VPM's
DR VN BRIMS, Thane
Programme: PGDM (2018-20)
PGDM Trimester V Examination January 2020

Subject	Derivative and Risk Management		
Roll No.		Marks	60 Marks
Total No. of Questions	7	Duration	3 Hours
Total No. of printed pages	2	Date	07.01.2020

Note: Q1 is compulsory and solve any FOUR from the remaining SIX questions.

Q1) 20 Marks (Compulsory)

Q1) GST collections topped the Rs 1 lakh crores mark for December, but auto sales numbers for the month came in weak. Nifty futures in Singapore signaled range bound trade ahead. Markets globally cheered the efforts by China's central bank to support its slowing economy and emergence of clarity over the signing of US-China trade deal. Tech view:

Nifty support at 12,150 Nifty50 on Wednesday settled near the 12,200 mark after trading in a thin range for the day. The index formed an indecisive Spinning Top on the daily chart. Analysts said levels below 12,150 could trigger a correction in the market and see resistance in the 12,250-12,290 range.

(Where first column is Open Interest, second column is change in open interest and fifth column is LTP)

						1,125	784.65	838.15	4,950	11450.00			0.10	4,800					
9,150	-675	11	760.00	70.80	1,125	743.35	774.45	75	11500.00			0.10	39,150	-0.40	0.10	3,204	-133,725	616,500
					1,125	689.25	738.10	4,950	11550.00			0.10	3,000					600
975	-150	4	666.00	116.00	75	655.00	674.45	75	11600.00			0.05	80,325	-0.30	0.05	1,026	-35,400	128,100
					1,050	584.15	638.05	4,950	11650.00			0.05	150	-0.40	0.05	2		675
8,175	-4,275	153	562.00	71.50	1,050	540.35	564.95	75	11700.00			0.05	16,050	-0.40	0.05	745	-21,600	269,625
750	750	10	470.50	47.55	1,050	490.15	537.25	4,950	11750.00			0.10	11,775	-0.30	0.05	60	-2,925	4,200
23,700	-2,025	47	463.00	70.05	300	462.80	464.90	75	11800.00	39,600	0.05	0.10	83,625	-0.55	0.05	2,727	1,500	523,575
1,050	600	16	408.10	70.45	75	412.05	415.85	75	11850.00	6,675	0.05	0.10	21,675	-0.50	0.05	174	-9,150	17,625
36,900	-18,900	505	359.50	62.65	75	363.30	364.80	75	11900.00	518,250	0.05	0.10	179,025	-0.65	0.05	2,674	-900	408,600
3,600	-2,250	90	312.65	73.00	75	313.70	315.00	225	11950.00	142,875	0.05	0.10	121,725	-0.55	0.10	3,049	4,500	317,400
137,250	19,575	2,501	266.00	72.60	300	265.30	266.45	75	12000.00	1,856,100	0.05	0.10	244,200	-1.05	0.10	32,219	506,625	1,610,100
23,025	-3,225	1,268	216.40	73.30	150	215.55	216.20	75	12050.00	822,525	0.05	0.10	39,075	-1.65	0.10	27,839	-187,125	523,650
236,325	-72,300	21,272	166.00	70.40	150	165.95	166.40	75	12100.00	108,000	0.15	0.20	100,950	-4.35	0.15	148,919	524,700	2,592,075
270,825	-313,275	68,158	115.00	62.40	300	115.10	115.55	225	12150.00	241,800	0.25	0.30	167,175	-11.55	0.30	291,393	1,790,850	3,574,350
1,857,150	-893,400	411,719	66.35	44.55	300	66.35	66.50	4,500	12200.00	23,250	1.30	1.35	5,850	-29.35	1.35	617,264	5,653,425	7,524,675
3,363,825	678,600	596,304	21.95	14.05	75	21.90	22.00	5,475	12250.00	3,975	7.05	7.15	2,925	-59.65	7.15	328,823	3,006,000	3,602,325
6,770,400	3,289,500	482,899	2.30	-0.50	375	2.35	2.40	31,350	12300.00	75	37.20	37.40	375	-74.20	37.20	89,724	543,525	1,011,600
2,159,250	840,825	61,447	0.10	-1.05	256,275	0.10	0.15	103,950	12350.00	75	85.15	85.55	525	-73.70	86.00	5,607	56,100	152,175
1,725,675	322,275	21,542	0.05	-0.70	1,656,300	0.05	0.10	441,975	12400.00	75	133.60	134.30	150	-74.45	133.95	3,819	-23,325	73,050
284,625	-6,300	2,472	0.05	-0.45			0.10	102,600	12450.00	75	184.50	186.40	150	-70.55	186.65	151	-1,875	11,175
874,575	-14,250	7,382	0.10	-0.40	616,800	0.05	0.10	98,925	12500.00	375	233.45	234.25	75	-76.75	233.85	223	-4,800	13,950
50,100	-6,150	205	0.05	-0.35			0.05	4,200	12550.00	300	284.55	287.95	75	-66.35	292.00	28	1,350	1,800
445,500	-54,525	890	0.05	-0.40	85,200	0.05	0.10	77,925	12600.00	75	334.00	337.75	75	-65.85	342.05	7	225	2,850
24,150	3,300	162	0.05	-0.15	2,250	0.05	0.10	12,900	12650.00	75	384.55	388.50	750	-69.00	392.00	2		300
176,925	-44,775	655	0.05	-0.35			0.05	61,725	12700.00	75	433.75	436.20	225	-67.20	442.00	4		900
3,075	1,425	25	0.05	-0.15	1,425	0.05	0.10	2,025	12750.00	750	483.50	488.50	750					
94,425	-14,475	199	0.05	-0.35	6,900	0.05	0.10	11,100	12800.00	75	526.05	561.20	975	-641.05	542.05	1		
							0.10	600	12850.00	4,950	561.55	615.45	975					
21,525	8,850	302	0.05	-0.15			0.10	14,025	12900.00	75	626.55	661.20	975	-624.75	642.00	1		
							0.10	4,200	12950.00	4,950	661.45	715.35	975					
391,800	-299,175	4,355	0.05	-0.30	2,625	0.05	0.10	30,000	13000.00	75	726.55	741.15	75	-597.25	755.00	2	75	75
75							0.10	3,000	13050.00	4,950	761.30	815.25	975					
							0.10	1,500	13100.00	4,950	811.50	861.20	975					

Looking at the above market condition

   a) formulate the bull call spread strategy

   b) Analyze the payoff table

Ques 1: An investor in India anticipated that the price of Cotton will fall and so took a short position on Cotton. The investor short sold 1000000 Kg Cotton. On 4 Jan, 2019, the investor anticipated that for the coming six months the price of cotton will rise. How should he hedge the risk for six month period?

Attempt Any FOUR from the Remaining SIX Questions

Q2) *Any two from (a) or (b) or (c)* ——————— *(5x2) = 10 Marks*

a) What is the result if the strike price of the put is higher than the strike price of the call in a strangle?

b) Compare ITM, OTM and ATM call and put option and how they vary w.r.t to delta?

c) Elaborate the meaning of gamma of an option position? What are the risks in the situation where the gamma is highly positive and the delta is zero?

Q3) *Any two from (a) or (b) or (c)* ——————— *(5x2) = 10 Marks*

a) What is meant by protective put? Analyze the situation when it is useful?
b) Outline the difference between implied volatility and historical volatility?
c) Using the CAPM Framework explain the beta of an option?

Q4) *Any two from (a) or (b) or (c)* ————— *(5x2) = 10 Marks*
a) How is delta hedging strategy useful in making profit from the portfolio?
b) Elaborate on the advantages of derivative market over equity market?
c) A 3-month call with a strike price of Rs.25 costs Rs. 2. A 3-month put with a strike pride of Rs 20 costs Rs 3. A trader uses the options to create a strangle. For what 2 values of the stock price 3 months from now will the trader breakeven?

Q5) *Any two from (a) or (b) or (c)* ————— *(5x2) = 10 Marks*
a) Infer VaR from the following statement "5-day VaR with 99% confidence level is 1.1 crore".
b) How is binomial model used to build a risk free portfolio?
c) Elaborate on the steps how you can calculate the historical volatility using the closing price of the stocks.

Q6) *Any two from (a) or (b) or (c)* ————— *(5x2) = 10 Marks*
a) Explain the movement of the Black Scohles model variables with respect to premium of the stock?
b) If delta neutral strategy minimizes the risk of movement of the market in upward and downward direction, then how can the investor earn profit?
c) Outline the difference between the forward contract and future contract?

Q7) *Any two from (a) or (b) or (c)* ————— *(5x2) = 10 Marks*
a) Explain the concept of delta hedging using straddle strategy?
b) Outline the difference between term structure and volatility smile?
c) Using a example explain when the concept of maintenance margin and initial margin.