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1705E704

Candidate's Seat No :_____

IMSc IT (FIN) Sem.-8 Examination

FTMSC-09

Risk Management in Fin Tech

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

Instructions:

- **Figures to the right indicate Full Marks.**
- **Do not write anything on the question paper.**
- **Simple calculator is allowed. Do not use a scientific calculator.**

Q.1 A. Discuss the vital issues involved in operational risk management with respect to Business activities, financial activities, Banking activities and insurance activities (14)

OR

Q.1 A. (i) A company had determined that a particular loss event has the following probabilities of loss during a one-year periods (Note that the probabilities must add up to 100%) (07)

Probability	Amount of Loss
10%	1,00,000
20%	1,20,000
30%	1,60,000
35%	1,80,000
5%	5,00,000

Q.1 A. (ii) For a particular loss event, management estimates the probability that the event will occur is 35% and the loss amount if it occurs is 1,50,000. Therefore, the probability the event will not occur must be 65% (100% - 35%) and the loss amount if it does not occur is, of course, zero. (07)

Q.2 A. Identify the hedging strategies that would be required using the index futures under the following circumstances: (14)

Stock	Position	Beta	Number of Shares	price	Hedge Needed
RIL	Long	1.2	1000	500	Full
Satyam	Long	0.8	1000	350	Full
RIL	Short	1.2	1000	500	Full
Satyam	Short	0.8	1000	500	80%
Infosys	Long	1.0	1000	1700	120%

(P.T.O)

OR

Q.2 A.(i) The following quotes were observed by Mr. Arvind on March 11, 2025 in the Economic Times. (07)

a) SBI MAR 05 FUT 720.50
b) HLL APR 05 FUT 144.30
c) NIFTY MAY 05 FUT 2140

Explain what these quotes indicate. Also, if the initial margin is 10% and Mr. Arvind wants to buy 100 of each how much margin he has to deposit individually?

Q.2 A.(ii) The following were observed by Mr. Arvind on March 11, 2005 in the Economic Times. (07)

Contracts	Open	High	Low	Close	Open Interest	Traded Equity	Number of Contracts
SBI MAR 05 FUT	735	740	735	738	433	138000	92
NIFTY MAY 05 FUT	2800	2380	2800	2830	1016	1024000	512

Q.3 A. "The current approach of fixing industry-wise, group-wise, borrower-wise exposure limits are sufficient for managing concentration risk". Do you agree? (14)

OR

Q.3 A. (i) Discuss the approaches to measuring credit risk an issue relating to the use of the same. (07)

Q.3 A. (ii) Write note on Orientation of the IRB Approach. (07)

Q.4 A. The workers of an industrial organization are exposed to an industrial accident. The recurrence and the severity of the uncertain. There measures available in the investment chunk of Rs. 5,00,000. If a company provides the safety measures in different chunks of investment range of Rs.5,00,000 the frequency of the accidents will decrease as under: (14)

Safety Expenditure	Accident Frequency per Employee
0	0.100
Rs.5,00,000	0.080
Rs.10,00,000	0.070
Rs.15,00,000	0.066
Rs.20,00,000	0.063

There are 5,000 workers working in this factory. On the basis of past experience. It was calculated that the average loss severity per employee is Rs.20,000.

Required: (1) Present the data in a tabulated manner showing: (a) expected accident cost per employee, (b) total expected accident cost

	of the company (i.e. above (a) X 5,000 total employee), (c) additional costs for providing each chunk of safety measure and (d) additional benefits derived from the prof the safety measures.	
	OR	
Q.4 A. (i)	Calculate the Value at Risk on the following details relate to an insurance company: (i) Total portfolio: $ 400mm, (ii) Daily portfolio standard deviation is 0.75% for a 10- days planning horizon., (iii) The 1- tail 99% confidence interval factor value is 2.326.	(07)
Q.4 A. (ii)	Distinguish **Loss prevention and loss minimization** with suitable practical example	(07)
Q.5	Multiple Choice Questions (Any seven with suitable reason): 1. Which of the following techniques is used in Credit Risk Management to identify patterns and make decisions using data through trial and error? a) Linear Regression b) Neural Networks c) Multiple Discriminant Analysis d) Optimization Models 2. What is the primary purpose of Optimization Models in Credit Risk Management? a) To maximize borrower defaults b) To discover the optimum weights for borrower and loan attributes c) To predict credit scores d) To simplify rule-based decision-making processes 3. Which of the following systems in Credit Risk Management utilizes simulation driven by a direct causal relationship with parameters determined through estimation techniques? a) Hybrid Systems b) Neural Networks c) Linear Regression d) Multiple Regression 4. Which of the following characteristics of risk is relevant to insurance risk? a) Risk retention b) Risk diffusion c) Risk elimination d) Risk transfer 5. Which of the following category of risk is not objectively measurable? a) Moral hazard	(14)

(P.T.O)

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b) Price risk
c) financial leverage risk
d) None of the above

6. Which step is not included in risk management process?
a) Risk identification.
b) Evaluation of frequency and severity of losses.
c) To keep away from the risky events.
d) Monitoring of the performance of chosen method.

7. The payoffs for financial derivatives are linked to
(a) securities that will be issued in the future.
(b) the volatility of interest rates.
(c) previously issued securities.
(d) government regulations specifying allowable rates of return.

8. By hedging a portfolio, a bank manager
(a) reduces interest rate risk.
(b) increases reinvestment risk.
(c) increases exchange rate risk.
(d) increases the probability of gains.

9. A contract that requires the investor to buy securities on a future date is called a
(a) short contract.
(b) long contract.
(c) hedge.
(d) cross.

10. Risk control can is an ideal strategy for risks with _____ frequency and _____ severity factors.
(a) high, low
(b) low, high
(c) high, high
(d) low, low