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B.Sc. (Hons. Math) (Semester – 6th)

FINANCIAL MATHEMATICS

Subject Code: BMAT1-622

Paper ID: [18131230]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. How long will it take money invested at 10.5% p.a., compounded monthly, to double in value?
- b. Determine the formula of discounting at a nominal discount rate.
- c. A family wants to save \$12000 for a car by depositing \$1000 in the bank annually. The annual interest rate in the bank is 7%. How long will it have to be saving?
- d. If the MP of a laptop is \$22000 and the sales tax imposed is 16%. Find the total amount that has to be paid.
- e. Find the rate of interest, if the amounts for a fixed principal after 3 and 2 years at a certain rate of compound interest are in the ratio 21:20.
- f. If desired rate of return is minimum by actual rate of return then it is classified as:
 - (1) Future cash flows (2) Present cash flow
 - (3) Positive cash flows (4) Negative cash flows
- g) The series of payment made periodically is classified as :
 - (1) Annuity (2) Effective payment
 - (3) Marginal payment (4) Nominal payment
- h) The assumption in calculating annuity is that every payment is
 - (1) Equal (2) Different
 - (3) Nominal (4) Marginal
- i) The amount of money today which is equal to series of payments in future:
 - (1) Nominal value of annuity (2) Sinking value of annuity
 - (3) Present value of annuity (4) Future value of annuity
- j) The identification of all the cash flows associated with project gives the value classified as :
 - (1) Net discounted value (2) Net present value
 - (3) Net future value (4) Net compounded value

Section – B**(5 marks each)**

- Q2. A credit deal of issuing 2000 rubles for a term of 3 years is considered. Find the amount of repayment, if the interest rate is 60%.
- Q3. How is the yield of the payment stream determined?
- Q4. What is the profitability index and how is it determined?
- Q5. Determine the Relation between the Accumulated and Present Values of Annuity.
- Q6. Determine Absolute and average annual transaction yield.

Section – C**(10 marks each)**

- Q7. What most important factors are connected with investment process?
- Q8. What is a financial transaction? What types of financial transaction yields are there and how are they determined?
- Q9. Calculate the amount of payment of an n - year loan for buying an apartment for A rubles at an annual rate of i percent and a down payment of q percent. Make calculations for monthly and annual payments. $i = 18\%$; $q = 30\%$. Make calculations at the compound interest rate.