \times 300 = 250$$
$$C = 100 + 0.5 \times 400 = 300$$

Thus, as income increases, APC decreases.

Q 18. The savings function of an economy is $S = -200 + 0.25Y$. The economy is in equilibrium when income is equal to 2,000. Calculate:

  (*i*) Investment expenditure at equilibrium level of income.
  (*ii*) Autonomous consumption.
  (*iii*) Investment multiplier.

Ans.
$$S = -200 + 0.25Y$$

Equilibrium income $= ₹\ 2000$

(*i*)
$$S = I \quad \text{... in equilibrium}$$
$$\Rightarrow \quad -200 + 0.25Y = I$$
$$\Rightarrow \quad -200 + 0.25 \times 2000 = I$$
$$\Rightarrow \quad I = 300$$

(*ii*) Autonomous consumption $= 200$

(*iii*) Investment multiplier $= \dfrac{1}{1 - MPC}$

$$= \dfrac{1}{1 - 0.75}$$

$$= \dfrac{1}{0.25} = 4$$

Q 19. In an economy 75 per cent of the increase in income is spent on consumption. Investment is increased by ₹ 1,000 crore. Calculate:

  (*i*) total increase in income.
  (*ii*) total increase in consumption expenditure.

Ans. (*i*)
$$\dfrac{\Delta C}{\Delta Y} = \dfrac{75}{100} = \dfrac{3}{4}$$

$$MPC = \dfrac{\Delta C}{\Delta Y} = \dfrac{3}{4} = 0.75$$

$$MPS = 1 - 0.75 = 0.25$$

$$\Delta I = 1000$$

$$K = \dfrac{1}{MPS} = \dfrac{1}{0.25} = 4$$

$$K = \dfrac{\Delta Y}{\Delta I}$$

$$\Delta Y = K.\Delta I$$

$$\Delta Y = 4\,(1000)$$

$$\Delta Y = ₹\ 4000 \text{ crore}$$

(*ii*)
$$\Delta C = MPC\,(\Delta Y)$$

$$\Delta C = 0.75\,(4000)$$

$$\Delta C = ₹\ 3000 \text{ crores}$$

Q20. In an economy the equilibrium level of income is ₹ 12,000 crores. The ratio of marginal propensity to consume and marginal propensity to save is 3 : 1. Calculate the additional investment needed to reach a new equilibrium level of income of ₹ 20,000 crores.

Ans.

$$MPC = 0.75$$
$$MPS = 0.25$$
$$\Delta I = ?$$
$$Y = 12{,}000 \text{ crores}$$
$$Y_1 = 20{,}000 \text{ crores}$$
$$\Delta Y = 8{,}000 \text{ crores}$$

$$\therefore \quad K = \frac{1}{MPS} = \frac{1}{0.25} = 4$$

$$K = \frac{\Delta Y}{\Delta I}$$

$$\Rightarrow \quad 4 = \frac{8000}{\Delta I} \quad \Rightarrow \quad \Delta I = ₹\ 2000 \text{ crores}$$

Q21. In an economy the consumption function is $C = 500 + 0.75\ Y$ where C is consumption expenditure and Y is income. Calculate the equilibrium level of income and consumption expenditure when investment expenditure is 5000.

Ans. (i)

$$C = 500 + 0.75\ Y$$
$$Y = C + I$$
$$Y = 500 + 0.75\ Y + 5000$$
$$Y = 5500 + 0.75\ Y$$
$$0.25\ Y = 5500$$

$$Y = \frac{5500}{0.25}$$

$$Y = ₹\ 22{,}000 \text{ crores}$$

(ii)
$$C = 500 + 0.75\ (22000)$$
$$= 500 + 75\ (220)$$
$$= 500 + 16{,}500$$
$$C = ₹\ 17{,}000 \text{ crores}$$

Q22. Complete the following table :

Income (₹)	Consumption expenditure (₹)	Marginal propensity to save	Average propensity to save
0	80		
100	140	0.4	....
200	....	....	0
....	240	....	0.20
....	260	0.8	0.35

Ans.

Income (₹) Y	Consumption expenditure (₹) C	Marginal propensity to save $= \dfrac{\Delta S}{\Delta Y}$	Average propensity to save $= \dfrac{S}{Y}$	S = Y − C
0	80			−80
100	140	0.4	− 0.4	−40
200	200	0.4	0	0
300	240	0.6	0.20	60
400	260	0.8	0.35	140

Q23. C = 100 + 0.4Y is the Consumption Function of an economy where C is Consumption Expenditure and Y is National Income. Investment expenditure is 1100. Calculate

(i) Equilibrium level of National Income

(ii) Consumption expenditure at equilibrium level of national income.

Ans.
$$Y = C + I$$
$$\Rightarrow \quad Y = 100 + 0.4Y + 1100$$
$$\Rightarrow \quad Y - 0.4Y = 1200 \quad \Rightarrow \quad 0.6Y = 1200$$
$$\Rightarrow \quad Y = \frac{1200}{0.6} = 2000$$

(ii) $\quad C = 100 + 0.4 \times 2000 = 100 + 800 = 900.$

Q24. In an economy, S= −100 + 0.6 Y is the saving function, where S is Saving and Y is National Income. If investment expenditure is 1100, calculate :

(i) Equilibrium level of National Income

(ii) Consumption expenditure at equilibrium level of National Income.

Ans. (i) $\quad Y = C + I$

Since
$$S = -100 + 0.6Y$$
$$C = 100 + 0.4Y$$

∴
$$Y = (100 + 0.4Y) + 1100$$

$$0.6Y = 1200 \quad \Rightarrow \quad Y = \frac{1200}{0.6} = 2000$$

(ii) $\quad C = 100 + 0.4 \times 2000 = 100 + 800 = 900$

Q25. Complete the following table :

Income (₹)	Savings (₹)	Average propensity to consume	Marginal propensity to consume
0	− 40		
50	− 20	....	....
100	0	....	0.6
150	30	0.8	....
200	50	....	....

Ans.

Income (₹) Y	Savings (₹) S	Average propensity to consume $\dfrac{C}{Y}$	Marginal propensity to consume $\dfrac{\Delta C}{\Delta Y}$	C = Y – S	ΔC
0	– 40			40	–
50	– 20	1.4	0.6	70	30
100	0	1.0	0.6	100	30
150	30	0.8	0.4	120	20
200	50	0.75	0.6	150	30

Q26. C = 50 + 0.5 Y is the consumption function where C is consumption expenditure and Y is National Income and investment expenditure is 2000 in an economy. Calculate:

(i) Equilibrium level of (national) income.

(ii) Consumption expenditure at equilibrium level of (national) income.

Ans. (i)
$$Y = C + I$$
$$Y = 50 + 0.5Y + 2000$$
$$0.5Y = 2050$$
$$Y = 4100$$

(ii)
$$C = 50 + 0.5Y$$
$$= 50 + (0.5 \times 4100)$$
$$= 50 + 2050$$
$$= 2100$$

Q27. Complete the following table :

Consumption Expenditure (₹)	Savings (₹)	Income (₹)	Marginal Propensity to Consume
100	50	150	
175	75	....	....
250	100	....	....
325	125	....	....

Ans.

Consumption Expenditure (₹)	Savings (₹)	Income (₹)	Marginal Propensity to Consume
100	50	150	
175	75	250	0.75
250	100	350	0.75
325	125	450	0.75

Q28. From the data given below about an economy, calculate (a) investment expenditure and (b) consumption expenditure.

(i) Equilibrium level of income	5000
(ii) Autonomous Consumption	500
(iii) Marginal propensity to consume	0.4

Ans. (a)
$$Y = C + I$$
$$C = 500 + 0.4Y$$

So,
$$Y = 500 + (0.4 \times 5000) + I$$
$$5000 = 500 + (0.4 \times 5000) + I$$
$$I = 2500$$

(b)
$$C = 500 + 0.4 \times 5000$$
$$= 2500$$

Q29. In an economy $C = 200 + 0.75\,Y$ is the consumption function where C is consumption expenditure and Y is National income. Investment expenditure is 4000. Calculate equilibrium level of income and consumption expenditure.

Ans.
$$Y = C + I$$
$$Y = 200 + 0.75Y + 4000$$
$$0.25Y = 4200$$
$$Y = 16800$$
$$C = 200 + (0.75 \times 16800) = 12800$$

Q30. From the following data about an economy, calculate (a) equilibrium level of national income and (b) total consumption expenditure at equilibrium level of national income.
    (i) $C = 200 + 0.5\,Y$ is the consumption function where C is consumption expenditure and Y is national income.
    (ii) Investment expenditure is 1500.

Ans.
$$Y = C + I$$
$$Y = \overline{C} + by + I$$
$$Y = 200 + 0.5Y + 1500$$
$$Y - 0.5Y = 1700$$
$$0.5Y = 1700$$
$$Y = \frac{17000}{5} = 3400$$
$$C = \overline{C} + by$$
$$C = 200 + 0.5 \times 3400$$
$$C = 200 + 1700$$
$$C = 1900$$

Q31. In an economy, the consumption function is C= 400 + 0.75 Y, where C is consumption expenditure and Y is national income and investment expenditure is 2000. Calculate the equilibrium level of national income and consumption expenditure.

Ans.

$$Y = C + I$$

$$Y = 400 + 0.75Y + 2000$$

$$Y - 0.75Y = 2400$$

$$Y = \frac{2400}{0.25} = 9600$$

$$C = 400 + 0.75 \times 9600$$

$$= 7600$$

□□

Chapter-4 Government Budget and the Economy

Very Short Answer Type Questions   (1 Mark)

Q1. In a government budget, revenue expenditure is ₹ 50,000 crores and receipts are ₹ 15,000 crores. How much is the revenue deficit?

Ans.   Revenue deficit = Revenue expenditure – Revenue Receipts

= 50,000 – 15000

= ₹ 35,000 crores.

Q2. In a government budget, primary deficit is ₹ 10,000 crores and interest payment is ₹ 8,000 crores. How much is the fiscal deficit?

Ans.   Fiscal deficit = Primary deficit + Interest payments

= 10,000 + 8000

= ₹ 18000 crores.

Chapter-5   Foreign Exchange Rate

Very Short Answer Type Questions   (1 Mark)

Q1. The price of 1 US Dollar has fallen from ₹ 50 to ₹ 48. Has the Indian currency appreciated or depreciated?

Ans.   When 1 US $ = ₹ 50

falls to 1 US $ = ₹ 48

It means appreciation of Indian rupees.

Chapter-6 Balance of Payments

Very Short Answer Type Questions (1 Mark)

Q1. If the value of exports of goods of a country is ₹ 1,000 crores and the value of imports of goods is ₹ 1,200 crores, how much will be the trade balance (or balance of trade)?

Ans.
$$\text{Balance of trade} = V_X - V_M$$
$$= 1000 - 1200$$
$$= ₹ - 200 \text{ crores}$$

∴ Country's Balance of Trade is ₹ (−) 200 crores.

Q2. Calculate the value of imports when balance of trade is ₹ (−) 400 crores and value of exports is ₹ 300 crores.

Ans.
$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -400 = 300 - V_M$$
$$\Rightarrow \quad V_M = 300 + 40ᴦ$$
$$\therefore \quad V_M = ₹ 700 \text{ crores}.$$

Q3. The balance of trade shows a deficit of ₹ 5,000 crores and the value of imports are ₹ 9,000 crores. What is the value of exports?

Ans.
$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -5000 = V_X - 9000$$
$$\Rightarrow \quad V_X = 9000 - 5000$$
$$\Rightarrow \quad V_X = ₹ 4,000 \text{ crores}.$$

Q4. A country's balance of trade is ₹ 100 crores and value of export of goods is ₹ 175 crores. Find out the value of import of goods.

Ans.
$$\text{Balance of trade} = V_X - V_M$$
$$100 = 175 - V_M$$
$$V_M = 175 - 100$$
$$= ₹ 75 \text{ crores}.$$

Q5. A country's balance of trade is ₹ (−) 60 crores and value of import of goods is ₹ 100 crores. Find out the value of export of goods.

Ans.
$$\text{Balance of trade} = V_X - V_M$$
$$\Rightarrow \quad -60 = V_X - 100$$
$$\Rightarrow \quad V_X = 100 - 60$$
$$\therefore \quad V_X = ₹ 40 \text{ crores}.$$

Q 6. The value of a country's import of goods is ₹ 200 crores and value of export of goods is ₹ 250 crores. Find out its balance of trade.

Ans.

Balance of trade = $V_X - V_M$

⇒ Balance of trade = 250 – 200

⇒ Balance of trade = ₹ 50 crores.

Q 7. A country's balance of trade is ₹ 75 crores. Value of import of goods is ₹ 100 crores. How much is the value of export of goods?

Ans.

Balance of trade = $V_X - V_M$

⇒ $75 = V_X - 100$

⇒ $V_X = 100 + 75 = 175$ crores.

Q 8. Balance of trade shows a deficit of ₹ 5,000 crores. Value of exports is ₹ 4,000 crores. Find out the value of imports.

Ans.

Balance of trade = $V_X - V_M$

⇒ $-5000 = 4000 - V_M$

⇒ $V_M = 4000 + 5000$

∴ $V_M = ₹ 9000$ crores.

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