

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

27th March 2021

Subject SP5 – Investment and Finance

Time allowed: 3 Hours 30 Minutes (09.30 – 13.00 Hours)

Total Marks: 100

- 1. Please read the instructions to examinees sent along with hall ticket carefully and follow without exception.*
- 2. 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.*
- 3. Mark allocations are shown in brackets.*

- Q. 1)** You met a newly joined colleague, who was earlier providing portfolio management service to a few HNI clients. He told you that he had beaten the stock market index every year for past fifteen years by actively managing clients' investments.

He shared his special formula of investing as follows:

- At start of every year, for all listed companies, he will get price to earnings ratio (P/E)* and estimates risk adjusted return on capital (RAROC).
- Rank P/E (ascending order); RAROC (descending order) and sum the two ranks
- Invest 10% of portfolio in each of the top ten companies based on aggregate rank
- At the end of the year, sell all the ten stocks

*P=latest closing share price; E=Earnings per share in last twelve months

- i) Describe and discuss the most common active management “styles” in portfolio management. (5)
- ii) Describe and discuss the estimation of RAROC. (6)
- iii) Mention the merits and demerits of the special formula stated by your colleague. (4)
- iv) Suggest ways to improve the special formula that addresses the demerits stated by you. (6)
- [21]**

Q. 2)

- i) Explain the method of chain linking in the context of investment indices. (2)
- ii) Give two examples where chain linking might be required in the calculation of a bond index, given that there are no new bond issues or redemptions. (1)
- iii) An investment bank publishes a weighted arithmetic average index consisting of three stocks namely ITCO, RETAILCO and TRAVELCO1. Below table summarizes the number of shares and prices at start of the first month when the index was 3000.

Name	No. of Shares	Price
ITCO	1000	1000
RETAILCO	2000	200
TRAVELCO1	3000	30

Below table summarizes prices at the end of first and second month.

Prices of	Month 1	Month 2
ITCO	1200	1250
RETAILCO	180	110
TRAVELCO1	10	12
TRAVELCO2	20	25

At the end of the first month:

- ITCO buyback 200 shares
- RETAILCO issued stock dividends i.e. bonus shares 1:2 (for every two shares held one bonus share was issued)
- TRAVELCO1 was removed from the index and was replaced by another company TRAVELCO2 that has 2000 shares

Stating any assumptions made, calculate the index value at the end of the first and second month.

(6)
[9]

Q. 3) You are an ALM analyst in a general insurance company. You are responsible for:

- developing investment strategies using ALM models for the insurer; and
- monitoring and controlling liquidity risk.

i) Discuss the ALM modeling process and key issues in developing an appropriate investment strategy for a general insurance company. (12)

ii) Discuss using Modern Portfolio Theory framework to determine efficient investment strategies for a general insurance company. (3)

iii) Discuss regarding monitoring and controlling liquidity risk for general insurance companies. (5)
[20]

Q. 4) Suppose that the term structure of interest rates is flat in both India and the UK. The interest rate in India is 5% per annum and that in the UK is 2% per annum, both continuously compounded. The spot rate between the Indian rupee (INR) and UK's pound sterling (GBP) is INR 90 per GBP.

i) Calculate the one year forward exchange rate. (1)

ii) Explain how you would make arbitrage profit, if any, in case the one year forward exchange rate is INR 85 per GBP. (3)

iii) Explain how you would make arbitrage profit, if any, in case the one year forward exchange rate is INR 95 per GBP. (3)

A company XYZ has entered into a currency swap in which it receives 6% in INR and pays 3% in GBP. The principal in the two currencies are INR 100 crore and GBP 1 crore. The swap is for 4 years.

iv) Calculate the value of swap for the company XYZ. (5)

v) Discuss currency hedging using forwards. (5)
[17]

Q. 5) i) Outline various regulatory regimes normally seen in financial markets worldwide (5)

- ii) Describe, in brief, the three main corporation tax systems. (3)
- iii) Set out the process of long-term financial planning for a fast food joint. (3)
- iv) In the context of behavioral finance, explain the main behavior being exhibited in each of the following cases:
- a) Your friend has been investing in PQ mutual fund of company ABC over the last 4 years. He intends to invest extra money this year in mutual funds. He researches on the internet and shortlists 5 mutual funds of different companies. After shortlisting, he chooses to invest in the same PQ mutual fund even though the other shortlisted mutual funds had better performance potential.
- b) A football coach is unhappy on the zero-goal scored by his team. He says that player X should have passed the ball to another player Y while they were attempting a goal, although the strategy / prior instruction given to player X was not to pass the ball to player Y.
- c) While asking to rate one's dancing skills in different quartiles, almost all the dance students of a dance coaching class rated themselves in top quartile.

(6)
[17]

Q. 6) You work as an equity analyst in investment department of a mutual fund company. Your manager has asked you to value a listed 'virtual event' company which specializes in providing curated solutions to hold webinars, online meetings and conferences. He instructs you to value this stock using fundamental analysis. The Company has been in operation for last 7 years and has been profitable for last 5 years. In the last three years, the company has declared dividend of 20%, 25% and 30%, respectively.

- i) Explain the points you would look to evaluate while carrying out fundamental analysis. (12)

Your company has launched a fund which invests in only the companies that follow sustainable Environmental, Social and Governance (ESG) model in their business. Accordingly, the fund manager has decided not to invest in a global retail company. This company has outperformed the industry in major financial parameters. The marketing manager of your company is not happy with this decision. He is of the opinion that the company's primary objective should be to ensure that financial interests are met and investing in only the companies that follow ESG model may lead to poor financial performance of fund.

- ii) Comment on the opinion of the marketing manager. (4)

[16]
