United International University (UIU)

Mid Term Examination

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

Spring Trimester: 2023

Total time: 1:45 hours Date: 11/03/2023 Total marks: 30

Section: A/B

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

1 (a) Jon is a deputy general manager in a steel factory. He has decent skills regarding steel industries. But he is very good at encouraging people and making them work their hardest with positive reinforcement like compliments and small rewards. He believes that his employees are self-driven and a little motivation can realize their full potential. Though he has this skill, he is severely lacking in generating ideas and taking big decisions which can impact the company's future. For this reason he is not getting his promotion for the last 5 years. Explain what kind of manager he is according to management level and what skill he needs right now to get his next promotion. [2] [CO2]

(b) Mr. Pulok invested $17239 at a certain effective rate for about 29 years and earned 1.5 million. First, find out the effective rate and then find out the nominal interest rate which was compounded weekly. [5.5] [CO1]

2 (a) Dante was travelling to Saint martin Island and he found a vendor who was selling shampoos and chocolate at a very cheaper price. If he had to buy those items from a super shop, it would have cost him a lot of money. After buying the shampoos and chocolate he returned to Dhaka and tried to use them. To his utter surprise, he found that the shampoo was a duplicate /counterfeit item. Instead of shampoo, it had soap water in it. Did Dante buy the items from a gray or white or black market? Explain [2] [CO2]

(b) Two Mutually exclusive projects are given [5.5] [CO1]

Project "Sun"

Year	0	1	2	3	4	5
Cash Flow	-26205	6524	18501	9712	16300	20012

Project "Moon"

Year	0	1	2	3	4	5
Cash Flow	-25201	8981	9981	6152	6591	17381

Now select the project using **Discounted payback period** method and consider hurdle rate =**22%** compounded quarterly. Selection authority wants the payback within 4.5 years

3 (a) **Describe 5 factors that influence technology acquisition decision** [2] [CO2]

(b) Two mutually exclusive projects have cash flow shown below [5.5] [CO1]

Project "Q"

Year	0	1	2	3	4	5
Cash Flow	-65001	18824	13312	17132	26518	11181

Project "P"

Year	0	1	2	3	4	5
Cash Flow	-75009	14127	29225	17772	26860	33011

Which project will you select applying **Benefit cost ratio** analysis considering **18%** WACC compounded weekly?

4 (a) The production rate of Fried chips is 200 per day. The usage rate of these produced chips is 1050 per week, set up cost is $40 and holding cost is $3.5 and number of working days are 300 in a year. Lead time 2 days [2] [CO2]

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

(b) A steel factory is open for 230 days in a year. The demand of refractory material in the factory is 100 bags per day. Whenever an order is placed it costs $48 and the holding cost per unit per year is 40%. 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 to300	No discount	17
2	301to 650	6%	?
3	651and over	14%	?

5 (a) X mart is a super shop which was trying to make a new outlet in Bongshal area near a slam. They had already made a billboard and posted their posters on various main roads of Bongshal and gave advertisement on social media. Their targeted customers were the mass people of the slam who belong to lower income group. The poster was not noticed by them as they were not posted near the slam area and they don't have smart phone to see those ads. X mart has necessary product for that community but the price is a bit high compared to the income level of the slam residents. As a result, X mart's sales was very disappointing. Determine if it was a successful marketing mix with the help of 4P and explain your answer. [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 **16%** compounded semiannually. Show it with proper calculations. [5.5] [CO1]

Project "Padma"

Year	0	1	2	3	4	5
Benefit	0	11500	11000	18525	8261	750
Cost	16000	6000	2500	7900	15000	2700

Project "Jamuna"

Year	0	1	2	3	4	5
Benefit	0	18889	15313	12256	4688	791
Cost	11000	4082	6089	9000	6327	1552

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.