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

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 4th and 8th year = Rs 30,000
MARR = 10 % per year

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.

a) What do you mean by independent, dependent and mutually exclusive 7

project? Develop the combination of each project with suitable example.

b) Following information has been obtained regarding two motors.

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

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2016
Full Marks: 100
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) Define demand, supply and utility. Explain about elasticity of demand. 7

   b) What are the principles of Engineering Economics? Explain why Studying Engineering Economics is fruitful to engineering student. 8

2. a) Sabina deposits a sum of Rs. 10, 00, 000 in a bank at an interest rate of 12 % per year. What will be the future amount after 5 years? 6
   If compounded
   i. weekly
   ii. quarterly and annually.

   b) Evaluate the following project by the simple payback period, present worth and future worth method. The cash flows of the project are as follows: if the MARR is 12 % per year. 9

End of year	Net cash flows (Rs.)
0	-700
1	-400
2	125
3	200
4	800
5	220
6	320

3. 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.

4. 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) 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

a) What are the advantages of company? What are the features of partnership firms? 7

b) What is life cycle cost? What are the differences between financial accounting and cost accounting? 8

a) Select which project is feasible to invest among other alternative projects whose cash flows are as follows: if MARR is 10 % per year. Use IRR method and incremental analysis if necessary. 10

	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	7 years	7 years
Repair and maintenance cost at 3rd and 5th year.	10,000	15,000

b) What do you mean by independent, dependent and mutually exclusive project? Explain with suitable examples. 5

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

a) Methods of financing

b) VAT

c) Stock and Bond

d) Types of cost.

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring

Year : 2016
Full Marks: 100
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) Define engineering economics and explains it's principles. 7
   b) Explain manufacturing and non-manufacturing cost, opportunity cost and opportunity cost. 8
2. a) What do you mean by time value of money? Point out the difference between Nominal and Effective Interest rate with example. 7
   b) A man aged 40 years now had borrowed Rs 5,00,000 from bank for his further studies at the age of 20 years . Interest was charged at 11% per year compounded quarterly .He wish to pay loan in semiannual equal installments with the first installment beginning 5 year after receiving the loan. He has just clear his loan now what amount did he pay in each installments. 8
3. a) Explain with example why the decision criteria of present worth (i.e. PW or net present value NPV) conflicts with decision criteria of IRR and how this can be overcome. 8
   b) Determine Both types of B/C ratio using present and annual worth method for the given project if interest rate is 12%, 7

Investment	6,00,000
Life	8 Years
Annual Revenue	2,00,000
Annual Cost	60,000
Salvage Value	2,00,000

4. a) Use repeatability assumptions to Recommend the best project from following information; 7

Project	A	B
Initial Investment(Rs)	40,000	50,000
Net Annual Revenue(Rs)	15,000	20,000
Salvage Value(Rs)	5,000	6,000
Life	3	5
MARR	15%	

b) Find the IRR, MIRR,Pay Back Period, Discounted Pay Back Period of the following project. (Assume MARR=10%) 8

Year	0	1	2	3	4	5
Amount(Rs)	(15000)	1000	2000	4000	5000	8000

5. a) What are the significance of financial statements in business? Explain the financial statement with its type. 7

b) From the following information find the annual depreciation and the book value of each year by Straight line, Declining balance, SOYD and sinking fund method. 8

Initial Cost=Rs. 7000 Salvage Value=Rs.2000
Useful Life=5 Year MARR=10%

6. a) Explain the golden rule of accounting. Define the term ratio analysis what are it's types explain in brief. 7

b) Perform the sensitivity analysis using PW method in initial investment, annual revenue and useful life and draw graph. (choose the suitable range that you prefer) 8

Initial Investment=1,00,000 Annual revenue=40,000
Annual expenses=5,000 salvage value=1,000
Life=6 Year MARR=12%

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

a) Mutually Exclusive, Contingent and Independent Project
b) Ecological limit and ecological footprint
c) Project funding mechanism

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2017
Full Marks: 100
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^{th} 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

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring

Year : 2017
Full Marks: 100
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 are principles of engineering economics? Explain the importance of engineering economics in business projects. 7

OR

What do you mean by utility, marginal utility and diminishing law of marginal utility?

b) Define manufacturing cost, non-manufacturing cost and differential cost and differential revenues with suitable examples. 8

2. a) How many deposits of Rs. 25,000 each should Mr. A make each month so that the final accumulated amount will be Rs. 10,000,000 if interest rate is 12% per year. 8

b) Suppose we have a project with the following cash flows; Outgoing: Rs 150,000 at beginning of year 1, Rs 250,000 at beginning of year 2, and some more Rs 250,000 at beginning of year 3; Income: Rs 1 million at end of year 3. Find the IRR of the project. (If MARR =20%) Is the project feasible? 7

3. a) Compare the ERR with PW method of selecting the project with suitable example that you know which one is the superior and why? 8

b) Determine both type of B/C ration using present and annual worth method for the given project if MARR is 12% and make a decision whether you select or reject this project 7

Investment	10,00,000
Life	12 Years
Annual Revenue	1,80,000
Annual Cost	40,000
Salvage Value	1,20,000

4. a) For the project with cash flow given below find the most sensitive factor among annual benefit, annual cost and salvage value if they changes by ±20%. 8

	Project
Initial investment	Rs.2,00,000
Annual revenue	Rs.1,00,000
Annual Cost	Rs. 40,000
Salvage Value	Rs. 50,000
MARR	10%
Life in years	5

b) What do you mean by ecological footprint? How ecological limits can be overcome to attain sustainable development? 7

5. a) Select which project is best to invest among following two feasible investments A and B having different useful lives, if MARR is 10 % per year. Use PW method with repeatability assumptions. 9

	Investment of A (Rs.)	Investment of B (Rs.)
Investment	5, 50,000	6,50,000
Net annual revenue	2,25,000	2,70,000
Net annual cost	30,000	50,000
Salvage value	70,000	80,000
Useful life	5 years	8 years

b) A machine costing of Rs 200,000 is estimated to have life of 10 years. The salvage value of the machine at the end of life is Rs 50000. Find depreciation charge and book value of each year and tabulate it. Use SOYD method. 6

6. a) What are the methods that are used in calculating the depreciation in economics? Write their advantages and disadvantages. 8

b) What do you mean by ration analysis? Explain in detail the types of ratios that are used in engineering economics. 7

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

a) VAT

b) Cost of capital, cost of equity and cost of debt

c) Dependent project, independent project and contingent project

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2018
Full Marks: 100
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

   b) Define Prime cost, Overhead cost, Fixed Cost, variable Cost, Opportunity cost, Sunk Cost, Marginal cost and differential cost. 8

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 %. 7

6. a) Differentiate between net profit and Gross Profit. From the following trial balance prepare P/L Account and Balance sheet. 2+6

Debit Balance	Amount Rs	Credit Balance	Amount Rs.
Closing Stock	30000	Capital	250000
Sundry debtors	50000	Gross profit	122000
Plant and Machinery	225000	Dividend received	1250
Goodwill	14500	Interest received	750
Land and Building	135000	Sundry creditors	39000
Salaries and Wages	27500	Reserve fund	50000
Rent	7500	Bank loan	50000
Selling Expenses	12500	Bank Overdraft	23500
Cash in Bank	10000		
Deposit with Custom	7500		
Advertisement	5000		
Investment	12000		
Total	536500	Total	536500

7

b) Perform sensitivity analysis of the following project over a range of -10% to +30% in initial Investment; -10% to +10% in Useful life and -20% to +20% in MARR. Draw Sensitivity diagram and decide the most sensitive parameter.

Initial Cost	Annual Income	Useful Life	Salvage Value	MARR
20 crore	3 crore	30 yrs	0	10%

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

a) Payback period

b) Causes of depreciation

c) Concept of Sustainable Development

d) Ecological Limit

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring

Year : 2018
Full Marks: 100
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 engineering economics? Why do you think studying this course is important for engineering students? Justify. 8

   b) Explain manufacturing, non-manufacturing, sunk and opportunity costs with suitable example. 7

2. a) Ramesh, an engineer is planning to place 20% of his salary, which is Rs. 250000 per year at present, each year in mutual fund. He expects 7% of his salary increase each year for next 15 years. If the mutual fund will average 10% annual return, what will be the sum amount at the end of 15 years? If salary increase by Rs. 25000 per year. What will be the amount? 8

   b) A multipurpose hydroelectric project under consideration of the government, whose estimated benefits and costs expected to be derived from the project, are listed as below: 7

End of year	Annual cash flow (Rs.)
Initial Cost	180000000
Annual power sales	12000000
Annual flood control saving	5000000
Annual irrigation benefits	8000000
Annual recreation benefits	4000000
Annual operating and maintenance costs	5000000

st, based on B/C ratio, the government about implementing the project 40 years. MARR = 15%.

3. a) An investment of Rs. 100,000 can be made in a project that will produce uniform annual revenue of Rs. 62,100 for 5 years and then have a market salvage value of Rs. 20,000. Annul expenses will be Rs. 30,000 each year. Company accepts project that earns 10% or more. Evaluate IRR of this project and suggest whether the project is feasible or not? Also draw an investment balance diagram. 7

b) Recommend the best project from the following two projects assume repeatability 8

Project	A	B
Initial investment (Rs.)	4,00,000	7,00,000
Annual Revenue (Rs.)	1,75,000	2,50,000
Annual Cost (Rs.)	25,000	35,000
Salvage value (Rs.)	40,000	70,000
Useful life	6 yrs	8 yrs
MARR	12%	12%

4. a) Consider the following three sets of mutually exclusive alternatives: 8

	Alternatives		
EOY	D_1 (Rs.)	D_2 (Rs.)	D_3 (Rs.)
0	-2000	-1000	-3000
1	1500	800	1500
2	1000	500	2000
3	800	500	1000

Which project would you select based on BCR method on Incremental investment assuming that MARR = 15%.

b) From the following information, conduct scenario analysis based on FW formulation. Assume I=2,25,000, MARR=13.5%, and life of project is 5 years. Also give your remarks based on results of different scenarios. 7

Variable Considered	Worst Case Scenario	Most Likely Scenario	Best Case Scenario
Annual Sales	86,000	1,10,000	137,000
Annual Variable Cost	37,000	40,000	38,000

Annual Fixed Cost	21,000	20,000	18,000
Salvage Value	40,000	50,000	60,000

5. a) Define ecological limit and sustainable development. Discuss ways for sustainable development. 8

   b) A company has purchased equipment whose first cost is Rs.10000 with an estimated life of 5 years. The estimated salvage of the equipment at the end of its life time is Rs. 2000. Determine the depreciation charge and book value at 3 and 4 years using the straight line and Sum of Years Digits (SOYD) method of deprecation. 7

6. a) Describe income statement and balance sheet with their format. How are they related to each other? 8

   b) What is financial ratio? Explain major financial ratios that can be applied in decision making process in business. 7

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

   a) Nominal Rate Versus Effective Rate
   b) Sources of project risk
   c) Corporate tax

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall
Programme: BE Year : 2019
Course: Engineering Economics Full Marks: 100
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 demand, elasticity of demand and types of elasticity of demand 7

   b) Explain manufacturing cost, non-manufacturing cost, opportunity cost and marginal cost with suitable examples. 8

2. a) Suppose a farmer want to save money semi-annually in a financial company for the engineering education of his daughter of 2 years old, How much money he needs to save per period if she need 20, 00,000 when her age will be 18 years old. The company compounded the money semi-annually and interest rate is 12%. 8

   b) An investment of Rs.1, 00,000 can be made in a project that will produce uniform annual revenue of Rs.50,000 for five years with annual cost of Rs 20000 and then have a market (salvage) value of Rs.5,000. If company has policy to accept any project that will earn 10% per year or more, on all invested capital. Calculate the discounted payback period and show whether this is a desirable investment by using the Present worth method. 7

   a) Compute discounted payback period and modified B/C ratio from the following data. 8

Initial investment	Rs. 10, 00,000
Annual revenue	Rs. 1,80,000
Annual cost	Rs. 60,000
Salvage value	Rs. 1,50,000
Useful life year	10
MARR	5%

   b) Select the best project by using IRR method when MARR is 8%. Use incremental analysis if necessary. 7

	Project A	Project B
Initial investment	3,00,000	5,00,000
Annual revenue	1,50,000	1,75,000
Life Year	6	6
Salvage value	70,000	1,00,000

4. a) From the given information select the best project using co-terminated assumption. Useful life = 5 years. 7

Items	X	Y	Z
Initial Investment	50000	40000	30000
Annual revenue	20000	15000	14000
Annual expenses	15000	10000	8000
Useful life	5 years	7 years	9 years
Salvage value	1000	500	0
MARR	10%	10%	10%

b) A company is considering the purchase of second-hand computers at a cost of Rs.10, 500 each with an estimated salvage value of Rs.500 and a projected useful life of four years. Determine the annual depreciation and book values using double declining Balance with conversion to Straight Line depreciation method. 8

5. a) Which motor would you select if you have to operate 12 hours a day? 7

	Motor A	Motor B
Purchase Price	Rs.3,00,000	Rs.4,00,000
Capacity	2HP	2 HP
Efficiency	75%	90%
Annual Cost	Rs. 30,000	Rs. 25,500
Electricity Cost	Rs 10 per kwh	Rs 10 per kwh
Life in years	5	7

b) Explain analytically the following ratios: 8
   i. Debt ratio
   ii. Current ratio and
   iii. Quick ratio / acid test ratio
   iv. Cost of capital

OR

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

6. a) Briefly explain about ecological limit, overcoming ecological limit and sustainable development. 7

b) What do you mean by income statement and balance sheet? Develop their formats and discuss the relationships and differences between them? 8

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

a) FIRR and EIRR

b) VAT

c) Ratio analysis for making decision.

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Semester: Spring
Year : 2019
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

Course: Engineering Economics

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 understand by engineering economics? Explain its seven principles and importance in business or engineering projects. 7

   b) 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? 8

2. a) What is depreciation? A photocopy machine is costing of Rs. 4,60,000 with estimated salvage value Rs. 12,000 at the end of 6th year. Find yearly depreciation amount and book value by (i) Double declining balance conversion to straight line method (ii) Sum of years digit (SOYD) method. 8

   b) Consider an investment project with the following cash flow. 7

End of Year	Net cash flow
0	-2,30,000
1	-70,000
2	0
3	80,000
4	1,20,000
5	1,70,000

   Compute the IRR for this investment and determine its acceptability at MARR=10% and draw also an investment balance diagram.

   a) Define cost benefit analysis. Find out the both types of B/C ratios using present worth and annual worth method. 8

   Initial investment = Rs. 5,00,000
   Annual benefit = Rs. 1,50,000
   Annual cost = Rs 30,000
   Salvage value = Rs. 40,000
   MARR = 12 % per year
   Useful life = 6 years

b) Define ecological limit and sustainable development. Discuss ways for sustainable development.

4. a) Perform sensitivity analysis using PW method over a range of (+ / or -) 20 % in

a) initial investment b) net annual revenue and c) salvage value

- Initial investment (Rs) = 2,00,000
- Annual revenues (Rs) = 50,000
- Annual expenses (Rs) = 5,000
- Salvage value (Rs) = 25,000
- Useful life = 10 yrs
- MARR = 12 % per year
- Draw also the sensitivity graph.

a) 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 % 7

5. a) What is the taxation system in Nepal please describe in brief? 7

b) Describe income statement and balance sheet with their format. How are they related to each other? 8

6. a) Evaluate the following two projects A and B having different useful lives, if MARR is 15 % per year. Use PW method with co-terminated assumptions. When MARR is 10 % per year. 8

	Project A (Rs.)	Project B (Rs.)
Initial Investment	40,00,000	50,00,000
Annual revenue	15,00,000	20,00,000
Annual cost	5,00,000	7,00,000
Salvage value	5,00,000	6,00,000
Useful life	5 years	7 years

b) What is financial ratio? Explain major financial ratios that can be applied in decision making process in business. 7

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

a) Ecological foot print

b) Quick Acid Test

c) Benefit Cost Ratio

POKHARA UNIVERSITY

Level: Bachelor
Programme: B E
Course: Engineering Economics

Semester: Chance

Year : 2020
Full Marks: 100
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) How you justify the statement "Demand creates supply"? Describe seven principles of Engineering economics. 7

   b) If you deposit Rs. 5,000 per month for two years, what will be the amount at the end of five years if bank interest rate is 5% in every six month? 8

2. a) Calculate Discount payback of following given cash flow of the Engineering project, when MAAR is 20% 8

End of year(EoY)	0	1	2	3	4	5
Net cashflow(Rs)	-25000	+8000	+8000	+8000	+8000	+13000

   b) Select the best project by using IRR method when MARR is 8%. 7

	Project A	Project B
Initial investment	3,00,000	5,00,000
Annual revenue	90,000	1,75,000
Life Year	6	6
Salvage value	10,000	1,00,000

3. a) Evaluate the following two projects A and B having different useful lives, if MARR is 15% per year. Use PW method with repeatability assumptions. 8

	Project A (Rs.)	Project B (Rs.)
Initial Investment	540000	650000
Annual revenue	250000	280000
Annual cost	50000	60000
Salvage value	100000	120000
Useful life	4 years	6 years

b) Explain manufacturing cost non-manufacturing cost and opportunity cost in Engineering economics. 7

4. a) Select the best project by using IRR method when MARR is 8%. Use incremental analysis if necessary. 7

	Project A	Project B
Initial investment	1,00,000	5,00,000
Annual revenue	50,000	1,75,000
Life Year	6	6
Salvage value	10,000	1,00,000

b) Flower shopkeeper want to a bunch of rose on Rs 100, the shop need to pay Rs 10,000 for rent and Rs 15000 for the helper, 98 he could sold the bunch of rose on Rs 125, How much quality the bunch of flowers need to sold to meet break-even point? 8

5. a) Define ecological limit and sustainable development. 7

b) An organization wants to purchase of Rs.10,00,000 machine that is assigned to 5 years useful life and expected salvage Rs. 2,00,000. Compute depreciation by SOYD and MACRS methods for each year. 8

6. a) What do you mean by financing and method of financing and explain debt ratio, current ratio, cost of equity and cost of debt. 7

b) Fill up the following data on standard balance sheet cash, $2000 inventory $5000, Account receival $3000, Land and Building $13000, Equipment $7000, Deprecation $1000 Bank overdraft $500, Account payable $1000 & Returned earning $6500.00? 8

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

a) Asset & liabilities

b) Economic Internal rate of return (EIRR) and Financial Internal rate of return

c) Depreciation by sinking fund method

POKHARA UNIVERSITY

Semester: Spring

Level: Bachelor
Programme: BE
Course: Engineering Economics

Year: 2020
Full Marks: 70
Pass Marks: 31.5
Time : 2 hrs.

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. In the current COVID pandemic context, you are required to do economic analysis of one engineering project. Takeany one specific example of the engineering project (e.g.: hydropower, mobile app, hospital, canal, etc.) and discuss the steps of engineering economics process (principles) for making investment decision for that project. Also, explain four different cost concepts for engineering decision making and how they can be related in the process of engineering economic evaluation in your above project. 6+4

2. Which interest is used in engineering economic analysis and how do you differentiate between simple, compound, nominal and effective interest rate with suitable example? 4+6

   Binayak has taken home loan of Rs. X5 million from a bank, which is to be repaid in equal end of the month installment for 5 years with nominal interest rate of 12 percent compounded monthly. Calculate: (i) the amount of each installment, (ii) effective rate of interest of loan, and (iii) the amount of each installment, if installment is repaid in the beginning of the month installment. Assume X is the last digit of your PU Examination Roll Number. (For example, if the last digit of your PU Examination Roll Number is 7, then consider loan as 75 million and if last digit is 0, consider your loan as 05 or 5 million).

3. Compare PW of following projects and select best alternatives using repeatability assumption. MARR rate is 1X.5%. Assume X is the last digit of your PU Examination Roll Number. (For example, if the last digit of your PU Examination Roll Number is 9, then consider interest rate as 19.5% and if last digit is 0, consider your interest rate as 10.5%). 10

Project	A	B	C
Initial Investment	3000	5500	7000
Annual Revenue	2500	3000	3000
Annual Cost	500	800	1200
Useful Life, Years	2	3	4
Salvage Value	25% of initial investment		

4. "Taxes are voluntary payments to governments without expectations of any benefit to the tax payer." Is this statement correct? Discuss different types of taxes that Nepal government levy. 3+7

   Equipment is purchased for Rs 500000 and having estimated salvage value and useful life Rs 80000 and 10 years, interest rate= 1X%; Assume X is the last digit of your PU Examination

Roll Number (For example, if the last digit of your PU Examination Roll Number is 9, then consider interest rate as 19% and if last digit is 0, consider your interest rate as 10%). Calculate the depreciation amount and book value of each year of the equipment from the following methods.

a. SOYD depreciation method
b. Sinking fund depreciation method.

OR

"It's not an investment if it's destroying the planet. Engineers can contribute in the development of technologically and environmentally-feasible solutions to overcome ecological limits of the planet." Explain the above statements. Discuss different risk analysis methods. Which methods do you think most effective in the context of Covid pandemic situation? Discuss with example.

5. Explain why financial statements are prepared in business organization? Explain types of financial statements and their need for the business organizations. 5+5

Discuss importance of financial ratios in engineering economics. Calculate debt ratio, current ratio and quick ratio of Kathmandu Bakery and interpret their results.

6. The following are proposed projects, their relationships and respective cash flows for the coming budgeting period. Some of the projects are mutually exclusive noted below, and B1 and B2 are independent of C1 and C2. Also, certain projects are dependent of others as mentioned below. 20

Project B1 and B2: Mutually exclusive
Project C1 and C2: Mutually exclusive and dependent on the acceptance of B2
Project D: Contingent on the acceptance of C1

Cash Flows (Rs. 000s) for the end of year

Project	Initial Investment	Annual Revenue	Annual Cost	SV at the end of 3rd year
B1	-55	43	20	20
B2	-32	24	10	12
C1	-16	10	5	4
C2	-15	11	5	5
D	-12	9	4	6

Using the PW and MARR=10%, determine what combination of projects is best if the capital to be invested is a) limited to Rs. 50,000 and b) unlimited.
Assume MARR is 1X.5%. X is the last digit of your PU registration number. (For example, if the last digit of your PU registration number is 9, then consider interest rate as 19% and if last digit is 0, consider your interest rate as 10%).

POKHARA UNIVERSITY

Semester: Fall

Level: Bachelor
Programme: BE
Course: Engineering Economics

Year : 2021
Full Marks: 100
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) Why should an Engineer study Economics? Write instances where and how it can be applied at work. 7

   b) Find IRR and ERR of the following cash flow. Draw investment balance diagram based on IRR value. 8

   $MARR = 12\%$

EOY	0	1	2	3	4
Net Cash flow	-550000	-50000	+125000	+1350000	+625,000

2. a) What do you mean by marginal cost & opportunities cost. Explain about the life cycle of cost. 7

   b) ER. Ram Prasad deposited Rs 1,00,000 in his bank account on 1 January 2022. The bank pay 9% simple interest, how much will he accumulate in his account on 30 Dec 2032? 8

3. a) What do you mean by payback period? Find simple and discounted payback periods and justify investment with the given cash flow information; 8

Initial investment	Rs. 3,00,000
Annual revenue	Rs. 1,50,000
Annual cost	Rs. 30,000
Salvage value	Rs.1,00,000
Useful life year	5
MARR	10%

   b) Yeti Airline company planning to purchase from different two company A & B, because it was based on estimation using Co-Terminated assumption & recommend the best project taking study 5 years & 8 year respectively? 7

	Investment	Revenue	Expenses	Salvage value
Plain A	350000000	13000000	1500000	3500000
Plain B	500000000	17500000	2500000	5000000

4. a) Perform sensitivity analysis of the following project over the range of ±30% in i) Initial investment ii) Annual revenue iii) Useful life. 8

Initial investment = 14,500
Annual revenue = 4,000
Salvage value =1,000
Useful life = 6 years
MARR = 20%

b) Explain in detail the Economic theory and Ecological limit, what do you understand about Ecological trot print? 7

5. a) A construction equipment has initial cost & annual saving per year are of Rs 40000 & Rs 20000 respectively with annual operation & maintenance cost of 7000. It will depreciate by MACRS method & will have no salvage value. The useful life of equipment is 5 years. Estimate before & after tax cash flow. The company pays income tax @40%. Evaluate after tax by FW method. 8

b) Discuss the different fording mechanism in which we manage the money to the project? 7

6. a) Prepare accounting equation on the basis of following transactions. 8

i. Ram starts business with Rs 40000 as capital.
ii. The business purchases equipment for Rs. 5000.
iii. Purchased goods of worth Rs. 2000 for cash.
iv. The business purchases goods for Rs 4000 in credit.

b) Describe the different ratios to make decision or to identify the company strong or week? 7

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

a) Balance sheet
b) Benefit-cost ratio
c) Tax system of Nepal

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2021
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) Why an engineer should follow fundamental principles of engineering economy? Explain. 7

   b) 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. 8

2. a) Write about the types of cost involved in cost accounting? Clarify the concept of cost for business decision making. 7

   b) Determine conventional and modified B/C ratio for the given project. The cash flows are as follows: 8

Initial cost	Rs. 400,000
Life of the project	10 yrs
Salvage value	100,000
Annual benefits	75000
Annual disbursements (O&M)	25000
Interest rate	10% per year

   Whether the projects is feasible or not?

3. a) Define payback period method. Explain simple and discounted payback period method with a suitable example. 7

   b) The following data have been estimated for two feasible investment machine X and Machine Y having different useful life. If minimum attractive rate of return is 10% choose the best one project using PW method. Use repeatability assumption. 8

	Machine X	Machine Y
Initial cost	20,000	30,000
Uniform annual benefit	10,000	10,000
Savlage value	2000	1000
Useful life	3	6

4. a) An estimation of a new model generator has the following information. Determine, how long will it operate for break-even point? 8

Purchase cost (Rs.)	3,00,000
Annual maintenance cost (Rs.)	8,000
Annual energy generated at full load	12,000 kw
Value of energy generated	Rs. 3/ kw-hr
Salvage value (Rs.)	60,000
MARR	8% per year

b) What do you mean by ecological footprint? How ecological limits can be overcome to attain sustainable development? 7

5. a) What is the difference between Income statement and cash flow statement? Describe in detail. 7

b) List out causes of depreciation. A machine costing of Rs 10,000 is estimated salvage value Rs 500 at the end of 5th year. Find depreciation each years by using 8

i) Sinking fund
ii) Declining balance
iii) SOYD method.

6. a) Explain the ratio analyses in detail of following: 7

i. Debt ratio
ii. Current ratio
iii. Total Asset turnover ratio
iv. Inventory turnover ratio

b) What are the objectives of financial statements? Prepare the balance sheet from the following information for year ended 30th December 2015. 8

Land & Building	50,000	Goodwill	10,000
Plant & Machinery	30,000	Creditors	20,000
Outstanding expenses	500	Loan	15,000
Advance Income	500	Investment	20,000
Debtors	10,000	Reserve	6,000
Cash in hand	5,000	Patent	5,000
Prepaid Insurance	1,000	Furniture	4,000
Inventories	25,000	Capital	1,18,000

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

a) Personal Tax and corporate tax
b) VAT
c) Mutually exclusive project and contingent project

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2022
Full Marks: 100
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) Describe engineering economics. Explain the different principles of engineering economic. 5+2

   b) You make 10 annual deposits of 1,000 each into a bank account paying 5% interest per year. The first deposit will be made one year from today. How much money can be withdrawn from this account after 10 years? What is the present worth of that sum? 8

2. a) Discuss any four basic cost concepts used in engineering economics. Explain why these cost concepts are important in engineering economic decisions. 7

   b) A piece of new equipment has been proposed by engineers to increase the productivity of a certain manual welding operation. The investment cost of equipment is Rs 1, 00,000 and has market value of Rs. 20,000 at the end of five years. The equipment will generate Rs. 32,000 per year after operation costs. The company is willing to accept the project if it will earn at least 20% per year. Evaluate IRR of this equipment and suggest whether the equipment is feasible or not? 8

3. a) Find both types of BC ratios from the following project and also suggest if it is feasible or not. 7

   Initial investment Rs 1500000
   Annual revenue Rs 300000
   Annual cost Rs 60000
   Estimated useful life 8 years,
   Salvage value Rs 120000
   MARR 12%

   b) A mobile company is taking quotations for purchase, installation and operation of microwave towers for long period. If MARR is 15%, determine the best alternative project using repeatability assumption and PW method. 8

Quotations	Project A	Project B
Equipment cost (Rs)	6500000	5800000
Installation (Rs)	1500000	2000000
Annual maintenance (Rs)	100000	125000
Annual extra charge (Rs)	0	50000
Salvage value (Rs)	0	0
Life (yrs)	15	10

4. a) Select the best project by using BCR method using FW formulation when MARR is 8.5%. Use incremental analysis if necessary. 7

Year	Project A	Project B
Initial Investment	6,00,000	10,00,000
Annual Revenue	3,00,000	3,50,000
Life	6	6
Salvage Value	1,20,000	1,80,000

b) What is break even Analysis? Phewa cement shop open the market to sell 10,000 bags of cement in one month, the shop purchase the cement at the rate Rs 650 in bulk and sell at the rate of Rs 800. What will be the break-even quantity, if the shop sold all the quantities what will be the profit or loss, when the shop pay Rs 15,000 for rent and Rs 5000 for salary? Initial Investment Was Rs 6500,000. 8

5. a) ABC Company is planning to purchase a machine costing of Rs 500000 having estimated salvage value of Rs 45000 and useful life 6 years. Calculate every year depreciation amount and book value under Sinking Fund and SOYD depreciation method, if MARR is 12%. 8

b) Discuss economic theory and ecological footprint. What role an engineer should play for overcoming ecological limit and achieve global sustainable goals? 7

6. a) What is financial ratio? Explain major financial ratios that can be applied in decision making process in business. 8

b) What are the funding mechanism of Nepal government to the project while talking about project funding mechanism? 7
Are you agree existing mechanism or needes to improve it?

7. Write short notes on: (**Any two**) 2×5
   a) Balance sheet
   b) Ecological limit and sustainable development
   c) Project risks

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring

Year : 2023
Full Marks: 100
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) Why we need to study engineering economics? State and explain law of demand and supply. 2+5

   b) What do you mean by IRR? Evaluate IRR of the following project and decide whether the project acceptable or not? Where MARR 8% per year. 8

Initial investment	=Rs. 5,000,000
Expected life	=10 Years
Salvage value	=Rs. 30,000
Annual revenue	=Rs. 120,000

2. a) How do you measure following cost concept in your engineering project; direct cost, indirect cost, average cost, variable cost, marginal cost, sunk cost, opportunity cost? 8

   b) From the following project information select the best project using capitalized worth method. MARR = 10% 7

Items	X	Y	Z
Initial Investment	50,000	40,000	30,000
Annual Revenue	20,000	15,000	14,000
Annual Expenses	15,000	10,000	8,000
Useful life year	5	7	9
Salvage value	1000	500	0

3. a) What is the future equivalent of Rs. 500,000.00 per year uniform cash flows for 10 years if nominal rate is 10% compounded continuously? 8

   b) Discuss economic theory and ecological footprint. In the pursuit of achieving global sustainable goals, what vital role should engineers play to overcome ecological limits and promote environmentally responsible practices? 7

4. a) Find the B/C ratio by both methods. Use AW method. Investment = Rs.2,50,000; Annual benefits = Rs.75,000; Annual cost = Rs.15,000; salvage value = Rs.25,000; MARR = 12%; Number of years = 10. 8

b) What do you mean by project financing and project funding? Explain with some example. 7

5. a) By using PW model & repeatability assumption select the best project. 7

Project	A	B
Initial Investment Rs	4,00,000	6,00,000
Annual Revenue Rs.	30,000	35,000
Annual O &M Rs.	3,000	4,000
Useful life in year	6	8
Salvage value Rs	4,000	7,000
MARR	12%	12%

b) What are financial statements? Explain the types of financial statements with their formats. 8

6. a) Perform sensitivity analysis of the following project over the range of ±20% for 8

i. initial investment
ii. annual revenue
iii. useful life &
iv. MARR.

Initial investment = 11, 500
Annual revenue = 3,000
Salvage value =1,000
Useful life = 6 years
MARR = 12%

b) A new electric sawmill for cutting small pieces of lumber in a furniture manufacturing plant has a cost basis of Rs. 5,000 and 8 year depreciable life. The estimated salvage value of the saw is zero at the end of 4^{th} year cumulative depreciation charge of 7^{th} year and book value of 6^{th} year using double declining balance method. 7

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

a) Importance of financial statement and accounting equation.
b) Financial Ratios
c) Ecology and economic development.

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2023
Full Marks: 100
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) Discuss Engineering Economics and describe Principles and applications of Engineering Economics. 7

   b) Define manufacturing, non-manufacturing, opportunity and sunk cost with suitable examples. 8

2. a) Mr. Hari Lamsal needs Rs2500000 at the end of 15th year in his bank account. How much money does he need to deposit at the end of every year for 10 years to meet his requirement if his bank provides him 12% interest compounding annually? 8

   b) Evaluate the following project under IRR method and also show unrecovered investment balance in tabular and graphical forms. 7

   Initial investment: Rs 1500000
   Annual revenue: Rs450000
   Annual cost: Rs50000
   Life: 6 years
   Salvage value: 60000
   MARR: 13%

3. a) Calculate both types of BC ratios from the following information and also give your decision whether the project should be selected or not. 7

   Initial investment: Rs 800000
   Annual revenue: Rs 150000
   Operating and maintenance cost: Rs25000
   Life: 10 years
   Salvage value: 20000
   MARR: 13%

   b) What do you understand by payback period? Calculate simple and discounted payback period from the following information. 8

   Initial investment 1000000 MARR 10%

Year	1	2	3	4	5	6
Net Annual Revenue	250000	345000	320000	280000	125000	210000

4. a) Project A and B are mutually exclusive projects. By using repeatability method evaluate the both projects. 8

Items	Project A	Project B
Initial investment	Rs200000	Rs 300000
Annual Revenue	Rs 75000	Rs 85000
Annual Cost	Rs 10000	Rs 12000
Useful life	6 years	8 years
Salvage Value	Rs 50000	Rs 80000

MARR 9% for both projects

b) Discuss Financial Ratio and explain the followings in detail. 7

i. Current Ratio
ii. Debt Ratio
iii. Total asset Turnover ratio
iv. Inventory Turnover ratio

5. a) Explain causes of depreciation. A machine costing of Rs. 10,000, estimated Salvage Value of Rs. 500 at the end of 5 year and MARR is 12%. Find depreciation each year by using: 8

i. Sinking Fund Factor method.
ii. SOYD method.

b) Pathivara Engineering Works Company has following capital structure. 7

Common Stock Rs 1000000
Bond Rs1500000
Preferred Stock Rs 500000
Total capital Rs 3000000

The company's cost of common stock is 21%
Cost of bond before tax is 18% and tax rate is 40%
Cost of preferred stock is 17%
Calculate weighted average cost of capital (WACC) of the company.

6. a) Perform Sensitivity analysis of the following Project over the range of ±30% in i) Initial investment ii) Annual revenue iii) Useful life and iv) Salvage Value: 8

Initial Investment (Rs)	14,500
Annual Revenue (Rs)	4,000
Salvage Value (Rs)	10,000
Useful life (Years)	6
MARR	20%

b) Prepare Balance sheet of Himalayan Tea Company as on 31st December 2023 from the following transaction. 7

Common Stock	1000000	Land and Building	1362000
Inventories	45000	Cash	75000
Vehicles	25000	Creditors	65000
Bank overdraft	200000	Debtors	120000
Prepaid insurance	25000	Outstanding salary	35000
Marketable securities	28000	Bond and Debenture	350000
Provision for taxation	55000	General Reserves	180000
Furniture	85000	Machinery	120000

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

a) Nominal and Effective interest rate

b) VAT

c) Ecological limit and sustainable development

Economics- 2023 Fall

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring

Year : 2024
Full Marks:100
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) Write the key principles of economy. 5
   b) Explain the Manufacturing cost and non-manufacturing cast. 5
   c) Describe the ecological foot print. 5
2. a) A man aged 30 years now had borrowed Rs. 5,00,000 from a bank for his further studies at the age of 20 years. The bank was charged interest at 12% per year compounded quarterly. He wishes to pay that loan from last 10 semi annual way with equal installment basis and now he has just cleared the loan. What amount did he pay in each installment? 7
   b) Star construction company planning to purchase from different two companies A & B. Because it was based on estimation using co-Terminated 5 years and 8 years respectively. 8

	Investment Rs.	Revenue Rs.	Expenses Rs.	Salvage value Rs.
Plain A	350000000	13000000	1500000	3500000
Plain B	500000000	17500000	2500000	5000000

3. a) Find both types of B/C ratios using PW formulation for a project having first investment cost of Rs. 1,50,000; project life 10 years; salvage value Rs. 30,000; annual benefit Rs. 65,000; annual O & M cost Rs. 20,000 & MARR=12% per year. 7
   b) Perform sensitivity analysis of the following project over the range of ±30% in i) Initial investment ii) Annual revenue iii) Useful life. 8

Initial investment = 14,500
Annual revenue = 4,000
Salvage value =1,000
Useful life = 6 years
MARR = 20%

4. a) Compute discounting payback period and B/C ratio from the following data. 7

Initial investment	Rs. 4, 00,000
Annual revenue	Rs. 1,50,000
Annual cost	Rs. 30,000
Salvage value	Rs. 50,000
Useful life year	8
MARR	12%

b) Select the best project by using IRR method when MARR is 8%. 8

Items	Project A	Project B
Initial investment	3,00,000	5,00,000
Annual revenue	90,000	1,75,000
Life Year	6	6
Salvage value	10,000	1,00,000

5. a) After passing civil Engineering course suppose you are going to start housing construction work, If you started it, describe the project funding mechanism, How many funding mechanism are there please describe. 8

b) What are financial ratios and why are they important in financial analysis and decision making? How do financial ratios provide insight into a company's performance and financial health? 7

6. a) A construction equipment has initial cost & annual saving per year are of Rs 40000 & Rs 20000 respectively with annual operation & maintenance cost of 7000. It will depreciate by MACRS method & will have no salvage value. The useful life of equipment is 5 years. Estimate before & after tax cash flow. The company pays income tax @40%. Evaluate after tax by FW method. 8

b) Describe the Taxation law and what do you understand about corporate income Tax? 7

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

a) Balance sheet

b) Nominal rate of interest

c) Demand and supply

POKHARA UNIVERSITY

Semester: Spring

Level: Bachelor
Programme: BE
Course: Engineering Economics (New)

Year : 2024
Full Marks:100
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) List out the principles of Economy. 5
   b) How you understand supply and demand. 5
   c) Describe about manufacturing cost and Non-manufacturing cost. 5
2. a) A man is planning to retire in 25 years. He wishes to deposit regular money every 3 months until he retires so that he will receive annual payments of Rs.4, 50,000 after the first year of his retirement for the next 10 years. How much must he deposit if the interest rate is 8%, compounded monthly? 8
   b) Explain about simple interest, compound interest, nominal interest and effective interest in your own word. 7
3. a) Calculate the simple and discounted payback period for the project when MARR is 20% 8
   Initial investment: Rs 25000
   Annual Revenue: Rs 8000
   Salvage Value: Rs 5000
   Expected Life: 5 year.
   b) Compute IRR and suggest the investment decision for the project given below: 7
   Initial investment: Rs 90000
   Annual Revenue: Rs 27000
   Annual Expenses: Rs 8000
   Salvage Value: Rs 10000
   Expected Life: 6 year
   MARR: 15%

4. a) Using co-terminated assumption recommend the best project taking study period as 5 years 8

Project	A	B
Initial Investment (Rs)	3,50,000	5,00,000
Annual Revenues (Rs)	1,30,000	1,75,000
Annual cost (Rs)	15,000	25,000
Salvage value (Rs)	35,000	50,000
Useful life	5 years	8 years
MARR	10%	

OR

Evaluate the following two feasible investment A and B having different useful lives, if MARR is 10% per year. Use PW method with repeatability assumption.

Project: A	Project: B
Initial investment: Rs 50000	Initial investment: Rs 150000
Annual Revenue: Rs 25000	Annual Revenue: Rs 70000
Annual Expenses: Rs 3000	Annual Expenses: Rs 2000
Salvage Value: Rs 15000	Salvage Value: Rs 40000
Expected Life: 3 year	Expected Life: 5 year

b) Suppose a company has decided to purchase a new machine having initial cost of Rs 18,000 by expecting 8 years useful life & have operating cost of Rs 3000 in 1st year. For remaining years, operating cost increase each year by 15% over previous year's operating cost & salvage value declines each year by 20% from the previous year's salvage value. Find the economic service life of this new machine when MARR is 12% per year. 7

5. a) Perform Sensitivity analysis using PW method over a range of (+ or -) 20% in initial investment, net annual revenue and salvage value. 8

Initial investment: Rs 200000
Annual Revenue: Rs 50000
Annual Expenses: Rs 5000
Salvage Value: Rs 25000
Expected Life: 10 year
MARR: 12% per year

b) What do you understand about break-even analysis? State the procedures to identify break even paint. 7

OR

If you purchase Jagadamba cement at the rate Rs 650 and selling at the rate of Rs 900, you are paying shop rent change Rs 10000 and Rs 12000 for the helper salary. What is the break-even quantity that you must sold. Let us say you have 10000 bags of cement is in stock.

6. a) A grinding machine has initial cost & annual saving per year of Rs. 40,000 & Rs. 20,000 respectively with annual O & M cost of Rs. 6,000. It will depreciate by MACRS method & will have salvage value of Rs. 4,000 at the end of 5th year. Estimate BTCF & ATCF. The company pays income tax @ 40%. Evaluate the profitability by FW method if interest rate is 12%. Also, calculate the interest rate by IRR analysis. 8

b) Discuss about different methods of financing including its merits and demerits. 7

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

a) Inflation

b) Risk Analysis

c) Independent and contingent project

(2024 Spring) Economics (New)

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Fall

Year : 2024
Full Marks : 100
Pass Marks : 45
Time : 3 hrs.

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) Explain about mutually exclusive alternatives. 5
   b) What are project funding mechanism in Nepal? 5
   c) How you understand about Value Added Tax (VAT)? 5
2. a) What will be the amount at the end of 8 years if you deposit Rs. 15,000 per month for five years continuously if nominal interest rate is 12% compounded quarterly? 8
   b) Justify 'demand creates its own supply'. Why an engineer needs to study economics? List out major principles of engineering economics. 7
3. a) Calculate PW of the following two mutually exclusive projects by using repeatability assumption when MARR is 10% per year. 8

	A	B
Initial Cost	2,00,000	4,00,000
Annual Revenue	15,000	20,000
Annual O & M	2,000	4,000
Useful Life (years)	3	9
Salvage Value	4,000	8,000

OR

Compare following two projects by repeatability assumption.

Item	Project-A	Project-B
Investment	5,00,000	7,00,000
Annual revenue	2,00,000	3,00,000
Annual cost	50,000	1,00,000
Salvage value	80,000	1,50,000
Useful life year	7	7
MARR	8%	

b) What do you mean by marginal cost & opportunities cost. Explain about the life cycle of cost. 7

4. a) What are the basic methods of engineering economic studies? 8

Determine IRR of the project with following information,

Initial investment = Rs. 10,000
Project life = 5 years
Annual revenue = Rs. 5,310
Annual expenses = Rs. 3,000
Salvage value = Rs. 2,000
MARR = 8%

OR

What do you mean by payback period? Find simple and discounted payback periods and justify investment with the given cash flow information;

Initial investment	Rs. 3,00,000
Annual revenue	Rs. 1,50,000
Annual cost	Rs. 30,000
Salvage value	Rs.1,00,000
Useful life year	5
MARR	10%

b) Make investment decision of the following project by B/C ratio and payback period methods. 7

Initial investment: Rs. 1,00,000
Annual revenue: Rs. 20,000
Annual expense: Rs. 5,000
Salvage value: Rs. 25,000
Project life: 10 years
MARR: 10% per year

5. a) What do you mean by fundamental equation of accounting? Briefly discuss the different types of ratios used in financial analysis and decision making. 8

b) Explain in detail the Economic theory and Ecological limit, what do you understand about Ecological trot print? 7

6. a) What are the causes of depreciation? If a machine costing Rs. 200,000 is purchased by expecting salvage value of Rs. 50,000 at the end of 6th year. Calculate depreciation amount for each year by 2+6

i. SOYD

ii. Declining balance

b) If Sony Company wants to produce branded laptop computers with increasing market demand. The company is estimated following figures,

Fixed cost = Rs. 20,00,000
Total cost = Rs. 40,00,000
Total sales = Rs. 30,00,000
Sales quantity = 50 units

i. Find break–even unit of production.
ii. What should be the output if company desires profit of Rs.5,00,000?

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

a) FIRR and EIRR
b) Ratio analysis
c) Project Risk

EE2024 - Fall