

Department of Management
Semester End Examination
MBA-^{4th} Semester [2017-2018]

Course Name: Financial Derivative

Max Marks: 75

Course Code: MBA-FM-07

Time: 03:00 Hr

Instructions:

1. Attempt only five questions.
2. Students are allowed to use scientific calculator.

- Q1: (a) Why the volume of Derivative Market is bigger than Cash Market. [05]
 (b) Give the specification of future contract at the time of developing a new contract. [05]
 (c) What is the basic difference between European and American Options contract? [05]
- Q2: (a) What do you mean by contract cycle in financial derivative market? [02]
 (b) Suppose interest rate in India and the USA are respectively 10% and 7%. The spot rate is Rs. 60/US\$. What is the 90 days forward rate can be? [03]
 (c) Suppose the spot rate is Rs. 40/US\$ and the three month forward rate is Rs. 40.28/US\$ involving a forward differential of 2.8 percent. The interest rate is 18 percent in India and 12 percent in the USA involving interest rate differential of 5.37%. Calculate profit/Loss under Covered Interest Arbitrage. [10]
- Q3: (a) What do you mean by time value of an option? [04]
 (b) Explain the following Payoff of Futures: [08]
 I Payoff for buyer of futures: long futures
 II Payoff for seller of futures: short futures
 (c) The security ABC Ltd. trades in the spot market at Rs. 1450 money can be invested at 14% per annum. Calculate the fair value of one month future contract of ABC Ltd as per cost-of-carry logic. [03]
- Q4: (a) Explain the method to calculate margin value of options [02]
 (a) What happen in options when: [06]
 I. Spot price > strike price
 II. Spot Price = Strike price
 III. Spot Price < Strike Price
 (b) Calculate the valuation of Option Pricing model with the help of two steps Binomial Tree Model: Given items: [07]
 $u = 1.2; d = 0.8; r = 5\%; T = 3 \text{ months}; f_{uu} = 0; f_{ud} = 4; f_{dd} = 20 \text{ and } \delta t = 1$

- Q5: (a) What do you mean by standard deviation of continuous compounded rate of return of the share? Explain with example. [05]
 (b) If the intrinsic value of a call option is $\text{Max} [0, (S_t - K)]$; So, what kind of intrinsic value output are take place with respect to that call options? [05]
 (c) $P = \frac{e^{rT} - d}{u - d}$; what is the use of this formula in Derivative market ? [05]
- Q6: (a) Discuss Black-Scholes option pricing model, its assumptions. [05]
 (b) Calculate Black-Scholes value of call option on the basis of this given information [10]
 $P_s = 78.245$; $P_x = 70$; $RF = 0.184$; $T = 3$ months and $\sigma = \sqrt{0.3}$
- Q7: (a) Let us assume that a financial institution pays six month LIBOR and receiving 9% per annum (with semiannual compounding) on a swap with a notional principle of \$ 200 million and the remaining payment dates are in 6,12 and 15 months. The Swap has a remaining life of 15 months. The LOBOR rates with continuous compounding for 3 months, 9 months and 15 months maturities are 12%, 12.5% and 14% respectively. The 6 month LIBOR rate at the last payment date was 12.2% (with semiannual Compounding). In this case $k = \$ 8$ million and $K^* = \$ 10$ million. Calculate the value of interest rate swaps. [10]
 (b) What do you mean by VEGA in options? [05]
- Q8: (a) How currency swaps are useful for various companies? [05]
 (b) If the value of portfolio is given by equation

$$\pi = 5S^3 + 4C^2 + 50 ;$$
 Calculate value of Gamma of a portfolio of option, if $S = 10$; where S is the stock price and C is the price of the call or put option. [05]
 (c) Define the function of valuation of warrants in financial derivative markets. [05]

$$P_3^* = Rs.68.125 - Rs.2.00 / e^{0.1325(0.8333)} - Rs.2.70 / e^{0.1325(0.1666)} \\ = Rs.64.19$$

TABLE 3

An entry in the table is the proportion under the entire curve which is between $d = 0$ and a positive value of d . Areas for negative values of d are obtained by symmetry

d	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0674	.0713	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1103	.1064	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3155	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3963	.3982	.3999	.4018
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990