



United International University (UIU)

Mid Term Examination

IPE 401/IPE3401: Industrial Management/Industrial and Operational Management

Summer Trimester: 2022

Total time: 1:45 hours

Date: 06/08/2022

Total marks: 30

Section: A/B/C

There are 5 questions. You must answer question 3 & 4 and any Two of 1, 2 & 5

- 1 (a) Describe the 5 factors that influence technology acquisition decision. [2] [CO2]
- (b) Mr. Bunny invested some money at 15.5% interest rate compounded weekly for 40 years and Mr. Sunny invested some money at 28% interest rate compounded semiannually for 30 years to reach 10 million. Whose investment was higher? And how many years it took for Sunny to reach 5 million. Show with necessary calculations. [5.5] [CO1]
- 2 (a) You are an employee of a famous multinational company named "ABC". They have various types of products in the market like different types of snacks items, Different types of condiments, Different types of Tobacco products and different types of cosmetics etc. All of their Snack's items have a brand name "W", their condiments have a brand name "X", All tobacco products have a brand name "Y" and all of their Cosmetic's brand name is "Z". So Which type of brand name they chose? Explain. [2] [CO2]
- (b) Two Mutually exclusive projects are given [5.5] [CO1]

Year	0	1	2	3	4	5
Cash Flow	-16109	6110	7999	8900	3000	2671

Project "Advanced"

Year	0	1	2	3	4	5
Cash Flow	-14870	7298	5186	6325	881	2031

Now select the project using **Discounted payback period** method and consider hurdle rate = **16.5%** compounded quarterly. Selection authority wants the payback within 4.8 years

- 3 (a) Two Independent projects have cash flow shown below [5.5] [CO1]

Project "Q"

Year	0	1	2	3	4	5
Cash Flow	-7121	5600	780	4512	1446	1700

Project "P"

Year	0	1	2	3	4	5
Cash Flow	-8311	3782	11452	4000	601	1400

Which project will you select applying **IRR** method considering **32%** WACC compounded daily? (Use trial and error method) (Show necessary calculations)

- (b) If you apply **NPV** method with the given interest rate and consider them independent, will the answer be same? Explain and show proper calculations. [2] [CO1]

- 4 (a) The production rate of "Dum chips" packets is 250 per day. The weekly demand of these produced packets is 1400 per week, set up cost is \$40 and holding cost is \$3.5 and number of working days are 245 in a year. [2] [CO2]

- i) Determine optimal order quantity
ii) Determine expected time between orders

- (b) The demand of raw material "Dolo-lime" for BSRM Steel Mill is about 1200 bags per day. Number of working days are 230. The cost associated with each order is about \$300. The holding cost is 25%. The quantity schedule chart is given below. Determine **Optimal order quantity** and **Total cost** associated with it [5.5] [CO2]

Discount Number	Discount quantity	Discount %	Discount price\$
1	0 to 4000	No discount	18
2	4001 to 5000	15%	?
3	5001 and over	20%	?

- 5 (a) Mr. Mihir is an assistant manager in Anwar Steel LTD. He is a very experienced person in his field and his technical knowledge about steel machineries is also vast. But he faces problems when dealing with his subordinates. He can't motivate them enough to work their best or he can't force them enough to do the same. And for this reason, he was not getting his long due promotion to be a manager. So which type of skill he needs to get the promotion? And what level of manager he is now? Explain. [2] [CO2]
- (b) Two Mutually exclusive public projects were being considered by govt. have the following estimated benefit and cost. By using NPV method, select the project and consider MARR 11% compounded semiannually. Show it with proper calculations. [5.5] [CO1]

Project "Q"

Year	0	1	2	3	4	5
Benefit	600	17000	12000	17525	9369	650
Cost	15000	5000	4500	8900	16000	1700

Project "P"

Year	0	1	2	3	4	5
Benefit	0	13313	16212	13258	3689	798
Cost	10000	4982	6789	9876	4323	452

$$FVF = \left(1 + \frac{i}{n}\right)^n - 1$$

CO1	Apply Engineering economics and simple mathematics for Solving project selection problems for choosing the best possible project
CO2	Analyze various industrial problems by using operation management, technique, operation research technique and cost accounting techniques and solve it.