

FYBCom Semester I
Open Elective: Quantitative Techniques
Question Bank

Module 1: Elementary Arithmetic – I

1. Simplify the following using BODMAS: $48 \div [6 + 2 \times \{5 - 3\}] + 7 \times 3$. [25.8]
2. If $x = -3/4$ and $y = 5/6$, find $x + y$, $x - y$, xy and x/y . State the type of numbers involved. [1/12, -19/12, -5/8, -9/10]
3. Without using a calculator, determine whether 2,345,678 is divisible by 2, 3, 5, 6, 9 and 11. Give reasons for each conclusion. [Divisible by 2]
4. A number is increased by 20% and then decreased by 20%. Determine the overall percentage change and explain why the original number is not obtained. [-4%]
5. Find the smallest number which leaves a remainder of 3 when divided by 8, 12 and 15. [123]
6. Find the GCD and LCM of 84, 126 and 210 using prime factorisation. [42, 1260]
7. Two bells ring at intervals of 18 seconds and 24 seconds, respectively. If they ring together at 10:00:00 a.m., after how much time will they ring together again? [72 seconds]
8. The GCD of two numbers is 12, and their LCM is 720. If one of the numbers is 60, find the other number. [144]
9. Find the greatest number that divides 245, 305 and 425, leaving the same remainder in each case. [60]
10. Three numbers are in the ratio 2:3:5, and their LCM is 900. Find the three numbers and verify their GCD. [60, 90, 150]
11. The marks obtained by five students are 42, 56, 61, 48 and 73. Find their arithmetic mean. [56]
12. The arithmetic mean of 8 numbers is 24. If one number, 36, is removed, find the new arithmetic mean. [156/7]
13. Find the geometric mean of 4 and 25, and the harmonic mean of 4 and 12. [10, 6]
14. The prices of an item in three successive months are ₹80, ₹100 and ₹125. Find the arithmetic mean and geometric mean of the prices. [101.67, 100]
15. A student's marks increase from 60 to 78. Find the percentage increase. If the marks later decrease from 78 to 70, find the percentage decrease based on 78. [30%, 10.26%]
16. Divide ₹4,800 among A, B and C in the ratio 3 : 5 : 4. Find A, B & C. [1200, 2000, 1600]

17. If 8 notebooks cost ₹240, find the cost of 15 notebooks, assuming direct proportion. [450]
18. Six workers can complete a job in 15 days. How many days will 10 workers take to complete the same job, assuming all workers work at the same rate? [09]
19. If $a : b = 3 : 5$ and $b : c = 10 : 7$, find $a : b : c$. [6 : 10 : 7]
20. Using the appropriate property of ratios, solve: $(x + 3)/(x - 3) = 5/2$. [Componendo and Dividendo & $x = 7$]

Module 2: Elementary Arithmetic – II

1. A shopkeeper purchases an article for ₹1,250 and sells it for ₹1,500. Find the profit and percentage profit. [250, 20%]
2. An article is sold for ₹1,840 at a loss of 8%. Find its cost price. [2000]
3. A shopkeeper marks an article at ₹2,500 and gives a discount of 12%. If the cost price is ₹1,900, find the selling price and percentage profit. [2200, 15.79%]
4. The trader sells two articles for ₹1,200 each. He gains 20% on one article and loses 20% on the other. Find the overall profit or loss percentage. [overall loss of 4%]
5. An article is sold at a profit of 25%. If its selling price is increased by ₹150, the profit becomes 40%. Find the cost price of the article. [1000]
6. A car travels 180 km in 3 hours and then 120 km in 2 hours. Find its average speed for the entire journey. [60 km/h]
7. A train 150 m long crosses a pole in 10 seconds. Find its speed in km/h. [54 km/h]
8. A train 200 m long travelling at 54 km/h crosses a bridge 400 m long. Find the time taken to cross the bridge completely. [40 seconds]
9. A boat travels 30 km downstream in 2 hours and the same distance upstream in 3 hours. Find the speed of the boat in still water and the speed of the current. [12.5 km/h, 2.5 km/h]
10. One can fill a tank in 12 hours, and another can fill it in 18 hours. If both are opened together, how long will they take to fill the tank? [7.2 hours]