SC

[176]

No of printed pages: 02

Sardar Patel University

M.Sc. (Sem-III), PS03EMTH33, Financial Mathematics-I;
Friday, 29^{th} March, 2019; 02.00 p.m. to 05.00 p.m.

Maximum Marks: 70

Note: (i) Notations and terminologies are standard; (ii) Figures to the right indicate marks.

Q.1 Answer the following. [8]

1. What is full form of CBOT ?
   (A) Chicago Board on Trade (B) Chicago Board of Trade
   (C) China Board of Trade (D) none of these
2. Futures contracts traded on
   (A) Over the counter market (B) Exchange traded market
   (C) On the counter market (D) none of these
3. What is the equivalent continuously compounding interest rate for 10% per annum with simple compounding ?
   (A) 9.531% (B) 6.913% (C) 10.517% (D) 10%
4. How many kinds of futures contracts are available in India ?
   (A) 5 (B) 4 (C) 3 (D) 2
5. What is the full form of SEBI ?
   (A) Securities and Exchange Board of India
   (B) Security and Exchange Board on India
   (C) Securities and Exchange Board over India
   (D) none of these
6. The value of futures contract on currency is
   (A) $S_0e^{(r-r_f)T}$ (B) $S_0e^{(r_f-r)T}$ (C) $S_0e^{(r+r_f)T}$ (D) none of these
7. How many types of participants in options market ?
   (A) 2 (B) 4 (C) 3 (D) 1
8. The lower bound for European call option on a non dividend paying stock is
   (A) S_0+Ke^{-rT} (B) S_0-Ke^{-rT} (C) $S_0e^{-rT}-K$ (D) $S_0e^{-rT}+K$

Q.2 Attempt any *seven*: [14]

(a) Define ET market. Give one example of it.
(b) Explain payoff from forward contract with graphs.
(c) Give three types of margin accounts in futures contracts.
(d) Define repo rate.
(e) Define n year zero interest rate.
(f) Define Dividend.
(g) Discuss short selling.
(h) What are the factors affecting option prices ?
(i) Write down put call parity for European options on non-dividend paying asset.

(P.T.O.)

Q.3

(a) Explain arbitrageur with an example. [6]

(b) Discuss comparisons between Exchange traded market and over the counter market. [6]

OR

(b) Give uses of derivatives.

Q.4

(a) Explain operation of margins. [6]

(b) Let an amount A be invested for n years at the interest rate R per annum with compounding frequency m per annum. Find the value of an investment at the end of n years. [6]

OR

(b) Explain forward interest rate.

Q.5

(a) Discuss futures contract on currencies. [6]

(b) Discuss comparisons of forward and futures prices. [6]

OR

(b) If the 2-year interest rates in Australia and United States are 5% and 7% per annum with continuously compounding, respectively, and the spot exchange rate between Australian dollar (AUD) to the US dollar(USD) is 0.6200 USD per AUD. Find the value of forward contract. Justify it.

Q.6

(a) Derive put call parity for European options. [6]

(b) Discuss bounds of European options. [6]

OR

(b) Suppose that a put option with striking price \$600 with option value \$20 expires in next three months. Under what circumstances will the sellar of the option make a profit? Under what circumstances will the option be exercised? Draw a diagram illustrating how the profit from a short position in the option depends on the stock price at maturity of the option.

*****