

CVL775		CONSTRUCTION ECONOMICS AND FINANCE	MINOR EXAMINATION	
Time allowed 1 hour	16:00 - 17:00		Maximum Marks	20
Venue	LH 410		Date	08.02.2023

ANSWER ALL QUESTIONS. EVALUATION WOULD BE DONE ON THE BASIS OF STEPS USED IN THE SOLUTION. ASSUME MISSING DATA SUITABLY IF REQUIRED. USE OF SCIENTIFIC CALCULATOR, INTEREST TABLE, AND FORMULA SHEETS ARE ALLOWED.

Q.1 [6 Marks]

A glass manufacturing company has four different alternatives to manufacture glass bottles. The details are given in the following table.

Description	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Initial cost (INR)	15,000	18,000	16,000	25,500
Net annual income (INR)	2,000	3,500	1,900	6,000
Salvage value (INR)	2,500	3,000	2,200	4,000
Useful life (Years)	10	10	10	10

If the MARR is 20% per year, then which of the alternative will be selected as the best alternatives among all?

Q.2 [6 Marks]

A construction firm has won a project at the bid price of Rs. 1000 lac. It is estimated to complete the whole project in 8 months with total execution cost as 90% of the quoted price. The monthly work completion is planned at 5%, 10%, 10%, 15%, 20%, 20%, 15% and 5% (running account bill produced every month). The relevant conditions are as follows:

1. The mobilization advance is 10%, to be recovered in 4 equal installments from the 3rd running account bill onwards.
2. Retention is 10% of every billed amount. Half of the retention is payable after one month of practical completion of the project, remaining 4 months later.
3. Of the running account bills produced, the client releases the payment under following conditions: 75% ad-hoc within a week and rest 25% at the end of the month after certification.
4. The total cost comprises of 50% labor & overheads cost (no delay in payment – paid continuously throughout the month), and 50% material cost (payment delayed by one month).

Prepare the incoming, outgoing and project cash flow diagram from the contractor's perspective. Calculate the cash requirement for the project (Highlight and justify the assumptions made by you).

Q.3 [2 Marks]

You plan to open a new savings bank account. The nominal rates of interest of banks are tabularized below. Which bank will you pick if you plan to add the interest payouts to your existing savings?

Bank	i%	Interest payout
AXD	3.25	Quarterly
SBF	3.10	Monthly
PBN	2.95	Daily
DIC	3.40	Yearly

Q.4 [2 Marks]

Mrs. G plans to install a filtered water bottling plant and finds out 2 plant setup alternatives from the existing market.

	Setup A	Setup B
Initial investment	Rs. 17 lac	Rs. 22.5 lac
Annual returns	Rs. 4 lac	Rs. 5 lac
Life span	10 years	10 years

Compare these setups on the basis of:

1. Payback period
2. Internal rate of return method

Q.5 [2 Marks]

An asset has been purchased for Rs. 200,000. The salvage value at the end of its expected life of 5 years is estimated to be Rs. 10,000. Calculate the depreciation for each year using Double Declining Balance Method. Also calculate the Book Value of the asset at the end of each year. In which year you will switch over to straight line method of depreciation if it is allowed.

Interest Tables

	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%
1	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000	1.2100
2	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400	1.4641
3	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.6016	1.6430	1.6852	1.7280	1.7716
4	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8106	1.8739	1.9388	2.0053	2.0736	2.1436
5	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.1924	2.2878	2.3864	2.4883	2.5937
6	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.5652	2.6996	2.8398	2.9860	3.1384
7	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600	2.8262	3.0012	3.1855	3.3793	3.5832	3.7975
8	2.1436	2.3045	2.4760	2.6584	2.8526	3.0590	3.2784	3.5115	3.7589	4.0214	4.2998	4.5950
9	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179	3.8030	4.1084	4.4355	4.7854	5.1598	5.5599
10	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	4.8068	5.2338	5.6947	6.1917	6.7275

(F/P, i, n)

	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%
1	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333	0.8264
2	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278	1.5095
3	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065	2.0739
4	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.7432	2.6901	2.6386	2.5887	2.5404
5	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906	2.9260
6	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255	3.2446
7	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046	3.5079
8	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372	3.7256
9	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310	3.9054
10	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925	4.0541

(P/A, i, n)