INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

End Spring Semester Examination 2023-24

Date of Examination:25/04/2024 **Session: AN** **Duration: 3 Hrs** **Full Marks: 50**

Subject No. : EP60008 **Subject: Economics of Entrepreneurship**

Department/Center/School: Rajendra Mishra School of Engineering Entrepreneurship

Specific charts, graph paper, log book etc., required_____ Special Instructions (if any): Please write in brief and to the point. No queries will be entertained during the examination. Please clearly state the assumptions made in the solution. ***All questions are compulsory.***

Q1. a Explain the following:

i. Suppose a discount retail chain is considering opening a new outlet in another city. What should they consider in assessing the risk associated with the future cash flows of this new outlet? **[2]**

ii. Discuss the four criteria for taking decision under uncertainty. **[4]**

Q1. b. A company is considering hedging its foreign exchange risk. It has made a purchase on 1st. January, 2018 for which it has to make a payment of British Pound GBP 73,500 on September 30, 2018. The present exchange rate is 1 GBP £ = ₹82.3953. It can purchase forward 1 GBP £ at ₹81.5375. The company will have to make a upfront premium of 2% of the forward amount purchased. The cost of funds to the company is 11% per annum and the rate of corporate tax is 45%. Ignore taxation. Consider the following situations and compute the Profit/Loss the company will make if it hedges its foreign exchange risk: **[4]**

i. If the exchange rate on September 30, 2018 is ₹84.5000 per £.

ii. If the exchange rate on September 30, 2018 is ₹83.0000 per £.2

Q2. a. An owner wants to decide on location of a new law firm. Following are the details. **[9]**

Profit (π)	Utility [U(π)]	Probabilities		
		Location 1 (P_1)	Location 2 (P_2)	Location 3 (P_3)
$1000	0	0	0.1	0.30
$2000	0.10	0.2	0.15	0.10
$3000	0.35	0.3	0.15	0.10
$4000	0.60	0.3	0.25	0.10
$5000	0.85	0.2	0.20	0.10
$6000	1.0	0	0.15	0.30

i. Calculate the marginal utility of profit.

ii. Calculate the weighted expected utility for the three locations. Which location maximizes the expected utility?

iii. What is the risk attitude of the owner? How you found the risk attitude?

Q2. b. Consider the two investments with the following cash flows. **[6]**

Economic Scenario	Probability of Economic Scenario	Possible Outcome for Investment 1	Possible Outcome for Investment 2
Boom	25%	$2000	$1500
Normal	40%	$1000	$1000
Bust	35%	$500	$857

i. Calculate the expected value of each investment.

ii. Calculate the standard deviation for each investment's possible outcomes.

iii. Which investment is riskier?

Q3. You are evaluating an investment project, with the following cash flows. Calculate the following: **[10]**

i. Payback period
ii. Discounted payback period, assuming a 16% cost of capital
iii. Net present value, assuming a 16% cost of capital
iv. Profitability index, assuming a 16% cost of capital
v. Modified internal rate of return, assuming reinvestment at 10%

Q4. Consider the following cash flows for Projects A and B. **[15]**

Project A		Project B	
Probability	Cash Flow	Probability	Cash Flow
0.25	$1300	0.30	$3000
0.40	$1500	0.25	- $1000
0.35	$800	0.45	$1500

i. What are the cash flows range for each project?
ii. What is the standard deviation of the possible cash flows for each project?
iii. What is the coefficient of variation for each project?
iv. Assume a firm is trying to decide between these two projects and uses a 13% required rate of return to evaluate all the projects having a coefficient of variation of less than 0.5 and an 18% required rate for those projects with coefficients greater than 0.5. Project A requires an initial outlay of $2,000, whereas Project B costs $1,000. Each project is expected to have a five-year life. Which project should be undertaken if the projects are mutually exclusive?

Conduct a sensitivity analysis on Project B making each of the following changes:
1) Change the discount rate to 19%.
2) Change the initial outlay to $ 1,800.