



Time Allowed – 2 Hours

Maximum Marks – 60

- (i) Attempt both the cases 1 and 2 carrying 30 marks each.
- (ii) Answers must be neat, relevant and brief.
- (iii) In marking the question paper, the examiners take into account clarity of exposition, logic of arguments, effective presentation, language and use of clear diagram or chart where appropriate.
- (iv) Read the instructions printed on the top cover of answer script CAREFULLY before attempting the paper.
- (v) Use of non-programmable scientific calculator of any model is allowed.
- (vi) DO NOT write your Name, Reg. No. or Roll No. anywhere inside the answer script.
- (vii) Multiple Choice Questions (MCQs) printed separately, is an integral part of this question paper.
- (viii) Question paper must be returned to the invigilator before leaving the examination hall.

CASE # 1

Marks

Saba Ltd., a renowned name in producing the cosmetics items. Its research department had made a report which pointed out that the users of most of the shampoos available in the market complained that their use is causing hair fall and whitening. The research department indicates that compositions of available shampoos are inappropriate. They tested a new formula of shampoo which found effective for the health of hairs. As a result Saba Ltd., decided to launch a shampoo with the name of HairCare. Initially the life of this product is estimated to five (5) years and its expected sales during five (5) years are as under:

Year	Sales in Units
1	6,000
2	10,000
3	12,000
4	13,000
5	12,000

The initial selling price of new shampoo is Rs. 240 per unit. However, due to market competition, it is expected that price will drop to Rs. 220 per unit at the beginning of the fourth year. The shampoo will require Rs. 40,000 in net working capital at the start. Subsequently, total net working capital at the end of each year will be about 15% of sales for that year. The variable cost per unit is Rs. 120, and total cash fixed costs are Rs. 50,000 per year.

A special equipment costing Rs. 1,600,000 will be required to begin the production. The equipment will have estimated salvage value of Rs. 350,000 at the end of the product life. The company intends to charge 20% depreciation using straight-line method. The tax rate is 35%, and company's WACC is 15%.

Required:

- (a) What is the NPV of the Shampoo? Would you like to recommend to Saba Ltd., to proceed with the product? Show your workings. 22
- (b) Calculate the discounted payback period of the Shampoo. 06
- (c) What is the Profitability index (PI) of the Shampoo? 02

CASE # 2

Orbit Industries manufactures and sells three (3) products, which are manufactured through processing in four (4) departments. Both labour and machine time are applied to the products as they pass through each department. The machines and labour required in each department are specialized and cannot be transferred from one department to another. Orbit Industries' management is planning its production for the next few months. The planning is complicated, because there are labour shortages in the area and some machines will have to be stopped for several months for major repairs.

Management has compiled the following information for the next six (6) months regarding available machine and labour time by department and the machine hours and direct labour hours required per unit of product:

Monthly Capacity Availability	Department			
	I	II	III	IV
Normal machine capacity (hours)	3,500	3,500	3,000	3,500
Capacity of machines being repaired (hours)	(500)	(400)	(300)	(200)
Available machine hours	3,000	3,100	2,700	3,300
Available direct labour hours	3,700	4,500	2,750	2,600

Labour and machine time per unit of each product are as under:

Product	Labour and Machine Time	Department			
		I	II	III	IV
A	Direct labour hours	2	3	3	1
	Machine hours	1	1	2	2
B	Direct labour hours	1	2	–	2
	Machine hours	1	1	–	2
C	Direct labour hours	2	2	2	1
	Machine hours	2	2	1	1

The sales department believes that the monthly demand for the next six (6) months will be as follows:

Product	Monthly Sales (Units)
A	500
B	400
C	1,000

Inventory levels are satisfactory and will not change during the next six (6) months. Unit price and cost data that will be valid for the next six (6) months are as follows:

	Rupees/ Unit		
	Product		
Unit Cost:	A	B	C
Direct material	700	1,300	1,700
Direct labour:			
Department-I	1,200	600	1,200
Department-II	2,100	1,400	1,400
Department-III	2,400	–	1,600
Department-IV	900	1,800	900
Variable overhead	2,700	2,000	2,500
Fixed overhead	1,500	1,000	3,200
Variable selling expenses	300	200	400
Unit selling price	19,600	12,300	16,700

Required:

- (a) Calculate the machine hours and direct labour hours required to produce the products 'A', 'B' and 'C' to meet the monthly sales demand of all these products. 10
- (b) Prepare monthly production schedule which will maximize the profits of Orbit Industries. Also explain how do you select this production schedule? 13
- (c) Prepare a schedule of the contribution margin that would be generated by production schedule prepared at (b) above. 04
- (d) Describe the alternatives which might be considered in order to supply all the products the customers demand. 03

THE END

PRESENT VALUE FACTORS											
Year	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.826	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.751	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.683	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.621	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.564	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.513	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.467	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.424	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.386	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162

CUMULATIVE PRESENT VALUE FACTORS											
Year	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.736	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.487	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.170	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.355	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.868	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.335	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.759	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	6.145	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192