PAPER – 8 : FINANCIAL MANAGEMENT AND ECONOMICS FOR FINANCE

SECTION – A: FINANCIAL MANAGEMENT

*Question No. **1** is compulsory.*

*Attempt any **four** questions out of the remaining **five** questions.*

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question

(a) *Following information has been gathered from the books of Tram Ltd. the equity shares of which is trading in the stock market at ₹ 14.*

Particulars	Amount (₹)
Equity Share Capital (face value ₹ 10)	10,00,000
10% Preference Shares	2,00,000
Reserves	8,00,000
10% Debentures	6,00,000
Profit before Interest and Tax for the year	4,00,000
Interest	60,000
Profit after Tax for the year	2,40,000

Calculate the following:

(i) *Return on Capital Employed*

(ii) *Earnings per share*

(iii) *PE ratio*

(b) *Door Ltd. is considering an investment of ₹ 4,00,000. This investment is expected to generate substantial cash inflows over the next five years. Unfortunately, the annual cash flows from this investment is uncertain, and the following profitability distribution has been established.*

Annual Cash Flow (₹)	Probability
50,000	0.3
1,00,000	0.3
1,50,000	0.4

At the end of its 5 years life, the investment is expected to have a residual value of ₹ 40,000.

The cost of capital is 5%

(i)   Calculate NPV under the three different scenarios.

(ii)   Calculate Expected Net Present Value.

(iii) Advise Door Ltd. on whether the investment is to be undertaken.

Year	1	2	3	4	5
DF @ 5%	0.952	0.907	0.864	0.823	0.784

(c)   Following figures and information were extracted from the company A Ltd.

Earnings of the company	₹ 10,00,000
Dividend paid	₹ 6,00,000
No. of shares outstanding	2,00,000
Price Earnings Ratio	10
Rate of return on investment	20%

You are required to calculate:

(i)   Current Market price of the share

(ii)   Capitalisation rate of its risk class

(iii) What should be the optimum pay-out ratio?

(iv) What should be the market price per share at optimal pay-out ratio? (use Walter's Model)

(d)   A company has ₹ 1,00,000 available for investment and has identified the following four investments in which to invest.

Project	Investment (₹)	NPV (₹)
C	40,000	20,000
D	1,00,000	35,000
E	50,000	24,000
F	60,000	18,000

You are required to optimize the returns from a package of projects within the capital spending limit if-

(i)   The projects are independent of each other and are divisible.

(ii)   The projects are not divisible.   **(4 x 5 = 20 Marks)**

Answer

(a) (i) Calculation of Return on capital employed (ROCE)

Capital employed   = Equity Shareholders' funds + Debenture + Preference shares

= ₹ (10,00,000 + 8,00,000 + 6,00,000 + 2,00,000)

= ₹ 26,00,000

Return on capital employed [ROCE-(Pre-tax)] $= \dfrac{\text{PBIT}}{\text{Capital Employed}} \times 100$

$= \dfrac{₹\ 4,00,000}{₹\ 26,00,000} \times 100$

= 15.38% (approx.)

Return on capital employed [ROCE-(Post-tax)] $= \dfrac{\text{Profit after Tax}}{\text{Capital Employed}} \times 100$

$= \dfrac{₹\ 2,40,000}{₹\ 26,00,000} \times 100$

= 9.23% (approx.)

(ii) Calculation of Earnings per share

Earnings per share $= \dfrac{\text{Earnings available to equity shareholders}}{\text{No of equity shares}}$

$= \dfrac{\text{Profit after tax-preference Dividend}}{\text{No of equity shares}}$

$= \dfrac{₹\ (2,40,000 - 20,000)}{₹\ 1,00,000}$

= ₹ 2.20

(iii) Calculation of PE ratio

PE $= \dfrac{\text{Market Price per Share (MPS)}}{\text{Earning per Shares (EPS)}}$

$= \dfrac{₹\ 14}{₹\ 2.20} = 6.364$ (approx.)

(b) (i)   Calculation of NPV under three different scenarios   **(Amount in ₹)**

Particulars	1st Scenario	2nd Scenario	3rd Scenario
Annual Cash Flow	50,000	1,00,000	1,50,000
PV of cash inflows (Annual Cash Flow × 4.33*)	2,16,500	4,33,000	6,49,500
PV of Residual Value (₹ 40,000 × 0.784)	31,360	31,360	31,360
Total PV of Cash Inflow	2,47,860	4,64,360	6,80,860
Initial investment	4,00,000	4,00,000	4,00,000
NPV	**(1,52,140)**	**64,360**	**2,80,860**

* .952 + .907 + .864 + .823 + .784 = 4.33

(ii)   Calculation of Expected Net present Value under three different scenarios

Particulars	1st Scenario	2nd Scenario	3rd Scenario	Total (₹)
Annual Cash Flow	₹ 50,000	₹ 1,00,000	₹ 1,50,000	
Probability	0.3	0.3	0.4	
Expected Value	₹ 15,000	₹ 30,000	₹ 60,000	1,05,000
PV of Expected value (1,05,000 × 4.33)				4,54,650
PV of Residual Value (40,000 × 0.784)				31,360
Total PV of Cash Inflow				4,86,010
Initial investment				4,00,000
Expected Net Present Value				**86,010**

(iii) Since the expected net present value of the Investment is positive, the Investment should be undertaken.

(c) (i)   Current Market price of shares (applying Walter's Model)

- The EPS of the firm is ₹ 5 (i.e., Rs 10,00,000 / 2,00,000).

- Rate of return on Investment (r) = 20%.

- The Price Earnings (P/E) Ratio is given as 10, so capitalization rate (K_e), may be taken at the inverse of P/E Ratio. Therefore, K_e is 10% or .10 (i.e., 1/10).

- The firm is distributing total dividends of ₹ 6,00,000 among 2,00,000 shares, giving a dividend per share of ₹ 3.

The value of the share as per Walter's model may be found as follows:

Walter's model is given by-

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e}$$

Where,

P = Market price per share.

E = Earnings per share = ₹ 5

D = Dividend per share = ₹ 3

R = Return earned on investment = 20 %

K_e = Cost of equity capital = 10% or .10

$$P = \frac{3 + \dfrac{0.20}{0.10}(5 - 3)}{0.10} = ₹\ 70$$

Current Market Price of shares can also be calculated as follows:

$$\text{Price Earnings (P/E) Ratio} = \frac{\text{Market Price of Share}}{\text{Earnings per Shares}}$$

$$\text{Or,}\quad 10 = \frac{\text{Market Price of Share}}{₹\ 10,00,000 / 2,00,000}$$

$$\text{Or,}\quad 10 = \frac{\text{Market Price of Share}}{₹\ 5}$$

Market Price of Share   = ₹ 50

(ii) **Capitalization rate** (K_e) of its risk class is 10% or .10 (i.e., 1/10).

(iii) **Optimum dividend pay-out ratio**

According to Walter's model when the return on investment is more than the cost of equity capital (10%), the price per share increases as the dividend pay-out ratio decreases. Hence, the optimum dividend pay-out ratio in this case is nil or 0 (zero).

(iv) **Market price per share at optimum dividend pay-out ratio**

At a pay-out ratio of zero, the market value of the company's share will be:

$$P \ = \ \frac{0 + \dfrac{0.20}{0.10}(5 - 0)}{0.10} \ = ₹ \ 100$$

(d) (i) Optimizing returns when projects are independent and divisible.

Computation of NPVs per Re. 1 of Investment and Ranking of the Projects

Project	Investment (₹)	NPV (₹)	NPV per Re. 1 invested (₹)	Ranking
C	40,000	20,000	0.50	1
D	1,00,000	35,000	0.35	3
E	50,000	24,000	0.48	2
F	60,000	18,000	0.30	4

Building up of a Package of Projects based on their Rankings

Project	Investment (₹)	NPV (₹)
C	40,000	20,000
E	50,000	24,000
D (1/10th of Project)	10,000	3,500
Total	1,00,000	47,500

The company would be well advised to invest in Projects C, E and D (1/10th) and reject Project F to optimise return within the amount of ₹ 1,00,000 available for investment.

(ii) Optimizing returns when projects are indivisible.

Package of Project	Investment (₹)	Total NPV (₹)
C and E	90,000 (40,000 + 50,000)	44,000 (20,000 + 24,000)
C and F	1,00,000 (40,000 + 60,000)	38,000 (20,000 + 18,000)
Only D	1,00,000	35,000

The company would be well advised to invest in Projects C and E to optimise return within the amount of ₹ 1,00,000 available for investment.

Question 2

The Balance Sheet of Gitashree Ltd. is given below:

Liabilities		(₹)
Shareholders' fund		
Equity share capital of ₹10 each	₹1,80,000	
Retained earnings	₹60,000	2,40,000
Non-current liabilities 10% debt		2,40,000
Current liabilities		1,20,000
		6,00,000
Assets		
Fixed Assets		4,50,000
Current Assets		1,50,000
		6,00,000

The company's total asset turnover ratio is 4. Its fixed operating cost is ₹ 2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%.

Calculate:

(i)   (a)   Degree of Operating leverage.

(b)   Degree of Financial leverage.

(c)   Degree of Combined leverage.

(ii)   Find out EBIT if EPS is (a) ₹1 (b) ₹2 and (c) ₹ 0.   **(10 Marks)**

Answer

Working Notes:

Total Assets   =   ₹ 6,00,000

Total Asset Turnover Ratio i.e.   = $\dfrac{\text{Total Sales}}{\text{Total Assets}}$ = 4

Hence, Total Sales   =   ₹ 6,00,000 × 4 = ₹ 24,00,000

Computation of Profits after Tax (PAT)

Particulars	(₹)
Sales	24,00,000
Less: Variable operating cost @ 60%	14,40,000
Contribution	9,60,000

Less: Fixed operating cost (other than Interest)	2,00,000
EBIT (Earning before interest and tax)	7,60,000
Less: Interest on debt (10% × 2,40,000)	24,000
EBT (Earning before tax)	7,36,000
Less: Tax 30%	2,20,800
EAT (Earning after tax)	5,15,200

(i)   (a)   Degree of Operating Leverage

$$\text{Degree of Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹\,9,60,000}{₹\,7,60,000} = 1.263 \text{ (approx.)}$$

(b)   Degree of Financial Leverage

$$\text{Degree of Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{₹\,9,60,000}{₹\,7,60,000} = 1.033 \text{ (approx.)}$$

(c)   Degree of Combined Leverage

$$\text{Degree of Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}}$$

$$= \frac{₹\,9,60,000}{₹\,7,60,000} = 1.304 \text{ (approx.)}$$

Or

Degree of Combined Leverage =   Degree of Operating Leverage × Degree of Financial Leverage

=   1.263 × 1.033 = 1.304 (approx.)

(ii)   (a)   If EPS is Re. 1

$$\text{EPS} = \frac{(\text{EBIT} - \text{Interest})(1 - \text{tax})}{\text{No of equity shares}}$$

$$\text{Or,}\quad 1 = \frac{(\text{EBIT} - ₹\,24,000)\,(1 - 0.30)}{18,000}$$

Or, EBIT = ₹ 49,714 (approx.)

(b) If EPS is ₹ 2

$$2 = \frac{(EBIT - ₹\,24,000)\,(1-0.30)}{18,000}$$

Or, EBIT = ₹ 75,429 (approx.)

(c) If EPS is ₹ 0

$$0 = \frac{(EBIT - ₹\,24,000)\,(1-0.30)}{18,000}$$

Or, EBIT = ₹ 24,000

Alternatively, if EPS is 0 (zero), EBIT will be equal to interest on debt i.e. ₹ 24,000.

Question 3

Slide Ltd. is preparing a cash flow forecast for the three months period from January to the end of March. The following sales volumes have been forecasted:

Months	December	January	February	March	April
Sales (units)	1,800	1,875	1,950	2,100	2,250

Selling price per unit is ₹ 600. Sales are all on one month credit. Production of goods for sale takes place one month before sales. Each unit produced requires two units of raw materials costing ₹ 150 per unit. No raw material inventory is held. Raw materials purchases are on one month credit. Variable overheads and wages equal to ₹ 100 per unit are incurred during production and paid in the month of production. The opening cash balance on 1st January is expected to be ₹ 35,000. A long term loan of ₹ 2,00,000 is expected to be received in the month of March. A machine costing ₹ 3,00,000 will be purchased in March.

(a) Prepare a cash budget for the months of January, February and March and calculate the cash balance at the end of each month in the three months period.

(b) Calculate the forecast current ratio at the end of the three months period.   ***(10 Marks)***

Answer

Working Notes:

(1) Calculation of Collection from Trade Receivables:

Particulars	December	January	February	March
Sales (units)	1,800	1,875	1,950	2,100
Sales (@ ₹ 600 per unit) / Trade Receivables (Debtors) (₹)	10,80,000	11,25,000	11,70,000	12,60,000

Collection from Trade Receivables (Debtors) (₹)		10,80,000	11,25,000	11,70,000

(2) Calculation of Payment to Trade Payables:

Particulars	December	January	February	March
Output (units)	1,875	1,950	2,100	2,250
Raw Material (2 units per output) (units)	3,750	3,900	4,200	4,500
Raw Material (@ ₹ 150 per unit) / Trade Payables (Creditors) (₹)	5,62,500	5,85,000	6,30,000	6,75,000
Payment to Trade Payables (Creditors) (₹)		5,62,500	5,85,000	6,30,000

(3) Calculation of Variable Overheads and Wages:

Particulars	January	February	March
Output (units)	1,950	2,100	2,250
Payment in the same month @ ₹ 100 per unit (₹)	1,95,000	2,10,000	2,25,000

(a) **Preparation of Cash Budget**

Particulars	January (₹)	February (₹)	March (₹)
Opening Balance	35,000	3,57,500	6,87,500
Receipts:			
Collection from Trade Receivables (Debtors)	10,80,000	11,25,000	11,70,000
Receipt of Long-Term Loan			2,00,000
Total (A)	11,15,000	14,82,500	20,57,500
Payments:			
Trade Payables (Creditors) for Materials	5,62,500	5,85,000	6,30,000
Variable Overheads and Wages	1,95,000	2,10,000	2,25,000
Purchase of Machinery			3,00,000
Total (B)	7,57,500	7,95,000	11,55,000
Closing Balance (A – B)	**3,57,500**	**6,87,500**	**9,02,500**

(b)   **Calculation of Current Ratio**

Particulars	March (₹)
Output Inventory (i.e. units produced in March) [(2,250 units x 2 units of raw material per unit of output x ₹ 150 per unit of raw material) + 2,250 units x ₹ 100 for variable overheads and wages] **or,** [6,75,000 + 2,25,000] from Working Notes 2 and 3	9,00,000
Trade Receivables (Debtors)	12,60,000
Cash Balance	9,02,500
Current Assets	**30,62,500**
Trade Payables (Creditors)	6,75,000
Current Liabilities	**6,75,000**
Current Ratio (Current Assets / Current Liabilities)	**4.537 approx.**

Question 4

Loft Ltd. is considering an investment in new technology that will reduce operating costs through increasing efficiency. The new technology will cost ₹ 5,00,000 and have a four year life at the end of which it will have a residual value of ₹ 50,000.

An annual license fee of ₹ 52,000 is payable to operate the machine. The purchase can be financed by 10% loan payable in equal installments at the end of each of four years. The depreciation is to be charged as per reducing balance method. The rate of depreciation is 25% per annum.

Alternatively, Loft Ltd. could lease the new technology. The Company would pay four annual lease rentals of ₹ 1,90,000 per year. The annual lease rentals include the cost of license fee. Tax rate is 30%. Compute the incremental cash flows under each option. What would be the appropriate rate at which these cash flows have to be discounted? Discount the incremental cash flows under each option and decide which option is better - buy or lease?

Year	1	2	3	4
DF @ 7%	*0.935*	*0.873*	*0.816*	*0.763*
DF @ 10%	*0.909*	*0.826*	*0.751*	*0.683*

(10 Marks)

Answer

(1) The buy or lease decision means computation of NPV arising from lease decision i.e. computation of valuation advantage of lease over buy. If the value is positive then we go for lease, otherwise we buy.

(2)   The valuation process involves – a) finding incremental cash flow of lease over buy, and then, b) discounting the incremental cash flow by net of tax interest rate of equivalent loan (to purchase the asset in question).

If we go for lease, there would be cash outflow in the form of net of tax lease rent from year 1 to 4. Net of tax lease rent per annum = ₹ 1,90,000 x (1-.30) = ₹ 1,33,000.

Again, if the equipment had been purchases there would have been tax saving of depreciation = Depreciation x tax rate. Here, the tax saving or tax shield is available for 4 years. But under lease the benefit accrues to lessor. For lessee it is a negative cash flow as advantage is not available to him under lease arrangement as lessor is considered the legal owner of the asset for claiming depreciation under Income tax law. The depreciation schedule and tax shield on depreciation are given in table 1.

Table 1

Year	Cost/ opening balance (₹)	Depreciation @ 25% (₹)	Closing balance (₹)	Tax shield (₹)
1	5,00,000	1,25,000	3,75,000	37,500
2	3,75,000	93,750	2,81,250	28,125
3	2,81,250	70,312.50	2,10,937.50	21,093.75
4	2,10,937.50	52,734.38	1,58,203.12	15,820.31

(3)   Further, if the equipment had been purchased there would have been tax saving of interest on loan = interest on loan x tax rate. Here, the tax saving or tax shield is available for 4 years. For lessee it is a negative cash flow as advantage is not available to him under lease arrangement.

The loan amount would have been repayable together with the interest at the rate of 10% in equal installment at the end of each year. The PVAF at the rate of 10% for 4 years is 3.169 (.909 + .826 + .751 + .683), the amount payable would have been-

Annual Installment = $\dfrac{₹\,5,00,000}{3.169}$ = ₹ 1,57,778 (approx.)

The interest expense schedule and tax shield on interest expense are given in table 2.

Table 2

Year	Total Installment (₹)	Interest (₹)	Principal (₹)	Principal amount outstanding (₹)	Tax shield (₹)
1	1,57,778	50,000	1,07,778	3,92,222	15,000
2	1,57,778	39,222	1,18,556	2,73,666	11,766.6
3	1,57,778	27,367	1,30,411	1,43,255	8,210.1

4	1,57,778	14,523 (bal. fig.)	1,43,255	------	4,356.9

(4) After 4 years the equipment is sold for ₹ 50,000 which is a cash outflow due to lease over buy

Loss on sale   = ₹ (1,58,203.12 - 50,000)

= ₹ 1,08,203.12

Tax savings on loss = 30% of ₹ 1,08,203.12 = ₹ 32,460.94

This further tax shield has to be accounted for in the year 4.

(5) If the equipment is taken on lease, the cash outflow on a/c of lease rental, depreciation tax shield is given in table 3

Table 3

Year	Net of tax lease rental (₹)	Depreciation tax shield (₹) (from Table 1)	Interest tax shield (₹) (from Table 2)	Total (₹)
1	1,33,000	37,500	15,000	1,85,500
2	1,33,000	28,125	11,766.6	1,72,891.6
3	1,33,000	21,093.75	8,210.1	1,62,303.85
4	1,33,000	15,820.31	4,356.9	1,53,177.21

(6) Net of tax interest rate = 0.10X (1-.30) = 0.07

Calculation of NPV for lease over buy option   (Amount in ₹)

Year	1	2	3	4
Loan Installment	1,57,778	1,57,778	1,57,778	1,57,778
License Fees (net of Taxes)	36,400	36,400	36,400	36,400
Amount from sale of Machine				(50,000)
Tax saving on loss on sale				(32,460.94)
Total Tax Shield on Lease Rent, Interest and Depreciation	(1,85,500)	(1,72,891.60)	(1,62,303.85)	(1,53,177.21)
Total Cash flow	8,678.00	21,286.40	31,874.15	(41,460.15)

Discounting Factor @7%	0.935	0.873	0.816	0.763
Discounted Cash Flow	8,113.93	18,583.03	26,009.31	(31,634.09)
NPV [8,113.93 + 18,583.03 + 26,009.31 + (31,634.09)]				**21,072.17**

Since, NPV or value of the lease is positive, the equipment should be taken on lease.

Question 5

A Company wants to raise additional finance of ₹ 5 crore in the next year. The company expects to retain ₹ 1 crore earning next year. Further details are as follows:

(i) The amount will be raised by equity and debt in the ratio of 3: 1.

(ii) The additional issue of equity shares will result in price per share being fixed at ₹ 25.

(iii) The debt capital raised by way of term loan will cost 10% for the first ₹ 75 lakh and 12% for the next ₹ 50 lakh.

(iv) The net expected dividend on equity shares is ₹ 2.00 per share. The dividend is expected to grow at the rate of 5%.

(v) Income tax rate is 25%.

You are required:

(a) To determine the amount of equity and debt for raising additional finance.

(b) To determine the post-tax average cost of additional debt.

(c) To determine the cost of retained earnings and cost of equity.

(d) To compute the overall weighted average cost of additional finance after tax.

(10 Marks)

Answer

(a) Determination of the amount of equity and debt for raising additional finance:

Pattern of raising additional finance

Equity	3/4 of ₹ 5 Crore	**= ₹ 3.75 Crore**
Debt	1/4 of ₹ 5 Crore	**= ₹ 1.25 Crore**

The capital structure after raising additional finance:

Particulars		(₹ In crore)
Shareholders' Funds		
Equity Capital	(3.75 – 1.00)	2.75
Retained earnings		1.00

Debt (Interest at 10% p.a.)		0.75
(Interest at 12% p.a.)	(1.25-0.75)	0.50
Total Funds		5.00

(b) Determination of post-tax average cost of additional debt

$K_d = I (1 - t)$

Where,

I = Interest Rate

t = Corporate tax-rate

On ₹ 75,00,000   =   10% (1 – 0.25) =   7.5% or 0.075

On ₹ 50,00,000   =   12% (1 – 0.25) =   9% or 0.09

Average Cost of Debt

$$= \frac{(₹\,75,00,000 \times 0.075) + (₹\,50,00,000 \times 0.09)}{1,25,00,000} \times 100$$

$$= \frac{₹\,5,62,500 + ₹\,4,50,000}{1,25,00,000} \times 100 = 8.10\%$$

(c) Determination of cost of retained earnings and cost of equity (Applying Dividend growth model):

$$K_e = \frac{D_1}{P_0} + g$$

Where,

K_e = Cost of equity

$D_1 = D_O (1+ g)$

D_0 = Dividend paid (i.e = ₹ 2)

g   = Growth rate

P_0 = Current market price per share

Then, $K_e = \dfrac{Rs.\,2\,(1.05)}{Rs.\,25} + 0.05 = \dfrac{Rs.\,2.1}{Rs.\,25} + 0.05 = 0.084 + 0.05 = 0.134 = 13.4\%$

Cost of retained earnings equals to cost of Equity i.e. 13.4%

(d) Computation of overall weighted average after tax cost of additional finance

Particular	(₹)	Weights	Cost of funds	Weighted Cost (%)
Equity (including retained earnings)	3,75,00,000	3/4	13.4%	10.05
Debt	1,25,00,000	1/4	8.1%	2.025
WACC	5,00,00,000			**12.075**

Question 6

(a)   Briefly explain the three finance function decisions.   **(3 Marks)**

(b)   Explain the steps while using the equivalent annualized criterion.   **(3 Marks)**

(c)   Explain the significance of Cost of Capital.   **(4 Marks)**

OR

Briefly describe any four sources of short-term finance.   **(4 Marks)**

Answer

(a) The finance functions are divided into long term and short term functions/ decisions:

Long term Finance Function Decisions

(i)   Investment decisions (I): These decisions relate to the selection of assets in which funds will be invested by a firm. Funds procured from different sources have to be invested in various kinds of assets. Long term funds are used in a project for various fixed assets and also for current assets.

(ii) Financing decisions (F): These decisions relate to acquiring the optimum finance to meet financial objectives and seeing that fixed and working capital are effectively managed. The financial manager needs to possess a good knowledge of the sources of available funds and their respective costs and needs to ensure that the company has a sound capital structure, i.e. a proper balance between equity capital and debt.

(iii) Dividend decisions (D): These decisions relate to the determination as to how much and how frequently cash can be paid out of the profits of an organisation as income for its owners/shareholders. The owner of any profit-making organization looks for reward for his investment in two ways, the growth of the capital invested and the cash paid out as income; for a sole trader this income would be termed as drawings and for a limited liability company the term is *dividends*.

Short- term Finance Decisions/Function

Working capital Management (WCM): Generally short term decision is reduced to management of current asset and current liability (i.e., working capital Management).

(b) Equivalent Annualized Criterion: This method involves the following steps-

(i) Compute NPV using the WACC or discounting rate.

(ii) Compute Present Value Annuity Factor (PVAF) of discounting factor used above for the period of each project.

(iii) Divide NPV computed under step (i) by PVAF as computed under step (ii) and compare the values.

(c) Significance of the Cost of Capital: The cost of capital is important to arrive at correct amount and helps the management or an investor to take an appropriate decision. The correct cost of capital helps in the following decision making:

(i) Evaluation of investment options: The estimated benefits (future cashflows) from available investment opportunities (business or project) are converted into the present value of benefits by discounting them with the relevant cost of capital. Here it is pertinent to mention that every investment option may have different cost of capital hence it is very important to use the cost of capital which is relevant to the options available. Here Internal Rate of Return (IRR) is treated as cost of capital for evaluation of two options (projects).

(ii) Performance Appraisal: Cost of capital is used to appraise the performance of a particulars project or business. The performance of a project or business in compared against the cost of capital which is known here as cut-off rate or hurdle rate.

(iii) Designing of optimum credit policy: While appraising the credit period to be allowed to the customers, the cost of allowing credit period is compared against the benefit/ profit earned by providing credit to customer of segment of customers. Here cost of capital is used to arrive at the present value of cost and benefits received.

OR

Sources of Short Term Finance: There are various sources available to meet short-term needs of finance. The different sources are discussed below-

(i) Trade Credit: It represents credit granted by suppliers of goods, etc., as an incident of sale. The usual duration of such credit is 15 to 90 days. It generates automatically in the course of business and is common to almost all business operations. It can be in the form of an 'open account' or 'bills payable'.

(ii) Accrued Expenses and Deferred Income: Accrued expenses represent liabilities which a company has to pay for the services which it has already received like

wages, taxes, interest and dividends. Such expenses arise out of the day-to-day activities of the company and hence represent a spontaneous source of finance.

Deferred Income: These are the amounts received by a company in lieu of goods and services to be provided in the future. Since these receipts increases a company's liquidity, they are also considered to be an important sources of short-term finance.

(iii) Advances from Customers: Manufacturers and contractors engaged in producing or constructing costly goods involving considerable length of manufacturing or construction time usually demand advance money from their customers at the time of accepting their orders for executing their contracts or supplying the goods. This is a cost free source of finance and really useful.

(iv) Commercial Paper: A Commercial Paper is an unsecured money market instrument issued in the form of a promissory note. The Reserve Bank of India introduced the commercial paper scheme in the year 1989 with a view to enabling highly rated corporate borrowers to diversify their sources of short-term borrowings and to provide an additional instrument to investors.

(v) Treasury Bills: Treasury bills are a class of Central Government Securities. Treasury bills, commonly referred to as T-Bills are issued by Government of India to meet short term borrowing requirements with maturities ranging between 14 to 364 days.

(vi) Certificates of Deposit (CD): A certificate of deposit (CD) is basically a savings certificate with a fixed maturity date of not less than 15 days up to a maximum of one year.

(vii) Bank Advances: Banks receive deposits from public for different periods at varying rates of interest. These funds are invested and lent in such a manner that when required, they may be called back. Lending results in gross revenues out of which costs, such as interest on deposits, administrative costs, etc., are met and a reasonable profit is made. A bank's lending policy is not merely profit motivated but has to also keep in mind the socio- economic development of the country. Some of the facilities provided by banks are Short Term Loans, Overdraft, Cash Credits, Advances against goods, Bills Purchased/Discounted.

(viii) Financing of Export Trade by Banks: Exports play an important role in accelerating the economic growth of developing countries like India. Of the several factors influencing export growth, credit is a very important factor which enables exporters in efficiently executing their export orders. The commercial banks provide short-term export finance mainly by way of pre and post-shipment credit. Export finance is granted in Rupees as well as in foreign currency.

(ix) Inter Corporate Deposits: The companies can borrow funds for a short period say 6 months from other companies which have surplus liquidity. The rate of interest on

inter corporate deposits varies depending upon the amount involved and time period.

(x) Certificate of Deposit (CD): The certificate of deposit is a document of title similar to a time deposit receipt issued by a bank except that there is no prescribed interest rate on such funds.

The main advantage of CD is that banker is not required to encash the deposit before maturity period and the investor is assured of liquidity because he can sell the CD in secondary market.

(xi) Public Deposits: Public deposits are very important source of short-term and medium term finances particularly due to credit squeeze by the Reserve Bank of India. A company can accept public deposits subject to the stipulations of Reserve Bank of India from time to time maximum up to 35 per cent of its paid up capital and reserves, from the public and shareholders. These deposits may be accepted for a period of six months to three years. Public deposits are unsecured loans; they should not be used for acquiring fixed assets since they are to be repaid within a period of 3 years. These are mainly used to finance working capital requirements.

PAPER – 8 : FINANCIAL MANAGEMENT AND ECONOMICS FOR FINANCE

SECTION – B: ECONOMICS FOR FINANCE

*Question No. **7** is compulsory.*

*Answer any **three** from the rest.*

Question 7

(a) *Compute the amount of subsidies from the following data:*

GDP at market price (₹ in crores)	*7,79,567*
Indirect Taxes (₹ in crores)	*4,54,367*
GDP at factor cost (₹ in crores)	*3,60,815* **(3 Marks)**

(b) *What do you mean by 'Global Public Goods'? Explain in brief.* **(2 Marks)**

(c) *Compute reserve money from the following data published by RBI:*

	(₹ in crores)
Net RBI credit to the government	*8,51,651*
RBI Credit to the commercial sector	*2,62,115*
RBI' s claim on Banks	*4.10,315*
Government's Currency liabilities to the public	*1,85,060*
RBI's net foreign assets	*72,133*
RBI's net non-monetary liabilities	*68,032*

(3 Marks)

(d) *Explain the term 'Real Exchange Rate'.* **(2 Marks)**

Answer

(a) Gross Domestic Product at Market Price (GDP $_{MP}$) = Gross Domestic Product at Factor Cost (GDP$_{FC}$) + (Indirect Taxes – Subsidies)

∴ Subsidies = GDP$_{FC}$ + Indirect tax - GDP$_{MP}$

= 360815 + 454367 – 779567

= ₹ 35,615 Crores

(b) **Global Public Goods** are those public goods with benefits /costs that potentially extend to everyone in the world. These goods have widespread impact on different countries and regions, population groups and generations throughout the entire globe. Global Public Goods may be:

- final public goods which are 'outcomes' such as ozone layer preservation or climate change prevention, or

- intermediate public goods, which contribute to the provision of final public goods. e.g. International health regulations

  The distinctive characteristic of global public goods is that there is no mechanism (either market or government) to ensure an efficient outcome.

  The World Bank identifies five areas of global public goods which it seeks to address: namely, the environmental commons (including the prevention of climate change and biodiversity), communicable diseases (including HIV/AIDS, tuberculosis, malaria, and avian influenza), international trade, international financial architecture, and global knowledge for development.

(c) **Reserve Money** = Net RBI credit to the Government + RBI credit to the Commercial sector + RBI's Claims on banks + RBI's net Foreign assets + Government's Currency liabilities to the public – RBI's net non - monetary Liabilities.

= 851651 + 262115 + 410315 + 72133 + 185060 -68032

= 1713242 crores

(d) The Real Exchange Rate (RER) compares the relative price of the consumption baskets of two countries, i.e. it describes 'how many' of a good or service in one country can be traded for 'one' of that good or service in a foreign country. Unlike nominal exchange rate which assumes constant prices of goods and services, the real exchange rate incorporates changes in prices. The real exchange rate therefore is the exchange rate times the relative prices of a market basket of goods in the two countries and is calculated as:

Real exchange rate = Nominal exchange rate X $\dfrac{\text{Domestic Price Index}}{\text{Foreign Price Index}}$

Question 8

(a) *(i)* *Describe the problems in administering an efficient pollution tax.* **(3 Marks)**

(ii) *Explain the open market operations conducted by RBI.* **(2 Marks)**

(b) *(i)* *Explain the key features of modem theory of international trade.* **(3 Marks)**

(ii) *Distinguish between 'pump priming' and 'compensatory spending'* **(2 Marks)**

Answer

(a) **(i)** Pollution tax is imposed on the polluting firms in proportion to their pollution output to ensure internalization of externalities. Following are the problems in administering an efficient pollution tax:

1. Pollution taxes are complex to determine and administer because it is difficult to discover the right level of taxation that would ensure that the private cost plus taxes will exactly equate with the social cost.

2. If the demand for the good on which pollution tax is imposed is inelastic, the tax may only have an insignificant effect in reducing demand. The producers will be able to easily shift the tax burden in the form of higher product prices. This will have an inflationary effect and may reduce consumer welfare.

3. Imposition of pollution tax involves the use of complex and costly administrative procedures for monitoring the polluters.

4. Pollution tax does not provide any genuine solutions to the problem. It only establishes an incentive system for use of methods which are less polluting.

5. Pollution taxes also have potential negative consequences on employment and investments because high pollution taxes in one country may encourage producers to shift their production facilities to those countries with lower pollution taxes.

(ii) **Open Market Operations (**OMO) is a general term used for monetary policy involving market operations conducted by the Reserve Bank of India by way of sale/ purchase of government securities to/ from the market with an objective to adjust the rupee liquidity conditions in the market on a durable basis.

When the Reserve Bank of India feels that there is **excess rupee liquidity** in the market, it resorts to sale of government securities for absorption of the excess liquidity. Similarly, when the **liquidity conditions are tight**, the RBI will buy securities from the market, thereby injecting liquidity into the market.

(b) **(i)** The Heckscher-Ohlin theory of trade, also referred to as Factor-Endowment Theory of Trade or Modern Theory of Trade, emphasises the role of a country's factor endowments in explaining the basis for its trade. 'Factor endowment' refers to the overall availability of usable resources including both natural and man-made means of production.

If two countries have different factor endowments under identical production function and identical preferences, then the difference in factor endowment results in two countries having different factor prices and different cost functions. In this model a country's advantage in production arises solely from its relative factor abundance. Thus, comparative advantage in cost of production is explained exclusively by the differences in factor endowments of the nations.

According to this theory, international trade is but a special case of inter-regional trade. Different regions have different factor endowments, that is, some regions have abundance of labour, but scarcity of capital; whereas other regions have abundance of capital, but scarcity of labour. Thus, each region is suitable for the production of those goods for whose production it has relatively plentiful supply of the requisite factors. The theory states that a country's exports depend on its resources endowment i.e. whether the country is capital-abundant or labour-abundant. A country which is capital-abundant will export capital-intensive goods. Likewise, the country which is labor-abundant will export labour-intensive goods.

The Heckscher-Ohlin Trade Theorem establishes that a country tends to specialize in the export of a commodity whose production requires intensive use of its abundant resources and imports a commodity whose production requires intensive use of its scarce resources.

The Factor-Price Equalization Theorem which is a corollary to the Heckscher-Ohlin trade theory states that in the absence of foreign trade, it is quite likely that factor prices are different in different countries. International trade equalizes the absolute and relative returns to homogenous factors of production and their prices. This implies that the wages and rents will converge across the countries with free trade, or in other words, trade in goods is a perfect substitute for trade in factors. The Heckscher-Ohlin theorem thus postulates that foreign trade eliminates the factor price differentials.

(ii) A distinction may be made between the two concepts of public spending during depression, namely, the concept of 'pump priming' and the concept of 'compensatory spending'. **Pump priming** involves a one-shot injection of government expenditure into a depressed economy with the aim of boosting business confidence and encouraging larger private investment. It is a temporary fiscal stimulus in order to set off the multiplier process. The argument is that with a temporary injection of purchasing power into the economy through a rise in government spending financed by borrowing rather than taxes, it is possible for government to bring about permanent recovery from a slump. **Compensatory spending** is said to be resorted to when the government spending is deliberately carried out with the obvious intention to compensate for the deficiency in private investment.

Question 9

(a) The price index for exports of Bangladesh in the year 2018-19 (based on 2010-11) was 233.73 and the price index for imports of it was 220.50 (based on 2010-11)

(i) What do these figures mean?

(ii) Calculate the index of terms of trade for Bangladesh.

(iii) How would you interpret the index of terms of trade for Bangladesh? **(5 Marks)**

(b) (i) Explain the consumption function using a suitable table and diagram. **(3 Marks)**

(ii) Distinguish between positive and negative externalities. **(2 Marks)**

Answer

(a) (i) The figures represent foreign trade price indices which are compiled using prices of specified group of commodities exported from and imported by Bangladesh in the year 2018-19. Both indices have a base year of 2010 -11 (=100) and the price changes are measured in relation to that figure. In the current year, the import price index of 220.50 indicates that there has been a 120.50 percent increase in price since 2010-11 and export price index shows that there is 133.73 percent increase in

export prices. These indices track the changes in the price which firms and countries receive / pay for products they export/ import and can be used for assessing the impact of international trade on the domestic economy.

(ii) Terms of trade for Bangladesh (ToT) is given by

$$\text{Terms of Trade} = \frac{\text{Price index of Bangladesh export}}{\text{Price index of Bangladesh import}} \times 100$$

$$\frac{233.73}{220.50} \times 100 = 106$$

(iii) 'Terms of trade' is defined as the ratio between the index of export prices and the index of import prices. It is the relative price of a country's exports in terms of its imports and can be interpreted as the amount of import goods an economy can purchase per unit of export goods. If the export prices increase more than the import prices, a country has positive terms of trade, because for the same amount of exports, it can purchase more imports.

In the given problem, with a ToT of 106, a unit of exports by Bangladesh will buy six percent more of imports. In other words, from the sale of home produced goods at higher export prices and the purchase of foreign produced goods at lower prices, trade will result in Bangladesh obtaining a greater volume of imported products for a given volume of the exported product. This indicates increased welfare for Bangladesh.

(b) (i) Consumption function expresses the functional relationship between aggregate consumption expenditure and aggregate disposable income, expressed as:

C = f (Y)

When income is low, consumption expenditures of households will exceed their disposable income and households dissave i.e. they either borrow money or draw from their past savings to purchase consumption goods. If the disposable income increases, consumers will increase their planned expenditures and current consumption expenditures rise, but only by less than the increase in income. This can be illustrated with the following table and diagram:
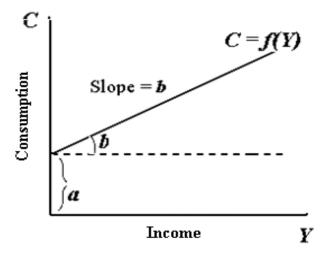
Disposable Income (Yd) (₹ Crores)	Consumption (C) (₹ Crores)
0	30
100	100
200	170
300	240
400	310

500	380
600	450
700	520

The specific form of consumption function, proposed by Keynes is as follows:

C = a + bY

where C = aggregate consumption expenditure; **Y**= total disposable income; *a* is a constant term which denotes the (positive) value of consumption at zero level of disposable income; and the parameter *b*, the slope of the function, (Δ**C** /ΔY) is the marginal propensity to consume (MPC) i.e the increase in consumption per unit increase in disposable income.

(ii)   An externality is defined as the uncompensated impact of one person's production and/or consumption actions on the well-being of another who is not involved in the activity and such effects are not reflected directly in market prices. If the impact on the third parties' is adverse, it is called a negative externality. If it is beneficial, it is called a positive externality.

When **negative externalities** are present, the social cost of production or consumption is greater than the private cost. The benefit of a negative externality goes to the agent producing it, while the costs are invariably borne by the society at large.
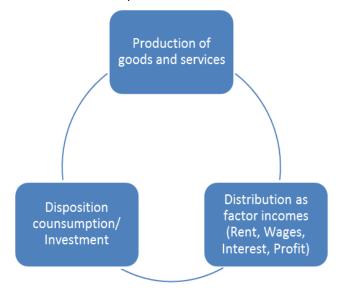
When a **positive externality** exists, the benefit to the individual or firm is less than the benefit to the society i.e. the social value of the good exceeds the private value. In both cases, the outcome is market failure and inefficient allocation of resources.

Question 10

(a) (i) *Explain the circular flow of income in an economy.* **(3 Marks)**

(ii) *How does the WTO agreement ensure market access?* **(2 Marks)**

(b) (i) *How does a discretionary fiscal policy help in correcting instabilities in the economy?* **(3 Marks)**

(ii) *Explain 'Reverse Repo Rate'.* **(2 Marks)**

Answer

(a) (i) Circular flow of income refers to the continuous circulation of production, income generation and expenditure involving different sectors of the economy. There are three different interlinked phases in a circular flow of income, namely: production, distribution and disposition as can be seen from the following figure*.

Circular Flow of Income

(i) In the production phase, firms produce goods and services with the help of factor services.

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* *The circular flow of income describes the flows of money among the different sectors of an economy namely, household sector, firm sector, government sector, foreign sector and financial sector. It is studied using different models as two sector, three sectors, four sectors etc. and therefore cannot be summarized to fit into a three marks question. The answer given is a simple version of the circular flow which is the basis of national income accounting, namely, Gross Domestic Product (GDP) = income = production = spending.*

(ii) In the income or distribution phase, there is a flow of factor incomes in the form of rent, wages, interest and profits from firms to the households.

(iii) In the expenditure or disposition phase, the income received by different factors of production is spent on consumption goods and services and investment goods. This expenditure leads to further production of goods and services and sustains the circular flow.

It is clear from the figure that income is first generated in production unit, then it is distributed to households in the form of wages, rent, interest and profit. This increases the demand for goods and services and as a result there is increase in consumption expenditure. This leads to further production   of goods and services and thus make the circular flow complete. These processes of production, distribution and disposition keep going on simultaneously.

(ii) The principal objective of the WTO is to facilitate the flow of international trade smoothly, freely, fairly and predictably. The WTO agreement aims to increase world trade by enhancing market access by the following:

(i) The agreement specifies the conduct of trade without discrimination. The Most-favoured-nation (MFN) principle holds that if a country lowers a trade barrier or opens up a market, it has to do so for the same goods or services from all other WTO members.

(ii) The National Treatment Principle requires that a country should not discriminate between its own and foreign products, services or nationals. With respect to internal taxes, internal laws, etc. applied to imports, treatment not less favourable than that which is accorded to like domestic products must be accorded to all other members.

(iii) The principle of general prohibition of quantitative restrictions

(iv) By converting all non- tariff barriers into tariffs which are subject to country specific limits.

(v) The imposition of tariffs should be only legitimate measures for the protection of domestic industries, and tariff rates for individual items are being gradually reduced through negotiations 'on a reciprocal and mutually advantageous' basis.

(vi) In major multilateral agreements like the Agreement on Agriculture (AOA), specific targets have been specified for ensuring market access.

(b) (i) Discretionary fiscal policy for stabilization refers to the deliberate policy actions on the part of a government to change the levels of expenditure, taxes and borrowing to influence the level of national output, employment and prices. Governments aim to correct the instabilities in the economy by changing:

(i) the level and types of taxes,

(ii)   the extent and composition of spending, and

(iii) the quantity and form of borrowing.

During inflation, or during the expansionary phase of the business cycle when there is excessive aggregate spending and excessive level of utilization of resources, contractionary fiscal policy is adopted to close the inflationary gap. This measure involves:

(i)   decrease in government spending,

(ii)   increase in personal and business taxes, and introduction of new taxes

(iii) a combination of decrease in government spending and increase in personal income taxes and/or business taxes

(iv)   a smaller government budget deficit or a larger budget surplus

(v)   a reduction in transfer payments

(vi)   increase in government debt from the domestic economy

During deflation or during a recessionary/contractionary phase of the business cycle, with sluggish economic activity when the rate of utilization of resources is less, expansionary fiscal policy aims to compensate the deficiency in effective demand by boosting aggregate demand. The recessionary gap is set right by:

(i)   increased government spending,

(ii)   decrease in personal and business taxes,

(iii) a combination of increase in government spending and decrease in personal income taxes and/or business taxes

(iv)   a larger government budget deficit or a lower budget surplus

(v)   an increase in transfer payments

(vi) repayment of public debt to people

(b) (ii) 'Reverse repo operation' is a monetary policy instrument and in effect it absorbs the liquidity from the system. This operation takes place when the RBI borrows money from commercial banks by selling them securities (which RBI permits) with an agreement to repurchase the securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed. The interest rate paid by the RBI for such borrowings is called the "Reverse Repo Rate". Thus, reverse repo rate is the rate of interest paid by the RBI on its borrowings from commercial banks.

Question 11

(a) (i)   Compute NNP at factor cost or national income from the following data using

income method:

	(₹ in crores)
Compensation of employees	*3,000*
Mixed income of self-employed	*1,050*
Indirect taxes	*480*
Subsidies	*630*
Depreciation	*428*
Rent	*1,020*
Interest	*2,010*
Profit	*980*
Net factor income from abroad	*370*

(3 Marks)

(ii) *Compute credit multiplier if the Requited Reserve Ratio is 10% and 12.5% for every ₹ 1,00,000 deposited in the banking system. What will be the total credit money created by the banking system in each case?* *(2 Marks)*

(b) (i) *Explain the neo-classical approach to demand for money.* *(3 Marks)*

(ii) *What is 'Recessionary Gap'?* *(2 Marks)*

OR

What is meant by 'Bound tariff'? *(2 Marks)*

Answer

(a) (i) NNP_{FC} or NI = Compensation of employees + Operating Surplus (rent + interest+ profit) + Mixed Income of Self- employed + Net Factor Income from Abroad

= 3,000+ (1,020+2,010+980) +1,050+370 =**₹ 8,430 Crores**

(ii) The credit multiplier is the reciprocal of the required reserve ratio.

$$\text{Credit Multiplier} = \frac{1}{\text{Required Reserve Ratio}}$$

For RRR = 0.10 i.e. 10% the Credit Multiplier = 1/ 0.10 = 10

For RRR = 0.125 i.e. 12.5% Credit Multiplier = 1/ 0.125 = 8

Credit Creation = Initial Deposit x 1/RRR

For RRR = 0.10, Credit creation will be 1, 00,000 x 1/0.10 = ₹ 10, 00,000

For RRR = 0. 125, Credit creation will be 1, 00,000 x 1/0. 125 = ₹ 8, 00,000

(b) (i) The Neo classical Approach or the cash balance approach put forth by Cambridge economists holds that money increases utility in the following two ways:

1. for transaction motive, i.e. for enabling the possibility of split-up of sale and purchase to two different points of time rather than being simultaneous

2. as a temporary store of wealth i.e. for a hedge against uncertainty

Since demand for money also involves a precautionary motive in this approach and money gives utility in its store of wealth and precautionary modes, money is demanded for itself. How much money will be demanded depends:

(i) partly on income which points to transactions demand, such that higher the income, the greater the quantity of purchases and as a consequence greater will be the need for money as a temporary abode of value to overcome transactions costs, and

(ii) partly on other factors of which important ones are wealth and interest rates.

The Cambridge equation is stated as:

Md = k PY

Where

Md = is the demand for money

Y = real national income

P = average price level of currently produced goods and services

PY = nominal income

k = proportion of nominal income (PY) that people want to hold as cash balances

The term 'k' in the above equation is called 'Cambridge k'. The equation above explains that the demand for money (M) equals k proportion of the total money income. The neoclassical theory changed the focus of the quantity theory of money to money demand and hypothesized that demand for money is a function of money income.

(ii) A recessionary gap, also known as a contractionary gap, is said to exist if the existing levels of aggregate production is less than what would be produced with full employment of resources. It is a measure of output that is lost when actual national income falls short of potential income, and represents the difference between the actual aggregate demand and the aggregate demand which is required to establish the equilibrium at full employment level of income. This gap occurs during the contractionary phase of business-cycle and results in higher rates of unemployment. In other words, a recessionary gap occurs when the aggregate demand is not sufficient to create conditions of full employment.

OR

A bound tariff is a tariff which a WTO member binds itself with a legal commitment not to raise it above a certain level. By binding a tariff, often during negotiations, the members agree to limit their right to set tariff levels beyond a certain level. The bound rates are specific to individual products and represent the maximum level of import duty that can be levied on a product imported by that member. A member is always free to impose a tariff that is lower than the bound level. Once bound, a tariff rate becomes permanent and a member can only increase its level after negotiating with its trading partners and compensating them for possible losses of trade. A bound tariff ensures transparency and predictability in trade.