

**Indian Institute of Technology, Kharagpur**

Date \_\_\_\_\_ FN/AN Time: 2 hours Full Marks: 30 No of Students: 72  
Mid-Autumn Semester 2022 Deptt: HSS Sub No: HS30203  
5-Year Integrated M.Sc in Economics Sub Name: **Financial Institutions and Markets**  
**Answer all Questions. (Each question carries equal marks)**

- (1) How do you define financial development? Financial development affects savings and investment. Explain this statement through different theories.
- (2) Explain the different theories of interest rate determination and what are the factors which shift the demand for and supply of bond curves and how?
- (3) What is the theoretical basis for the monetary policy of RBI? The operating framework of monetary policy has undergone a significant change since the establishment of RBI. Justify this statement.
- (4) During the year 2020-21 three companies X, Y and Z have announced bonus on December 2021. A financial analyst working in a brokerage firm wanted to test the semi-strong form of efficiency. He estimated the characteristics lines for a period of 4 years on a monthly basis up to September 30, 2021. The relationship between the returns on these three companies and the market index are presented by following equations:

$$R_x = 1.70\% + 1.05 R_m, R_y = 1.53\% + 1.08 R_m \text{ and } R_z = 1.92\% + 1.02 R_m$$

The following data pertains to the returns of the companies and market for the period four months before and four months after the bonus declared

Period	Actual Return (%)			Market Return (%)
	$R_x$	$R_y$	$R_z$	$R_m$
August 31, 2020	13.47	13.61	13.35	11.00
September 30, 2020	11.90	12.04	11.82	10.00
October 31, 2020	13.50	13.67	13.42	11.15
November 30, 2020	12.97	13.12	12.88	10.88
December 31, 2020	13.43	13.60	13.31	10.90
January 31, 2021	12.50	12.62	12.41	10.05
February 28, 2021	13.09	13.25	12.99	11.05
March 31, 2021	14.51	14.71	14.37	12.15
April 30, 2021	14.80	14.99	14.65	12.67

Using the event study approach verify the validity of semi-strong form of market efficiency in the Indian stock market.

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(5) The closing value of the NSE Nifty for the month of October 2021 is given below:

Date	Closing Value	Date	Closing Value
01-10-2021	2699.31	16-10-2021	2992.21
03-10-2021	2655.65	17-10-2021	3043.06
04-10-2021	2888.17	19-10-2021	3016.81
05-10-2021	2912.96	22-10-2021	3001.87
08-10-2021	2765.37	23-10-2021	3061.91
09-10-2021	2794.42	24-10-2021	3047.92
10-10-2021	2891.65	25-10-2021	3022.16
11-10-2021	2943.69	29-10-2021	3009.33
12-10-2021	2953.39	30-10-2021	2957.35
15-10-2021	2976.37	31-10-2021	2989.56

You are required to test the weak form of efficient market hypothesis by applying the Run test at 5% and 10% level of significance (Use standard normal distribution values at 5% and 10% level)

(6) An analyst has made risk and return projections for the securities of the companies X and Y as follows:

Scenario	Probability	Return on X (%)	Return on Y (%)	Market Return (%)
4% GDP Growth	0.30	3	2	1
6% GDP Growth	0.35	17	14	15
8% GDP Growth	0.25	20	19	17
9% GDP Growth	0.10	22	17	25

Assume, risk free rate is 7%, Correlation coefficient between Return on X and Market return is 0.9792 and correlation between return on Y and market return is 0.9378. You are required to (i) calculate the betas of company X and Y, (ii) Find out whether the shares of company X and Y are under-priced or over-priced, (iii) Comments on the proportions of systematic and unsystematic risk in two stocks.

18.96

21.56

B =  $\frac{8.6\%}{2.1\%}$