

USN

1

D

A

18ME653

Sixth Semester B. E. Degree (Autonomous) Semester End Examination, 2022

Department of Mechanical Engineering
MODEL PAPER 1

Engineering Economics

Time: 3 Hours

Maximum Marks: 100

Instructions to students:

- 1. Answer ANY ONE FULL question from EACH UNIT.**
- 2. Use black ball point pen only for text, fig, table etc.,**

UNIT-1

Q. No.	Questions	Marks	CO	RBT Level
1. (a)	Explain problem solving iteration with a sketch	10	CO1	L2
(b)	If the annual ,maintenance and operating costs of a dam are expected to be Rs 4,00,000 for the first year and increasing at a rate of 10% per year ,determine the present value of all operating costs spent over a 30 years life .assume rate of interest as 12 %. If the rate of increase per year would be 12% instead of 10%,what is the difference would it make to the answer	10	CO1	L2
OR				
2. (a)	A film star is at the height of his career .he wants to invest Rs 10 lakhs from the end of this year and follow it up with 9 lakhs ,8 lakhs and so on for the next 5 years ,when his income would go on diminishing .find the maturity amount 6 years later if a film producer agrees to pay him 15%rate of interest,compounded annually	10	CO1	L2
(b)	Explain factors influencing demand and supply	10	CO1	L3

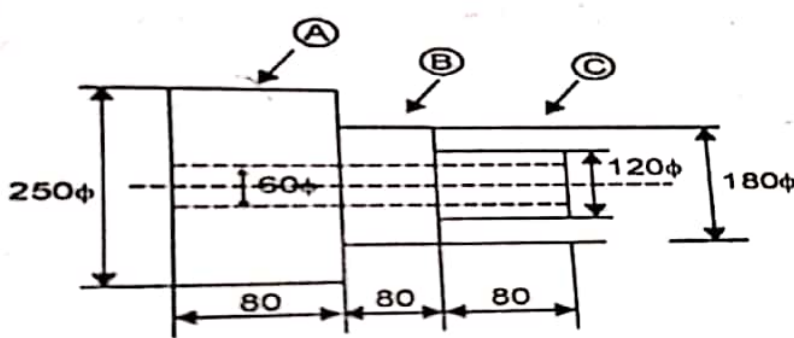
UNIT-2

3. (a)	Two holiday cottages are under consideration .compare the present worth of the cost of 24 years service ,at an interest rate of 5 percent, when neither cottage has a realizable salvage value. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; width: 80%;"> <thead> <tr> <th></th> <th>Cottage 1</th> <th>Cottage 2</th> </tr> </thead> <tbody> <tr> <td>First cost</td> <td>Rs 4,500</td> <td>Rs 10,000</td> </tr> <tr> <td>Estimated life</td> <td>12 years</td> <td>24 years</td> </tr> <tr> <td>Annual maintenance cost</td> <td>Rs 1,000</td> <td>Rs 720</td> </tr> </tbody> </table>		Cottage 1	Cottage 2	First cost	Rs 4,500	Rs 10,000	Estimated life	12 years	24 years	Annual maintenance cost	Rs 1,000	Rs 720	10	CO2	L3
	Cottage 1	Cottage 2														
First cost	Rs 4,500	Rs 10,000														
Estimated life	12 years	24 years														
Annual maintenance cost	Rs 1,000	Rs 720														

(b)	The following alternatives are available to accompany an objective of years duration.		10	CO2	L2	
		Plan A				Plan B
	Life style	6 years				3 years
	First cost	Rs. 2000				Rs.8000
	Annual cost	Rs.3200				Rs.700
Compare the present worth of the alternatives using an interest rate of 7 percent?						
OR						
4. (a)	Autocon company is evaluating three robots for possible use in its assembly operations (only one robot will be purchased). Data associated with these robots are as follows:		10	CO2	L2	
	Robot A	Robot B				
First cost Rs.	55000	58000				
Operating & maintenance cost Rs.	3000/year	4500/year				
Expected incomes	40000/year	44000/year				
Estimated salvage value Rs.	4000	6000				
Assuming a technological life of 3years and adesired interest rate of 12 percent, which robot seems to be preferable assuming all other factors are equal? Use a net present worth evaluation						
(b)	A granite company is planning to buy a fully automated granite cuttingmachine. If it is purchased under down payment, the cost of the machine is Rs. 16,00,000. If it is purchased under installment basis, the company has to pay 25% of the cost at the time of purchase and the remaining amount in 10 annual equal installments of Rs. 2,00,000 each. Suggest the best alternative for the company using the present worth basis at i = 18%, compounded annually.		10	CO2	L2	
UNIT-3						
5. (a)	EXPLAIN i)IRR and MARR ii)Cost of capital concepts.		10	CO3	L2	
(b)	A fresh mechanical engineer wants to become an entrepreneur .he starts a cad centre to give desg n solutions to small scale industries .he expects that his software and business would last for 5 years.the initial outlay and cash flow		10	CO3	L1	

pattern for the new business are listed below.find the IRR for the new business if he Estimates a salvage value of Rs, 1,00,000 at the end of 5 years																																								
period	0	1	2	3	4	5																																		
cash flow	7,00,000	180000	190000	210000	225000	200000																																		
OR																																								
6. (a)	What is depreciation and its causes explain in detail	10	CO3	L1																																				
(b)	Short notes i)Tax concepts ii)Corporate income taxes	10	CO3	L2																																				
UNIT-4																																								
7. (a)	following is the financial status of a company as on 31 st march 2017 <table><tr><td>Sundry debtors</td><td>Rs 10,000</td></tr><tr><td>Cash in hand</td><td>Rs 22,000</td></tr><tr><td>Bank loans</td><td>Rs 40,000</td></tr><tr><td>Bills payable</td><td>Rs 20,000</td></tr><tr><td>Eqity shares</td><td>Rs 1,13,000</td></tr><tr><td>Land and buildings</td><td>Rs 50,000</td></tr><tr><td>Plant and machinery</td><td>Rs 90,000</td></tr><tr><td>Inventories</td><td>Rs 15,000</td></tr><tr><td>Creditors</td><td>Rs 30,000</td></tr><tr><td>Bank balance</td><td>Rs 1,60,000</td></tr></table> Prepare a balance sheet as on 31 st march 2017	Sundry debtors	Rs 10,000	Cash in hand	Rs 22,000	Bank loans	Rs 40,000	Bills payable	Rs 20,000	Eqity shares	Rs 1,13,000	Land and buildings	Rs 50,000	Plant and machinery	Rs 90,000	Inventories	Rs 15,000	Creditors	Rs 30,000	Bank balance	Rs 1,60,000	10	CO4	L2																
Sundry debtors	Rs 10,000																																							
Cash in hand	Rs 22,000																																							
Bank loans	Rs 40,000																																							
Bills payable	Rs 20,000																																							
Eqity shares	Rs 1,13,000																																							
Land and buildings	Rs 50,000																																							
Plant and machinery	Rs 90,000																																							
Inventories	Rs 15,000																																							
Creditors	Rs 30,000																																							
Bank balance	Rs 1,60,000																																							
(b)	what is financial planning? list and explain essentials of financial planning	10	CO4	L1																																				
OR																																								
8. (a)	Calculate Current Ratio from the following Information <table><tr><td>Liabilities Rs.</td><td>Rs</td><td>Assets</td><td>Rs</td></tr><tr><td>Sundry creditors</td><td>40000</td><td>Inventories</td><td>120000</td></tr><tr><td>Bills payable</td><td>30000</td><td>Sundry debtors</td><td>140000</td></tr><tr><td>Dividend payable</td><td>36000</td><td>Cash at Bank</td><td>40000</td></tr><tr><td>Accrued expenses</td><td>14000</td><td>Bills Receivable</td><td>60000</td></tr><tr><td>Short-term advances</td><td>50000</td><td>Prepaid expense</td><td>20000</td></tr><tr><td>Share Capital</td><td>150000</td><td>Machinery</td><td>200000</td></tr><tr><td>Debenture</td><td>200000</td><td>Patents</td><td>50000</td></tr><tr><td></td><td></td><td>Land & Building</td><td>150000</td></tr></table>	Liabilities Rs.	Rs	Assets	Rs	Sundry creditors	40000	Inventories	120000	Bills payable	30000	Sundry debtors	140000	Dividend payable	36000	Cash at Bank	40000	Accrued expenses	14000	Bills Receivable	60000	Short-term advances	50000	Prepaid expense	20000	Share Capital	150000	Machinery	200000	Debenture	200000	Patents	50000			Land & Building	150000	10	CO4	L3
Liabilities Rs.	Rs	Assets	Rs																																					
Sundry creditors	40000	Inventories	120000																																					
Bills payable	30000	Sundry debtors	140000																																					
Dividend payable	36000	Cash at Bank	40000																																					
Accrued expenses	14000	Bills Receivable	60000																																					
Short-term advances	50000	Prepaid expense	20000																																					
Share Capital	150000	Machinery	200000																																					
Debenture	200000	Patents	50000																																					
		Land & Building	150000																																					
(b)	Explain journal and ledger with a small example	10	CO4	L2																																				

UNIT-5

9. (a)	<p>A CI stepped cone pulley is shown in the following figure . material cost=20/kg. Calculate the cut and material cost. Density of CI=7.009 gm/cc</p> 	10	CO5	L1
(b)	Explain 5 differences between estimation and costing	10	CO5	L2
OR				
10. (a)	Explain different types of budget	10	CO5	L2
(b)	list the important objectives of profit planning	10	CO5	L1
