POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2018
Programme: BE Full Marks: 100
Course: Engineering Economics Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is engineering economics? Why do you think studying this course is important for engineering students? Justify. 8

   b) Explain manufacturing, non-manufacturing, sunk and opportunity costs with suitable example. 7

2. a) Ramesh, an engineer is planning to place 20% of his salary, which is Rs. 250000 per year at present, each year in mutual fund. He expects 7% of his salary increase each year for next 15 years. If the mutual fund will average 10% annual return, what will be the sum amount at the end of 15 years? If salary increase by Rs. 25000 per year. What will be the amount? 8

   b) A multipurpose hydroelectric project under consideration of the government, whose estimated benefits and costs expected to be derived from the project, are listed as below: 7

End of year	Annual cash flow (Rs.)
Initial Cost	180000000
Annual power sales	12000000
Annual flood control saving	5000000
Annual irrigation benefits	8000000
Annual recreation benefits	4000000
Annual operating and maintenance costs	5000000

Suggest, based on B/C ratio, the government about implementing the project of life 40 years. MARR = 15%.

3. a) An investment of Rs. 100,000 can be made in a project that will produce uniform annual revenue of Rs. 62,100 for 5 years and then have a market salvage value of Rs. 20,000. Annul expenses will be Rs. 30,000 each year. Company accepts project that earns 10% or more. Evaluate IRR of this project and suggest whether the project is feasible or not? Also draw an investment balance diagram. 7

   b) Recommend the best project from the following two projects assume repeatability 8

Project	A	B
Initial investment (Rs.)	4,00,000	7,00,000
Annual Revenue (Rs.)	1,75,000	2,50,000
Annual Cost (Rs.)	25,000	35,000
Salvage value (Rs.)	40,000	70,000
Useful life	6 yrs	8 yrs
MARR	12%	12%

4. a) Consider the following three sets of mutually exclusive alternatives: 8

	Alternatives		
EOY	D_1 (Rs.)	D_2 (Rs.)	D_3 (Rs.)
0	-2000	-1000	-3000
1	1500	800	1500
2	1000	500	2000
3	800	500	1000

Which project would you select based on BCR method on Incremental investment assuming that MARR = 15%.

   b) From the following information, conduct scenario analysis based on FW formulation. Assume I=2,25,000, MARR=13.5%, and life of project is 5 years. Also give your remarks based on results of different scenarios. 7

Variable Considered	Worst Case Scenario	Most Likely Scenario	Best Case Scenario
Annual Sales	86,000	1,10,000	137,000
Annual Variable Cost	37,000	40,000	38,000