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M. Sc. (Sem.-III) Examination October - 2025

Mathematics : Skill Based Elective Paper

Basics of Financial Mathematics

Time: 2 Hours] **[Total Marks: 30**

સૂચના : / Instructions	Seat No.:
(1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fill up strictly the above details on your answer book (2) Follow usual notations and conventions. (3) Use of non-programmable scientific calculator is permitted.	Student's Signature

Q.1. Answer any NINE of the following: **18**

1. What is interest rate? How many types of interest rates are there?

2. A loan of 10,000 has been issued for 6years. Compute the amount to be repaid by the borrower to the lender if simple interest is charged 5% per year.

3. Find the compound interest on rupees 12,600 for 2years on 10% per year.

4. If Ram deposited Rs. 2,00,000 rupees for the interest rate of 8% and the compound frequency is monthly, then find the effective interest rate.

5. The difference between the CI and SI on acertain sum ofmoney at 40% per annum for 2 years is Rs. 500. Find the sum.

6. If CF = 10,000, r = 5%,n = 10, then PV = ________ .

7. If Abhay took a loan of Rs. 12,00,000 for 5 years in saving account with 10% simple interest rate paid annually, then find the future value.

8. What is the future value of Rs. 1,25,000 after 8years at 8.5% interest per year?

9. What is annuity? What are the types of annuity?

10. If C= 1,20,000, i = 5%, n = 9, then find the future value for annuity due.

11. What is Tax? Draw the chart of Tax.

12. Define: Service charge.

Q.2. Answer any FOUR of the following: **12**

1. Divide ₹43,500 rupees into two parts so that simple interest, on the first when deposited for one year at 9% per annum and that on the second when deposited

for 2 years at 10%per annum in a bank are the same.

2. Surya Textiles wants to expand its business and it is willing to invest Rs. 10,00,000. The investment will bring an inflow of Rs. 1,00,000 in first year, Rs. 2,50,000 in second year, Rs. 3,50,000 in the third year, Rs. 2,50,000 in the fourth year and Rs. 4,15,000 in fifth year. Discount rate is 9%. Calculate the NPV.

3. Find the least number of years for which an ordinary annuity of Rs. 1,500 per annum must run in order that its amount just exceeds Rs. 30,000 at 9% compound annually.

4. For the child's education, Naman decided to invest Rs. 3,000 at the end of each 6 months period in a fund paying 8% per year compounded semi-annually. Find the amount of the investment at the end of 18 years.

5. Paras had income from salary of Rs. 2,00,000, income from capital gain is Rs. 1,50,000 and income from other sources is Rs. 2,50,000. Contribution to PF is Rs. 40,000, PPF is 70,000 and LIC is Rs. 40,000. Calculate income tax liability of Paras.

6. Gunjan Gas agency of Dadra Nagar Union Territory purchased some gas cylinders for industrial use for Rs. 24,500, and sold them to the local customers for Rs. 26,500. Find the GST to be paid at the rate of 5% and hence the CGST and UTGST to be paid for this transaction. (For union territories, there is UTGST instead of SGST.)