Nepal College of Information Technology

**Assessment**

Fall 2012

Program : ELX/CE/IT Time : 3 hrs

Semester : Fall (VII) FM : 100

Subject : Engineering Economics PM : 50

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *All Question Carry Equal Marks*
* *Attempt ALL question*

1. a) Describe importance of engineering economic for engineers.

b) Explain what you understand by Break-even analysis explain with a suitable example.

2. a) Ram invested Rs.15000 in a high yield account. At the end of 30 years, he closed the account and received Rs.539250. Compute the effective interest rate he received on the account.

b) We are considering the purchase of second-hand computer at a cost of Rs.10, 500 with an estimated salvage value of Rs.500 and a projected useful life of four years. Interest is 10%.

Determine:

i) Sum of Years Digits (SOYD) depreciation

ii) Double Declining Balance depreciation and resulting book values.

OR

A company has purchased equipment whose first cost is Rs.100, 000 with an estimated life of eight years. The estimated salvage of the equipment at the end of its time is Rs.20, 000. Determine the depreciation charge and book value at the 4 and 5 years using the sum of digital number method of depreciation.

3. a) Calculate types of B/C ratio using present worth and annual worth method.

|  |  |
| --- | --- |
| Initial investment | Rs.400000 |
| Annual revenue | Rs.175000 |
| Annual cost | Rs.25000 |
| MARR | 10% |
| Salvage value | Rs.40000 |

b) How many hour/yr would motors have to be operated at the full loads so that the annual cost will be equal?

|  |  |  |
| --- | --- | --- |
| ***Items*** | ***Motor A*** | ***Motor B*** |
| Initial investment | Rs. 185000 | Rs.160000 |
| Efficiency | 74% | 92% |
| Annual tax 1.5% of investment | ….. | ….. |
| Power | 100Hp | 100Hp |
| Useful life | 10yrs | 10yrs |
| MARR | 15% | 5% |
| Electricity cost | Rs.6/kwh | Rs.6kwh |

4. a) Find the both types simple payback and discounted pay back period of the project with the following cash flow status(MARR=12%).

|  |  |
| --- | --- |
| Eoy | Cash flow |
| 0 | -1600 |
| 1 | 150 |
| 2 | 350 |
| 3 | 500 |
| 4 | 600 |
| 5 | 900 |
| 6 | 1100 |

b) Evaluate IRR of the following project and identify whether the projects is feasible or not? Also draw investment Balance Diagram.

Initial Investment Rs. 5, 50,000

Annual Revenues (uniform) Rs. 1, 35,000

Annual cost Rs. 32,000

Useful life year 11

Salvage value Rs. 50,000

MARR 12%

5. a) Calculate the equivalent future worth of the project having the following information of cash flow. Use the arithmetic gradient.

|  |  |
| --- | --- |
| EOY | payment |
| 1 | 8000 |
| 2 | 7000 |
| 3 | 6000 |
| 4 | 5000 |

b) Check the acceptability of the project by using Present worth, Future worth and Annual method what is the capital recovery amount of the project.

|  |  |
| --- | --- |
| First Investment | Rs.100000 |
| Salvage Value | Rs.25000 |
| Project period | 10 yrs. |
| Annual Revenue | Rs.20000 |
| Annual Cost | Rs.5000 |
| MARR | 10% per year |