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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester - Master of Business Administration (MBA)

Semester End Examination; Aug. / Sep. - 2020

Risk Management

Time: 3 hrs

Max. Marks: 100

Note: i) Answer any **ONE** full question among Q.1 and Q.2 in **PART - A**.

ii) Answer any **THREE** full questions among Q.3 to Q.8 in **PART - A**.

iii) Q.9 in **PART - B (Case Study)** is compulsory. iv) Table for $N(x)$ shall be allowed.

PART - A

- 1 a. What is financial derivative? Why and when the derivatives are used? 10
- b. Explain the major players in derivative markets. 10

OR

- 2 a. Explain the meaning and features of a futures contract. Also mention the types of future contracts. 10
- b. What are margins? Explain types of margins. 10
- 3 a. Using the following data, prepare a margin account of the investor. Assume that, if a margin call is made at any time, the investor would deposit the amount called for;

Position → short;

Contract size → 500 units;

Unit price → ₹ 22;

No. of contracts → 8;

Initial Margin → 10% of contract;

Maintenance margin → $\frac{3}{4}$ th of initial margin; Date of contract June 3rd closing price;

June	3	4	5	6	7	8	9	12
Price	22	22.30	23.10	22.90	23.00	23.15	22.85	22.95

- b. i) What is the equivalent continuous compounding rate, if quarterly compounded rate is 12% and 21%? 10
- ii) What is the equivalent half yearly compounded rate, if the continuously compounded rate is 20%?
4. A 12 months forward contract is available for the price of ₹ 477. The underlying asset pays an income of ₹ 13 each at the end of 4th, 7th and 9th month. If the interest rate is 9% continuously compounded per annum,
- i) What is the fair future price?
- ii) If at the end of 5th month, the underlying asset quoted at ₹ 450, what is its value of short and long? 20
- iii) At the end of 7th month, if the price moved upto ₹ 499, what is the value of short and long?
- iv) If the delivery price at the time of entering the contract is quoted at ₹ 530; is there any possibility of Arbitrage? If so, What is the action you will take in order to make benefits to the arbitragers?

Contd...2

- 5 a. The value weighted Index consists of 5 stocks. The Index currently stands at 1240. The market lot Index future is 100.

Company	Price per share	Market capitalization (in Crores)
A	72	50
B	115	250
C	425	350
D	48	75
E	220	275
		1000

10

The dividend per share are expected on:

A → ₹ 5 → 30 days from now

B → ₹ 15 → 45 days from now

E → ₹ 20 → 60 days from now

C and D → are not expected to pay any dividend

Risk free rate continuously compounded is 10%. Calculate the price of the future contract on the Index with 6 months to maturity.

- b. An airline company expects to purchase two million Gallance of jet fuel in one month and decides to use heating oil futures. Each future contract is trading 42,000 Gallance. The change in future price (ΔF) and change in fuel price (ΔS) per Gallance is given below

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ΔF	2.1	3.5	-4.6	0.1	4.4	-2.9	-2.6	-2.9	4.8	-0.6	-3.6	-1.1	+1.9	-2.7	2.9
ΔS	2.9	2.0	-4.4	0.8	2.6	-1.9	-1.0	-0.7	-4.3	1.1	3.6	-1.8	-0.9	3.2	2.3

10

Calculate the hedge ratio and number of future contracts the company has to enter into.

- 6 a. An investor has the portfolio consisting of following securities. The investor intends to safeguard following securities by taking short position in the NSE's NIFTY futures. Determine the number of contracts to hedge when the investor intends to hedge the portfolio by 100% and 130%. The current NIFTY value is 5,145 and the multiplier is 50. What will be the number of contracts that will be sold to bring down the Beta to 1.5?

Company	No. of Shares	Share price	β_i
ABB	1250	1110	1.32
Bank of Baroda	5200	320	0.89
HUL	600	250	0.65
Infosys	750	1860	1.46
GMR	1800	165	1.19
Wipro	30000	3500	2.45

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- b. Write a short note on;

i) American and European Options

ii) In the money, out of the money and At the money

10

- 7 a. Explain the factors influencing the option prices. 10
- b. The current market price of the stocks is ₹ 60 and It is believed that at the end of one months the price will be ₹ 66, or ₹ 54. If risk free rate is 15% p.a. A call option is available at an exercise price of ₹ 63. Using Binomial model; 10
- i) Determine the value of call option
- ii) Determine the hedge ratio
- 8 a. The following data is given to you about the call option on a share which is currently traded at ₹ 54:

	X ₁	X ₂	X ₃
Exercise price	50	55	60
Call price	8	4.5	2

10

Determine the profit and loss from the butterfly strategy when share price is 42, 55, 58 and 59.

- b. What are combinations? Explain important combination strategies. 10

PART - B (Case study - Compulsory)

9. From the following data :
- a) Find the value of call and put option under B and S Model
- b) Find Greek terminologies like Delta, Gamma, Theta, Vega and Rho 20
- Current price is 120; Exercise price is 115; Expiration 3 months;
- Risk free rate continuously compounded 10%; Standard deviation of returns 0.6

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