

# POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2017  
 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 do you mean by engineering economics? Explain the importance of engineering economics in business projects. 7
- b) Explain opportunity cost, marginal cost and sunk cost with example. 8
2. a) Calculate the future worth of the following cash flows deposited at 8% compounded continuously for 5 years. 7
  - i. Rs 50,000 at the beginning of each year.
  - ii. Rs 50,000 at the end of each year.
- b) A company is investing the purchase of new equipment. Interest rate is 9%. The cash flow for the equipment is as follows: Initial investment Rs 50,000, annual operating cost Rs 2,000, annual income Rs 9,000 and salvage value Rs 10,000, life 10 years. 8
  - i. Is this investment worth undertaking?
  - ii. What should be the minimum annual benefit for marking it a worthy of investment at 9% rate of return?
3. a) Evaluate the following project whose cash flows are given below. Use simple payback period, present worth and future worth method. MARR is 10 % per year. 8

End of year	Net cash flows (Rs.)
0	-600
1	-500
2	125
3	300
4	1,000
5	220
6	320

- b) Select which project is feasible to invest among two following alternative projects whose cash flows are as follows. MARR is 12 % per year. Use IRR method and incremental analysis. 7

Particulars	Project A (Rs)	Project B (Rs)
Initial investment	6,50,000	5,00,000
Net annual revenue	2,50,000	2,00,000
Net annual cost	50,000	40,000
Salvage value	75,000	50,000
Useful life	8 years	8 years

4. a) What do you mean by project risk? Explain briefly about the methods of project risk management. 7
- b) What do you mean by payback period? Find simple and discounted payback periods and justify invested with the given cash flow information; 8
 

Initial investment: Rs. 4,00,000  
 Annual revenue: Rs. 1,50,000  
 Annual cost: Rs. 30,000  
 Salvage value: Rs. 1,00,000  
 Useful life year: 5  
 MARR: 10%
5. a) Pokhara Photocopy Center is considered to purchase a new photocopy machine costing Rs 100,000 and expected salvage value Rs 30,000 at the end of 10<sup>th</sup> year. The machine will save Rs 20,000 by consuming electricity of Rs 6,000 per year. Find IRR and interpret your result when MARR is 8% per year. 7
- b) A construction equipment has initial cost and annual saving per year are of Rs 40,000 and Rs 20,000 respectively with annual operating and maintenance cost of Rs 7,000. It will depreciate by MARCS method and will have no salvage value. The useful life of equipment is 5 years. Estimate before and after tax cash flow. The company pays income tax @ 40%. 8
6. a) What do you know about equity financing and debt financing? Explain ways to project funding mechanisms by giving example. 6
- b) Define accounting. How do you formulate an accounting equation? What are the major ratios that can be applied in decision making process? 9
7. Write short notes on: (Any two) 2x5
  - a) Ecological limit and sustainable development
  - b) Project funding mechanism
  - c) Balance sheet