

P P SAVANI UNIVERSITY

Seventh Sem of B. Tech. Examination

November 2022

SECH4041 Chemical Engineering Plant design, Economics & Industrial Management

24.11.2022, Thursday

Time: 10:00 a.m. To 12:30 p.m.

Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION - I

Q - 1	Define the term: (Any five)	[05]	CO	BTL
(i)	Revenue		1	1
(ii)	Breakeven point		1	1
(iii)	Working capital		3	1
(iv)	Fixed capital		3	1
(v)	Discounted payback period		3	1
(vi)	Six tenth factor for estimating equipment cost		3	1
(vii)	Cost of capital		1	1
Q - 2 (a)	Enlist various methods of Profitability Analysis. Explain any two methods.	[05]	2	2
Q - 2 (b)	Enlist the factors to be considered for total product cost estimation & role of chemical engineer in improving the product cost.	[05]	1	4

OR

Q - 2 (a)	Define depreciation. List methods of determining depreciation. Discuss any two in detail.	[05]	2	2
Q - 2 (b)	Write a note on Project management concepts and various method of tracking / planning projects including GANTT chart & PERT.	[05]	2	2
Q - 3 (a)	List types of capital cost estimates with specific use and requirements in each of them.	[05]	2	3
Q - 3 (b)	Explain in detail difference between (1) Capital & Expense and (2) Salvage value & Scrap value.	[05]	2	2

OR

Q - 3 (a)	What are alternative investments and replacements in chemical industry. Discuss various practical aspects of both.	[05]	3	5
Q - 3 (b)	Write a note on time value of money.	[05]	2	2
Q - 4	Attempt any one.	[05]	1	5
(i)	Compared to installed system of SPD at Rs 30 lakhs capital & Rs. 2 lakhs annual expenses, a new technology SPD is available with Rs 20 lakhs capital & Rs. 0.5 lakhs annual expenses. If expected rate of return is 11%, whether changing over to new technology SPD advisable?		1	5
(iii)	In case of Project A, four years cash flow respectively is Rs 1.5 lakh, Rs. 0.75 Lakhs and 0.5 lakhs & Rs 1.0 lakhs. In case of Project B, four years cash flow respectively are Rs. 0.5 lakhs, Rs. 0.75 lakhs, Rs. 1.5 lakhs & Rs. 1.0 lakhs. Which one of two is better project?			

SECTION - II

Q - 1	Discuss Selection of process-factors affecting process selection.	[05]	2	2
Q - 2 (a)	Distinguish between Standard versus special equipment-material of	[05]	2	2

	construction for process equipment			
Q - 2 (b)	Explain in details: Plant location and layout & Factors affecting plant location.	[05]	3	4
	OR			
Q - 2 (a)	What are various methods used for Fixed capital cost estimates? Explain any two of them in detail.	[05]	1	1
Q - 2 (b)	Explain about (i) physical depreciation and (ii) functional depreciation.	[05]	2	2
Q - 3 (a)	Define: (i) payback period (ii) net present worth (iii) rate of return on investment.	[05]	2	2
Q - 3 (b)	With suitable example write in brief about salvage value.	[05]	3	1
	OR			
Q - 3 (a)	Discuss the Importance of laboratory development of Pilot plants.	[05]	1	2
Q - 3 (b)	Discuss material of constructions for process equipment.	[05]	1	2
Q - 4	Discuss some important factors in scale up methods for the equipment.	[05]	4	2

CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create