INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

5th May 2016

Subject ST5 - Finance and Investment A

Time allowed: Three hours (14.45* – 18.00 Hrs.)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
2. ** You have 15 minutes at the start of the examination in which you are required to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
3. *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor.*
4. *The answers are not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Mark allocations are shown in brackets.*
7. *Please check if you have received complete Question Paper and no page is missing. If so, kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION
Please return your answer book and this question paper to the supervisor separately.

Q. 1) Bisco Corp is a leading biscuit manufacturer in India which owns several marquee brands. The Board of the company has recently approved issue and allotment of two bonus debentures of face value ₹ 170 for every share of face value ₹ 10. The debentures would be secured and redeemable at par after 5 years. The coupon rate of the debenture would be 9%. The debentures would be treated like deemed dividends and hence attract a dividend distribution tax of 17%. They would also be listed on the stock exchange. The company has not paid any dividend during the last 3 years. The financials of the company over last three years is given below:

Income Statement	**12-13**	**13-14**	**14-15**
Net Sales	**2,500**	**2,750**	**2,950**
Other Income	11	23	29
Expenses	2,300	2,516	2,685
Operating Profit	211	257	295
Interest	-	-	-
Depreciation	12	14	16
Pre Tax Profit	199	243	279
Tax	66	80	92
Profit after tax	**133**	**163**	**187**
Balance Sheet			
Equity	24	24	24
Total Reserves	748	911	1,098
Total shareholder’s funds	772	935	1,122
Sources of funds	**772**	**935**	**1,122**
Gross Fixed assets	360	410	450
Less: Accumulated Depreciation	162	175	192
Net Fixed Assets	198	235	258
Net Current Assets (excl cash)	245	280	300
Cash & Cash Eq.	329	420	563
Utilization of funds	**772**	**935**	**1,122**

i) Based on the given data and making suitable assumptions and stating them clearly prepare a pro forma income statement and balance sheet for ‘15-16. You may assume that the bonus debentures were allotted on 1st of April. (10)

ii) What are the possible reasons behind the Management’s decision? You may assume that the stock traded at a price of ₹ 1,200 just before the announcement. (10)

[20]

Q. 2) During the last decade several fund houses in India have launched Gold ETFs

i) What are ETFs? (1)

ii) How does a Gold ETF work? (1)

iii) What are the advantages of investing in gold through Gold ETFs? (4)

iv) What are the disadvantages of investing in Gold through Gold ETFs? (2)

v) The government of India has recently launched a gold monetisation scheme:

a) What is the rationale behind the launch of this scheme? (2)

b) Briefly explain how the gold monetisation scheme works (4)

c) What are the disadvantages of the scheme? (4)

[18]

Q. 3) Define the following terms

i) Alpha (2)

ii) ISDA (2)

iii) Principal-Agent problems (2)

iv) Rights Issue (2)

v) Split capital investment trust (2)

vi) Bond strip (2)

vii) Anomaly switch (2)

viii) Unit trust (2)

[16]

Q. 4) **i)** Explain why investments with a high running yield, might offer a lower gross redemption yield. (2)

A financial institution (FI) has entered into a currency swap with an investment Bank (IB) in which it receives 7% per annum in rupees and pays 4% per annum in sterling once a year. The principals in the two currencies are 10 million sterling and 110 crore rupees. The swap will last for another four years, and the current exchange rate is 100 rupees = 1 sterling. It is further given that the term structure of interest rates is flat in both UK and India. The UK interest rate is 4% per annum and the India interest rate is 8% per annum (both with continuous compounding).

ii) What is the value of this swap at inception for the financial institution in rupees? (6)

Consider a European put option on a five-year bond with a principal of 100. The coupon is 15% per year payable annually. The life of the option is 2.5 years and the strike price of the option is 127. The forward yield volatility is 20%. The zero curve is flat at 5% with continuous compounding.

iii) Calculate the price of option. (10)

[18]

Q. 5) **i)** An investor has created an investment portfolio of his entire wealth of 1 million rupees. Under the MPT framework, what would be the appropriate measure of risk for this investor? Justify your answer. (2)

ii) A friend of his advises him to create multiple portfolios out of his total wealth. One of the portfolios would be based on overseas equity. Under the MPT framework, what would be the appropriate measure of risk for overseas equity portfolio? Justify your answer. (2)

iii) The table below shows total returns of two fund managers over the last 10 years. The risk-free return is 4% flat for the 10 year period. Which fund manager is better for investor? Explain your answer. (4)

Year	**Fund Manager A**	**Fund Manager B**
1	10%	12%
2	8%	-9%
3	-3%	9%
4	15%	16%
5	5%	14%
6	10%	17%
7	5%	-8%
8	8%	4%
9	-1%	-6%
10	5%	13%

iv) If the fund managers were given following benchmark, would your answer to question (iii) above change? Explain your answer. (4)

Year	**Benchmark**
1	4%
2	2%
3	7%
4	5%
5	4%
6	9%
7	8%
8	2%
9	2%
10	7%

[12]

Q. 6) Totak Bank has a position in options on the AAX/INR exchange rate which has a delta of 30,000 and gamma of -80,000. The current exchange rate is 0.5 INR per AAX.

i) How can the position be made delta neutral? (2)

After a short period of time the exchange rate moves to 0.53 INR per AAX.

ii) Estimate the new delta (2)

iii) What needs to be done to maintain delta neutrality? (2)

iv) Assuming that the position was delta neutral to begin with comment on the position due to change in exchange rate. (3)

[9]

Q. 7) **i)** Explain the concept of Management Buy Out and Management Buy In. (3)

ii) Typical Management Buyouts/Buyins are usually followed by taking the company private (if it is currently listed). What could be the reasons for this? (4)

[7]

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