B.Com. (2011 & Onwards)   (Sem. – 1)
BUSINESS MATHEMATICS
M Code: 22004
Subject Code: BCOP-104
Paper ID: [B1104]

Time: 3 Hrs.   Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION A

1. a) Determine the 2nd term of an A.P. whose 6th term is 12 and 8th term is 22.

    b) Find four numbers forming a G.P. in which the third term is greater than first by 9, and the second term is greater than the fourth by 18.

    c) If Ram deposit Rs. 4000 into an account paying 6% annual interest compounded quarterly, how much money will be in his account after 5 years?

    d) Chapman borrowed Rs. 12,000 from her Aunt. If she agreed to pay a 9% annual rate of interest, calculate the amount of interest she must pay if the loan is for (i) 1 year, and (ii) 15 months

    e) Sohan decide to pay off an 8% Rs.5,000 loan early. The bank tells him that he owe a total of Rs. 82.19 interest. Assuming that the bank uses a 365-day year, for how many days is he being charged interest?

    f) The population of a village increases at the rate of 6% per annum. There is an additional increase of 2% in the population due to rural development. Find the percentage increase in the population after 2 years.

    g) Income of Rahim is Rs 12000 per month and that of Ami is Rs 191520 per annum. If the monthly expenditure of each of them is Rs 9960 per month, find the ratio of their savings.

    h) In a year, Ravi earns Rs 360000 and paid Rs 24000 as income tax. Find the ratio of his (i) income to income tax. (ii) income tax to income after paying income tax.

    i) Explain cross rate.

    j) Ram bought a 9% stock for Rs. 5,400 at a discount of 11%. If he paid 1% brokerage, find the percentage of his income.

SECTION B

2. The A.M. between two distinct positive numbers is twice the G.M. between them. Find the ratio of the greater to the smaller.

3. If a, b, c are in A.P., prove that

   (i) $(ab)^{-1}$, $(ca)^{-1}$ and $(bc)^{-1}$ are also in A.P

   (ii) $\dfrac{ab+ac}{bc}, \dfrac{bc+ba}{ca}, \dfrac{ca+cb}{ab}$ are also in A.P.

4. a) A product costs a company Rs 60 to manufacture, and it sold the product to a dealer for Rs 70, who in turn sold it to a shopkeeper for Rs 85, who sold to a customer for Rs 102. What is the percentage of profit for the company and who made the highest profit on selling the product?

   b) A reputed company sells a wrist watch to a wholesaler making a profit of 10%. The wholesaler, in turn, sells it to the retailer making a profit of 10%. A customer purchases it by paying Rs. 990. Thus the profit of retailer is 2(3/11)%. What is the cost (in rupees) incurred by the company to produce it?

5. a) On a certain sum of money, after 2 years the simple interest and compound interest obtained are Rs 400 and Rs 600 respectively. What is the sum of money invested?

   b) A sum of money is lent for 2 years at 10% p.a. compound interest. It yields Rs 8.81 more when compounded semi-annually than compounded annually. What is the sum lent?

6. a) In a library 60% of the books are in Hindi, 60% of the remaining books are in English rest of the books are in Malayalam. If there are 4800 books in English, then find the total number of books in Malayalam.

   b) Find the investment required to get an income of Rs. 1938 from $9\frac{1}{2}$% stock at 90. (Brokerage 1%)

7. a) Suppose spot USD/INR is 46.75 and 1 year US interest rate is 5% while it is 11% in India. Calculate the 1 year USD/INR forward rate.

   b) USD is worth Yen 125 and is equal to 1.6949 Fijian Dollar. What is the cross rate between Yen/Fijian Dollar (with yen as base currency)?