

1.c) Ref	Calculation of Cost	Amount in Tk.
1	Raw Material used	40,000
2	Direct Wages	(1400*20) 28,000
3	Direct Expenses	<u>70,000</u>
4	Prime cost (1+2+3)	<u>138,000</u>
5	Factory Overheads	
6	Indirect Material	40,000
7	Indirect Labour	90,000
8	Total Factory Overheads (6+7)	130,000
9	Total Manufacturing Cost (4+8)	<u>268,000</u>
10	+WIP (BB)	50,000
11	-WIP (CB)	60,000
12	Cost of Goods Manufactured (9+10-11)	<u>258,000</u>
13	+Finished Goods(BB)	140,000
14	-Finished Goods (CB)	80,000
15	Cost of Goods Sold (12+13-14)	<u>318,000</u>
16	Fixed Administrative Expenses	60,000
17	Variable (10% of Prime Cost)	13,800
18	Total Administrative Expenses (16+17)	<u>73,800</u>
19	Fixed Selling Expenses	30,000
20	Variable (5% of COGM)	12,900
21	Total Selling Expenses (19+20)	<u>42,900</u>
22	Total Cost (15+18+21)	<u>434,700</u>
23	Sales [Total Cost/(1-Profit Rate)]	<u>511,412</u>

Particulars	
Raw material used	40,000
Work in Process-Beginning	50,000
Work in Process-Ending	60,000
Finished Goods-Beginning	140,000
Finished Goods-Closing	80,000
Direct Wages	1,400 Hours @ Tk.20 per Hour
Direct Expenses	70,000
Indirect Material	40,000
Indirect Labour	90,000
General & Administrative Expense:	
Fixed	60,000
Variable	
Marketing Expenses	
Fixed	
Variable	5% of Cost of Goods Manufactured
Profit	15% on Sales

2(b) We are given,

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Particulars	Company A	Company B
Capacity Utilization	85%	80%
Sales	Tk. 60,00,000	Tk. 50,00,000
Variable Cost	Tk. 40,00,000	Tk. 35,00,000
Fixed Cost	Tk. 10,00,000	Tk. 8,00,000

(i)

	Company A	Company B
Contribution Margin		
= Sales - Variable Cost	60,00,000 - 40,00,000 = 20,00,000 Tk.	50,00,000 - 35,00,000 = 15,00,000 Tk.
Contribution Margin Ratio (cmr)	$\frac{20,00,000}{60,00,000}$ = 33.33%	$\frac{15,00,000}{50,00,000}$ = 30%
Break-Even Sales (Fixed cost/cmr)	$\frac{10,00,000}{33.33\%}$ = 30,00,300 Tk.	$\frac{8,00,000}{30\%}$ = 26,66,666 Tk.

(ii)

Merged Sales = (60,00,000 + 50,00,000) = 110,00,000 Tk.
 Merged Variable Cost = (40,00,000 + 35,00,000) = Tk. 75,00,000
 Merged Fixed cost = (10,00,000 + 8,00,000) = Tk. 18,00,000
 Merged Contribution Margin = (110,00,000 - 75,00,000) = Tk. 35,00,000
 Merged Contribution Margin Ratio = $\frac{35,00,000}{110,00,000} = 31.82\%$
 Break-Even Sales of Merged plant = $\frac{18,00,000}{31.82\%} = 56,56,820$

(iii)

	Company A	Company B
Sales @ 90% capacity utilization	$\frac{60,00,000}{85} \times 90$ = 63,52,941	$\frac{50,00,000}{80} \times 90$ = 56,25,000
Variable cost Ratio	$\frac{40,00,000}{60,00,000} = 0.67$	$\frac{35,00,000}{50,00,000} = 0.70$
Merged Sales @ 90% capacity utilization	= (63,52,941 + 56,25,000) = 11,97,79,41	
Variable cost @ 90% capacity utilization	$(63,52,941 \times 0.67)$ = 42,56,470 Tk.	$(56,25,000 \times 0.70)$ = 39,37,500 Tk.
Merged variable cost	= (42,56,470 + 39,37,500) = Tk. 81,93,970	
Merged contribution Margin	= (11,97,79,41 - 81,93,970) = Tk. 37,83,971	
Contribution Margin Ratio	= $\frac{37,83,971}{11,97,79,41} = 31.59\%$	
Profit of merged plant @ 90% capacity	= (37,83,971 - 18,00,000) = Tk. 19,83,971	

[Due to taking decimals, the answers might deviate; However marks may be given, if the process is correct]

- (iv) In order to earn profit of Tk. 25,00,000 from the merged plant, the sales turnover will be -

$$\text{Sales Turnover} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution Margin Ratio}}$$

$$\begin{aligned} \text{Contribution Margin Ratio} &= 31.82\% = \frac{(10,00,000 + 800,000 - 300,000) + 25,00,000}{0.3182} \\ &= (15,00,000 + 25,00,000) / 0.3182 \\ &= \text{Tk. } 125,70,710 \end{aligned}$$

$$3(b)i) \text{ Net Income Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

$$= \frac{500,000}{32,00,000} = 15.62\%$$

$$(ii) \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{16,50,000}{13,50,000} = 1.22 \text{ times}$$

$$(iii) \text{ Acid Test Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liability}}$$

$$= \frac{16,50,000 - 50,000}{13,50,000} = 1.19 \text{ times}$$

$$(iv) \text{ Long-Term Debt to Equity Ratio} = \frac{10,00,000}{30,00,000 + 500,000}$$

$$= (\text{Long term Debt/Equity}) = 10,00,000 / 35,00,000 = 0.29 \text{ times}$$

$$(v) \text{ Time Interest Earned Ratio} = \frac{\text{Earnings Before Interest and Tax}}{\text{Interest}}$$

$$\text{Interest} = 10,00,000 @ 10\% = 100,000$$

Since EBIT is not given we consider

$$\text{Net Income} = 500,000$$

Since tax is to be ignored so it is also EBT

$$\text{So EBIT} = \text{EBT} + \text{Interest} = (500,000 + 100,000) = 600,000$$

(* If anyone calculate EBIT from NI adding back the interest it will be acceptable)
since operating expenses is not given

$$(vi) \text{ Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets (Current + Fixed Assets)}}$$

$$= \frac{500,000}{(16,50,000 + 47,00,000)}$$

$$= \frac{500,000}{63,50,000} = 7.87\%$$

$$(vii) \text{ Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

$$= \frac{500,000}{(30,00,000 + 500,000)}$$

$$= \frac{500,000}{35,00,000} = 14.28\%$$

$$(viii) \text{ Price-Earning (P/E) Ratio} = \frac{\text{Price Per share}}{\text{Earnings Per share}}$$

$$\text{Earning per share} = \frac{\text{Net Income}}{\text{No. of share}} = \frac{11.20}{1.67}$$

$$= \frac{500,000}{300,000} = 6.71 \text{ times}$$

$$= 1.67$$

4)

Month of 202A	Sales	Raw Material	Wages	Overhead
January	150,000	75,000	10,000	25,000
February	160,000	80,000	11,000	26,000
March	170,000	85,000	12,000	30,000
April	180,000	90,000	13,000	31,000
May	190,000	95,000	14,000	32,000
June	200,000	100,000	15,000	33,000

Ref	Cash Budget April-June 202A				
	Particulars	April	May	June	Quarter (April-June)
1	Cash in Hand (OB)	100,000	113,000	138,500	100,000
2=3+4+5	Sales	166,000	175,500	185,000	526,500
3	60% Current Month	108,000	114,000	120,000	
4	20% Previous Month	34,000	36,000	38,000	
5	15% Before Previous Month	24,000	25,500	27,000	
6	Expenses:				
7	Raw Material (2 Months Credit)	80,000	85,000	90,000	255,000
8	Wages (No Lag in Payment)	13,000	14,000	15,000	42,000
9	Overheads (1 Month Lag in Payment)	30,000	31,000	32,000	93,000
10	Plant	10,000	10,000	10,000	30,000
11	Research Expenditure	10,000			10,000
12	Hire Purchase	10,000	10,000	10,000	30,000
13	Payment of Tax			100,000	100,000
14	Dividend Income			50,000	50,000
15=2+14	Total Cash Inflow	166,000	175,500	235,000	576,500
16=7 to13	Total Cash outflow	153,000	150,000	257,000	560,000
17=1+15-16	Cash in Hand (OB+Inflow-Outflow)	113,000	138,500	116,500	116,500

5(b) We are given, $PMT = \text{Grant} = \text{Tk. } 300,000$. $n = 10 \text{ years}$.

$i = \text{Rate of Return} = 8\% \text{ (Annually)}$

We have to find out the Present Value i.e. PVA

We know,

$$PVA = PMT \times PVIFA_{i, n \text{ years}}$$

$$= 300,000 \times PVIFA_{6\%, 10 \text{ year}}$$

$$= 300,000 \times 7.3601 \quad [\text{From PVIFA Table } 6\%, 10 \text{ year}]$$

$$= 2,208,030 \text{ Tk. (Ans)}$$

[Considering Ordinary Annuity]

(b) Requirement of fund Tk. 10,00,000 after 5 years

Salvage Value Tk. 2,00,000

Actual Requirement Tk. 800,000 which is FVA

$i = \text{Rate of Return} = 8\% \text{ (Annually)}$

$n = \text{Number of years} = 5$, We have to find out $PMT = \text{Investment in each year}$

We know, $FVA = PMT \times FVIFA_{i, n \text{ years}}$

$$\Rightarrow 800,000 = PMT \times FVIFA_{8\%, 5 \text{ years}} \quad [\text{Considering ordinary Annuity}]$$

$$\Rightarrow 800,000 = PMT \times 5.8666 \quad [\text{From FVIFA table } 8\%, 5 \text{ years}]$$

$$\Rightarrow PMT = 800,000 / 5.8666 = \text{Tk. } 136,365 \text{ (Ans)}$$

(c) Price of flat = Tk. 55,00,000

Downpayment = Tk. 15,00,000

$$\text{Balance} = PVA = \text{Tk. } 40,00,000$$

$n = \text{No. of years} = 15$, $i = \text{Rate of Profit} = 10\%$

We know

$$PVA = PMT \times PVIFA_{i, n \text{ year}}$$

$$\Rightarrow 40,00,000 = PMT \times PVIFA_{10\%, 15 \text{ year}}$$

$$\Rightarrow 40,00,000 = PMT \times 7.6061 \quad [\text{From PVIFA table } 10\%, 15 \text{ year}]$$

$$\Rightarrow PMT = 40,00,000 / 7.6061$$

$$= 5,25,894 \text{ Tk. (Ans)}$$

(6)(c) Cost of Debt (K_d) = Cost \times (1 - Tax Rate)
 $= .08 \times (1 - .375)$
 $= .05 = 5\%$

Cost of Preference Share (K_p) = 9% = .09

Cost of Common Equity by using CAPM Model

$$K_e = K_f + \beta (K_M - K_f)$$

$$= .04 + 1.2 (.12 - .04)$$

$$= 0.136 = 13.60\%$$

Where,
 K_f = Risk Free Rate = .04
 β = Beta = 1.20
 K_M = Market Return = 12% = .12

Cost of Retained Earnings K_{re} = Cost of Equity = 13.60%

Source of Capital	Book Value	Weight	Cost	Weighted Cost
8% Debt	200,000	0.2352	.05	0.0117
9% Preference Share	100,000	0.1176	.09	0.0105
Common Equity	200,000	0.2352	.136	0.0319
Retained Earnings	350,000	0.4120	.136	0.0560
Total	850,000	1.000	WACC = 0.1101 = 11.01%	

WACC = 11.01%

716) ① Year	② Cash flow A	③ Cash flow B	④ Cumulative Cash flow - A	⑤ Cumulative Cash flow - B	⑥ PV @ 12%	⑦ PV @ 15%	⑧ = 6x2 ⑨ 12% PV of Project A	⑩ = 6x3 ⑪ 15% PV of Project B	⑫ 7x3 ⑬ 15% PV of Project B	Page-7
1	14,000	23,000	14,000	23,000	0.8929	0.8696	12,500	20,537	20,001	
2	14,000	12,000	28,000	35,000	0.7972	0.7561	11,161	9,566	9,073	
3	14,000	10,000	42,000	45,000	0.7118	0.6575	9,965	7,118	6,575	
4	14,000	9,000	56,000	54,000	0.6355	0.5718	8,897	5,720	5,146	
							PV 42,523	39,969	40,795	
							(-) Initial Investment 40,000	40,000	40,000	
							NPV 2,523	(31)	795	

$$(i) \text{ Payback Period} = A + \frac{NCO - C}{D} \quad (PBP)$$

$$(ii) IRR = A + \frac{C}{C-D} (B-A)$$

$$(iii) \text{ Profitability Index} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}} \quad (PI)$$

$$PI \text{ of Project A} = \frac{42,523}{40,000} = 1.06$$

$$PI \text{ of Project B} = \frac{42,941}{40,000} = 1.07$$

(iv) As per calculation, NPV of Project A = 2523 and NPV of Project B = 2941. Thus, both the projects are accepted. But if there is capital budget constraint, Project-B should be accepted as it generates higher NPV, IRR, and PI compared to Project-A.

[Note: Due to taking decimals, the answers might deviate. However marks may be given if the process is correct]