POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2015
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 meant by Engineering Economics? Describe its importance in engineering field. 7

   b) What is meant by cross elasticity of demand? Describe all types of cross elasticity of demand with suitable figures. 8

2. a) Mrs. Sharma is planning for her retired life and has 10 more years of service. She would like to deposit 20% of her salary, which is Rs 4000 at the end of first year and thereafter she wishes to deposit the amount with an annual increase of Rs 1000 for the next 9 years with an interest of 10%. Find the total amount at the end of 10th year. 8

   b) The first investment cost for a project is 500000. The net annual revenue from the end of first year onwards are 300000, 250000, 200000, 150000 and 50000 for five years. Determine whether the above investment is feasible or not if MARR = 15%. 7

3. a) Find out the B/C ration using present worth and annual worth method. 8

Initial investment	= Rs. 6,00,000
Annual benefit	= Rs. 2,50,000
Annual cost	= Rs. 30,000
Salvage value	= Rs. 40,000
MARR	= 12 % per year
Useful life	= 8 years

   b) Calculate the simple and discounted payback period of the following project. 7

Initial investment	= Rs 50000
Life of the project	= 8 years

Annual revenue = Rs. 15000
Operating cost = Rs 2000
MARR = 10%
Salvage value = Rs. 5000

4. a) Evaluate the following two feasible investments A and B having different useful lives, if MARR is 10 % per year. Use PW method with repeatability assumptions. 8

	Investment of A (Rs.)	Investment of B (Rs.)
Investment	50,000	150,000
Net annual revenue	25,000	70,000
Net annual cost	3000	2000
Salvage value	15,000	40,000
Useful life	3 years	5 years

b) Evaluate IRR of the following project and identify whether the project is feasible or not. 7

Initial investment = Rs. 6,00,000
Annual revenue = Rs. 2,50,000
Annual cost = Rs 50,000
Useful life = 10 years
Repair and maintenance cost at 4^{th} and 8^{th} year = Rs 30,000
MARR = 10 % per year

5. a) A machine costing of Rs 100,000 is estimated to have life of 10 years. The salvage value of the machine at the end of life is Rs 20000. Find depreciation charge and book value of each year and tabulate it. Use straight line and sum of years digit (SOYD) method. 7

b) Explain analytically the following ratios: 8

Debt ratio
Current ratio and
Quick ratio / acid test ratio

OR

What do you mean by balance sheet, income statement and cash flow? Explain.

6. a) What do you mean by independent, dependent and mutually exclusive project? Develop the combination of each project with suitable example. 7

b) Following information has been obtained regarding two motors. 8

	Standard motor	New Motor
Size	100 hp	100 hp
Cost	130000	156000
Life	20	20
Salvage	0	0
Efficiency	89 %	93 %
Annual maintenance cost	8000	2500
Annual tax/insurance	2 % of investment for each	
MARR	10 %/Year	

Find at what operating hours are they equivalent?

7. Write short notes on: **(Any two)** 2×5

a) Corporate tax
b) Methods of financing
c) Ecological limit and ecological footprint
d) Ledger and journal