NEPAL ENGINEERING COLLEGE
ASSESSMENT EXAMINATION

Level: Bachelor Semester – Spring Year : 2015
Programme: BE Full Marks : 100
Course: Engineering Economics 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) Define demand & Supply. Explain the concept of the law of diminishing marginal utility with suitable example & figure. [7]

OR

Define economics. Explain the concept of law of demand and law of supply diagrammatically.

OR

Define economics, demand & supply. Explain the concept of law of diminishing marginal utility with figure.

b) 'Scarcity is the fundamental economic problem', Justify. What are the principles of engineering economics? [8]

OR,

Scarcity is the major problem for each sectors like engineering, Justify this statement by supporting principles of engineering economics.

OR,

What is marginal utility? Derive demand and supply curve on the basis of the law of demand & supply with example.

2. a) What is time value of money? Calculate effective rate of interest when nominal rate of interest is 7% and compounding is i) Monthly iii) Daily ii) Quarterly iv) Continuously [7]

OR,

Define nominal & effective rate of interest. How do you find effective rate of interest when nominal rate of interest is 9% & compounding

i) Semi-annually
ii) Quarterly

iii) Monthly
iv) Daily

OR,
What do you mean by engineering economics? What are its principles?

b) Your sister needs Rs. 6,00,000 at the end of 10^{th} year for the study of +2 level. How much money should be deposited in the bank account at the end of each year for 7 continuous years from this year if bank provides 6% rate of interest per year? Make also cash flow diagram. [8]

OR,
You deposited Rs. 50,000 the beginning of each for 7 years. How much money will be in your account at the end of 10^{th} year when rate of interest is 6% compounded quarterly. Make also cash flow diagram.

OR,
"Resource scarcity is the fundamental economic problem". Justify this statement. What are the applications of engineering economics study?

3. Nepal Engineering College (NEC) is considering to purchase a new generator costing of Rs. 4,00,000 having salvage value Rs. 1,00,000 at the end of 5^{th} year. The use of generator will increase Rs. 1,50,000 that needs fuel cost of Rs. 30,000 per year. Find the following values when MARR = 10%.

i.	PW, AW & FW	[8]
ii.	IRR	[8]
iii.	B\C ratio by PW formulation	[7]
iv.	Simple & discounted payback period	[7]

OR,
Cosmos College is considering to purchase a new photocopy machine costing Rs. 1,00,000 having salvage value of Rs. 25,000 that needs Rs. 5,000 electricity cost per year where MARR 10% per year.

a) Find PW, AW& FW
b) Find IRR & Decide investment on photocopy
c) Find both types of B/C ratio by PW formulation

d) Find simple & discounted payback period

OR,

Define cost, What do you know about manufacturing and non manufacturing costs? Explain with examples.

4. Compare following projects by using repeatability & Co-terminated assumption when MARR = 12% per year. [15]

Items	Project A	Project B
I	1,50,000	2,00,000
AR	90,000	1,00,000
AE	20,000	22,000
S	50,000	1,00,000
N	2 years	4 years

OR,

Compare following projects by using repeatability & Co-terminated assumption when MARR = 12% per year. Use PW formulation.

Items	Project A	Project B
I	1,50,000	2,00,000
AR	90,000	1,00,000
AE	20,000	22,000
S	50,000	1,00,000
N	4 years	8 years

OR,

What is time value of money? Distinguish between nominal and effective rate of interest with suitable example.

5. a) What do you mean by depreciation? Explain the concept of straight line, declining balance & sinking fund depreciation with example. [7]

OR,

Define depreciation. What are the causes for depreciation?

OR,

From the given cashflow, find PW, AW & FW when MARR= 9%.

EOY	**Cashflow**
0	-5,00,000
1	80,000
2	1,00,000
3	60,000
4	1,20,000
5	90,000
6	90,000
7	90,000
8	1,00,000

b) Perform sensitivity analysis over the range of ±20% by the parameters: [8]

i) Initial investment
ii) Annual revenue
iii) Useful life

If I = 11,500
AR = 3,000
N = 6 years
S = 1,000
MARR = 10%

OR,

Perform sensitivity analysis of the parameters over the range of ±20% in

i) Initial investment
ii) Annual revenue
iii) Useful life

If I = 11,500
AR = 3,000
N = 6 years
S = 1,000
MARR = 10%

OR,

Your college is considering to purchase a new machine costing Rs. 3,00,000 that will have salvage generates annual income of Rs. 80, 000 that needs Rs. 20,000 operating cost for each year where MARR= 10%.

Find,

i) IRR & interpret your result
ii) Both types of B/C ratio by PW formulation
iii) Both types of payback period

6. Write short-notes on any two. [2x5]

a) Manufacturing & non-manufacturing cost
b) Break-even analysis with figure
c) Scenario analysis with example

OR,

a) Mutually exclusive, independent & contingent projects
b) Break-even analysis
c) Scenario analysis

OR,

Find break-even output level and current profitability position from the following information.

Total cost = 12,00,000

Variable cost = 4,00,000

Total income = 15,00,000 at production of 5,000 units.