

PGDM, 2014-16

Derivatives and Risk Management

DM-411/1B-409

Trimester – IV, End-Term Examination: September 2015

Time Allowed: 2 Hrs 30 mins

Max Marks: 50

Sec A

(Answer any three questions out of five. Each question carries five marks)

1. A trader buys 100 European call options with a strike price of INR 60.00 and a time to maturity of one year. The cost of each option is INR 5.00. The price of the underlying asset proves to be INR 80.00 in one year. What is the trader's gain or loss?
2. The price of a stock is INR 85.00 and the price of a three-month call option on the stock with a strike price of INR 85.00 is INR 8.50. Suppose a trader has INR 8500 to invest and is trying to choose between buying 1,000 options and 100 shares of stock. How high does the stock price have to rise for an investment in options to be as profitable as an investment in the stock?
3. You sell three December silver futures contracts when the futures price is INR 510 per ounce. Each contract is on 100 ounces of silver and the initial margin per contract is INR 1020.00. The maintenance margin per contract is INR 510.00. During the next seven days the futures price rises slowly to \$512 per ounce. What is the balance of your margin account at the end of the seven days?
4. 'Speculation in futures market is pure gambling. It is not in the public interest to allow speculators to trade on a futures exchange'. Explore this viewpoint.
5. What are the most important aspects of the design of a new futures contract?

Sec B

(Answer any two questions out of three. Each question carries ten marks)

6. A stock price is currently INR 40. It is known that at the end of 3 months it will be either INR 45 or INR 35. The risk-free rate of interest with quarterly compounding is 8% per annum. Calculate the value of a 3-month European put option on the stock with an exercise price of INR 40.

(10 marks)

7. The price of a stock is INR 40. The price of 1-year European put option on the stock with a strike price of INR 30 is quoted as INR 7 and the price of a 1-year European call option on the stock with a strike price of INR 50 is quoted as INR 5. Suppose that an investor buys 100 shares, shorts 100 call options, and buys 100 put options. Draw a diagram illustrating how the investor's profit or loss varies with the stock price over the next year. How does your answer change if the investor buys 100 shares, shorts 200 call options, and buy 200 put options?

(10 marks)

8. i) Explain carefully the meaning of terms *convenience yield* and *cost of carry*. What is the relationship between futures price, spot price, convenience yield, and cost of carry.

ii) Explain why brokers require margins when clients write options but not when they buy options.

(5 marks x 2=10 marks)

Sec C

(Compulsory)

9. Please refer the attached option chain at National Stock Exchange (NSE) as on 20th August, 2015. As you notice, the spot Nifty is 8372.75. With reference to the given option chain, answer the following questions:

- How would you construct straddle at index value of 8400?
- Find out its cost, payoff, break even point and the maximum loss
- What would be the profit/loss is after 1 month the index value were i) 8500 ii) 8300
- How would you construct a short strangle with 8400 as central points
- Construct a bull spread using call options and find out its cost, payoff, and break even points (strike: 8400 and 8500).

(15 marks)



Equity

Enter company name or symbol

Normal Market has Closed: Aug 20, 2015
Next Trading Date: Aug 21, 2015

(All prices in ₹)

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Option Chain (Equity Derivatives)

Underlying Index: **NIFTY 8372.75** As on Aug 20, 2015 15:30:45 IST

View Options Contracts for: **NIFTY** OR **GO** Filter by: Expiry Date **27AUG2015** Futures contracts

CALLS													PUTS								
Chart	OI	Chng in OI	Volume	IV	LTP	Net Chng	Bid Qty	Bid Price	Ask Price	Ask Qty	Strike Price	Bid Qty	Bid Price	Ask Price	Ask Qty	Net Chng	LTP	IV	Volume	Chng in OI	OI
	800	-	-	-	2,050.00	-	1,000	1,774.00	2,159.50	100	6450.00	250	0.10	1.00	500	-	9.10	-	-	-	250
	90,375	650	141	-	1,868.70	-122.20	250	1,835.90	1,884.50	50	6500.00	2,000	0.15	0.20	50	-	0.20	60.47	58	350	6,800
	2,000	-	-	-	1,883.00	-4.00	1,000	1,674.00	2,088.90	100	6550.00	-	-	2.65	10,000	-	-	-	-	-	1,300
	150	-	-	-	1,757.75	-	1,000	1,582.20	1,933.85	100	6650.00	-	-	2.50	10,000	-	-	-	-	-	75
	2,950	-	-	-	1,620.00	-	1,000	1,482.20	1,833.85	100	6750.00	-	-	2.50	10,000	-	-	-	-	-	1,075
	1,975	-	-	-	1,585.30	-	1,000	1,535.85	1,605.95	500	6800.00	-	-	1.00	1,000	-	0.15	-	-	-	925
	460,125	-18,050	1,279	-	1,380.00	-115.70	50	1,377.60	1,384.15	25	7000.00	1,000	0.35	0.40	500	0.05	0.40	46.96	429	600	207,375
	350	-	-	-	1,380.00	-	1,000	1,200.00	1,542.30	100	7050.00	10,000	0.05	0.80	100	-	0.50	-	-	-	400
	566,350	-26,450	1,254	-	1,273.50	-123.20	50	1,270.90	1,284.15	50	7100.00	9,200	0.35	0.85	1,000	-0.10	0.30	42.40	359	-1,500	157,725
	128,950	-28,350	1,993	-	1,182.00	-113.90	125	1,142.00	1,192.45	125	7200.00	1,550	0.50	0.90	1,000	-	0.50	41.17	658	-350	185,525
	43,525	-425	102	-	1,074.00	-115.60	100	1,076.05	1,081.95	25	7300.00	2,525	0.60	0.95	150	-0.05	0.60	38.54	157	-925	78,400
	22,750	-675	53	63.54	1,010.90	-47.65	1,000	935.90	1,006.95	500	7400.00	1,850	0.90	1.10	1,000	0.20	1.00	37.23	265	1,025	111,200
	255,975	-14,000	1,548	-	879.15	-121.20	100	880.00	885.00	50	7500.00	2,200	1.05	1.20	575	0.05	1.05	33.88	7,115	-14,950	1,018,625
	49,350	-10,300	1,273	-	784.05	-113.75	50	779.40	788.90	125	7600.00	50	1.00	1.20	500	0.10	1.00	30.13	7,613	-38,650	592,375
	37,275	50	204	-	677.15	-125.65	125	674.60	690.60	250	7700.00	1,975	1.00	1.15	800	0.05	1.00	26.59	9,802	-38,575	699,750
	65,700	-3,450	624	-	587.15	-113.20	1,000	581.35	595.00	25	7800.00	75	1.45	1.50	10,150	-0.05	1.50	24.36	35,021	-20,200	1,855,625
	58,350	-4,350	351	-	482.00	-119.00	125	478.15	487.00	25	7900.00	1,125	2.20	2.25	25	0.40	2.20	21.89	86,404	-3,425	2,250,325

NCFM Online	EMERGE-ITP	KRA	EMERGE	Blogs	SOCIAL MEDIA	Ticker	Recently Viewed Quotes	HRX													
						1,000	238.00	529.50	100	8050.00	200	6.10	7.50	50	2.70	6.15	19.53	7,222	17,725	100,150	
	181,100	13,850	3,388	11.35	288.85	-114.95	50	291.00	292.00	125	8100.00	900	8.90	9.10	1,950	4.05	9.10	18.94	249,124	1,375	2,375,775
	525	-	-	-	339.15	-	100	201.00	273.15	75	8150.00	1,000	11.60	14.00	225	6.60	14.00	18.61	14,725	21,850	219,950
	322,475	-64,375	15,256	16.72	204.95	-106.80	100	203.30	206.00	150	8200.00	975	21.10	24.95	25	13.95	25.00	19.53	607,367	-348,475	6,356,900
	1,625	275	60	18.30	170.80	-106.20	1,000	151.05	170.80	100	8250.00	400	30.90	31.60	50	15.20	30.95	17.84	54,797	71,775	520,525
	929,950	172,975	84,738	16.55	128.55	-94.55	100	128.10	129.00	350	8300.00	6,350	44.65	44.80	475	23.15	44.05	17.69	1,047,614	-480,225	5,905,400
	89,775	77,075	6,464	16.36	96.45	-84.85	575	95.00	97.00	100	8350.00	50	61.45	62.00	7,200	32.70	62.00	17.31	115,568	-1,875	513,800
	2,811,925	1,253,350	588,812	16.40	70.45	-73.20	50	70.05	70.50	1,075	8400.00	25	83.45	84.40	1,700	42.65	83.40	16.79	1,191,701	-1,721,400	3,374,325
	585,525	304,800	66,317	16.23	48.70	-59.85	100	48.30	48.70	100	8450.00	350	110.20	110.80	250	54.20	110.35	16.36	63,410	-299,350	199,900
	5,285,025	1,698,050	1,491,436	16.13	32.30	-47.50	200	32.25	32.30	525	8500.00	50	143.50	143.85	25	67.25	143.00	16.06	709,634	-911,050	2,247,150
	905,000	417,525	113,027	15.90	19.95	-34.95	50	19.60	20.00	800	8550.00	50	177.05	183.00	50	79.15	178.00	15.00	9,960	-47,975	175,200
	5,754,100	575,925	1,094,551	15.95	12.20	-23.50	25	12.05	12.30	25	8600.00	25	220.05	221.00	50	91.90	220.85	15.06	114,302	-263,150	923,625
	887,725	153,625	103,388	15.68	6.60	-15.15	675	6.60	6.95	125	8650.00	25	258.80	264.25	25	97.45	260.05	-	734	2,975	19,825
	4,515,150	38,750	719,201	15.95	3.90	-8.40	9,925	3.75	3.90	475	8700.00	225	310.50	312.70	25	106.85	311.20	-	26,367	-152,150	361,125
	496,075	-15,350	56,027	16.45	2.45	-3.85	75	2.45	2.60	25	8750.00	1,000	343.90	377.75	1,000	116.35	362.00	15.20	22	300	1,825
	4,686,700	144,950	420,638	17.13	1.63	-1.85	2,850	1.60	1.70	9,200	8800.00	25	406.30	408.65	25	113.20	407.30	-	5,473	9,275	320,425
	342,825	-1,800	5,509	19.08	1.80	-0.45	1,000	1.50	1.75	1,000	8850.00	1,000	191.50	549.00	25	-	350.00	-	-	-	1,625
	2,505,025	-36,225	148,113	20.10	1.45	-0.30	9,925	1.45	1.50	1,600	8900.00	125	504.95	509.75	50	115.25	504.35	-	1,022	-4,675	144,825
	53,125	-2,575	451	21.38	1.30	-0.25	6,375	1.30	1.70	2,000	8950.00	1,000	297.50	649.00	25	-	419.00	-	-	-	225
	3,426,175	-88,775	55,152	22.58	1.15	-0.15	44,325	1.15	1.20	2,875	9000.00	50	603.80	609.55	50	115.40	604.75	-	1,887	-16,100	524,750
	2,200	-25	609	24.10	1.15	-0.20	200	1.00	3.20	10,000	9050.00	1,000	385.50	775.50	100	-	-	-	-	-	-
	608,325	-28,125	10,040	24.65	0.85	-0.10	7,175	0.85	1.00	10,625	9100.00	25	701.45	708.00	75	120.00	712.00	27.98	82	-550	89,725
	2,500	-	600	25.90	0.80	-0.20	10,000	0.15	2.50	10,000	9150.00	1,000	481.45	879.50	100	-	-	-	-	-	-
	506,525	-16,800	9,214	27.71	0.90	0.15	125	0.90	1.00	500	9200.00	25	799.75	807.85	125	125.25	809.25	-	57	475	45,575
	309,350	5,550	1,857	29.40	0.65	0.10	10,000	0.05	2.45	10,000	9250.00	1,000	581.45	979.50	100	-	-	-	-	-	-
	130,975	-575	274	31.80	0.60	-	825	0.60	0.65	300	9400.00	125	995.10	1,011.70	125	104.50	984.95	-	31	25	12,800

