

# POKHARA UNIVERSITY

Level: Bachelor Semester: Fall 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 Demand? What are the factors affecting demand of a commodity? Describe the law of Diminishing Utility with neat sketches. 1+2+4  
8
- b) Define Prime cost, Overhead cost, Fixed Cost, variable Cost, Opportunity cost, Sunk Cost, Marginal cost and differential cost.
2. a) Define interest and time value of money. How does Compound interest differ with simple interest? Why does bank use concept of compound interest instead of simple interest? What is the interest rate if your amount will be double in 5 years? 2+2+2+2
- b) Define nominal and effective interest rates. If you have Rs. 10,00,000 loan now from a bank, how much Rs should you pay as installment per two month for 5 years if bank interest rate is 12% per year? 2+5
3. a) A machine costs Rs. 1200000 now and its useful life is 5years. Its Salvage value is expected to be Rs. 500000. Calculate depreciation in each year and corresponding salvage values using sinking fund method and double declining balance method. 8
- b) Differentiate between IRR and ERR. Calculate both IRR and ERR of the following cash flow. Explain why these values are different. 2+5

Year	0	1	2	3	4	5
Cashflow	-1100	250	-300	400	500	600

4. a) Find both types of BCR using FW formulation where initial investment is Rs. 500000; Annual income is Rs.100000 and decrease by Rs. 10000 per year; annual cost is Rs.20000 and increases by Rs 2000 per year; Useful life is 10 years and Salvage value is Rs. 150000. MARR = 11%. 8
- b) How many hours per day would the following motors have to be operated at full load for a motor of capacity 2 hp, for breakeven? MARR = 10%. 7

	Motor A	Motor B
Purchase price	350000	500000
Efficiency	75%	90%
Life - years	5	7
Maintenance cost/year	25000	15000
Tax and Insurance/year	5000	10500

5. a) Use repeatability assumption to select the best project. MARR =10% 8

Project	Initial Investment	Annual Income	Life	Salvage Value
A	2000	1000	3	20 % of Initial investment
B	3000	1200	5	
C	4000	1500	7	

- b) What are the sources of Project Finance? Explain the advantages of Debt Financing. If interest on debt is 12%, dividend to share holders are 15%. Calculate weighted average cost of capital if Debt is 70% and Equity is 30%. Tax rate is 20 %.