ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
B.Sc. MATHEMATICS - IV SEMESTER
SEMESTER EXAMINATION: APRIL 2022
(Examination conducted in July 2022)
MTOE 4118: QUANTITATIVE METHOD FOR QUALITATIVE EXAMINATION

Duration: $1\frac{1}{2}$ Hours   **Max Marks:** 35
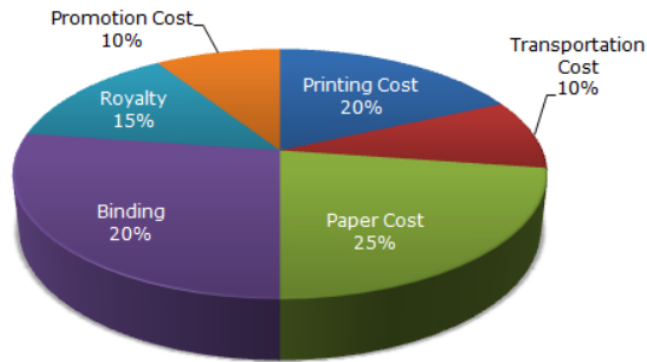
This question paper contains **TWO** printed pages.

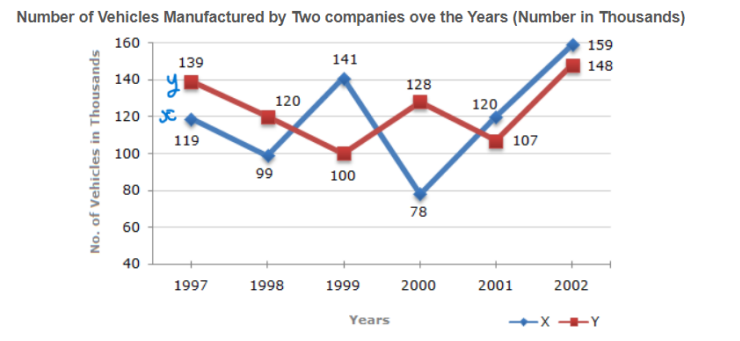## I. ANSWER ANY SEVEN OF THE FOLLOWING.   (7×5=35)

1. a) Solve $123 \times 123 + 288 \times 288 + 2 \times 123 \times 288 =$?

    b) If a number is divided by 6, 3 is the remainder. What is the remainder if the square of the number is divided by 6?   (2+3)

2. a) A fruit seller had some apples. He sells 40% apples and still has 420 apples. How many apples did he have originally?

    b) In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500. Find the number of valid votes that the other candidate got?
                                                                           (2+3)

3. a) What is Aman's present age, if after 20 years his age will be 10 times his age 10 years back?

    b) There are 8 men and 10 women and you need to form a committee of 5 men and 6 women. In how many ways can the committe be formed?   (2+3)

4. The sum of three numbers is 98. If the ratio of first to second is 2 : 3 and that of the second to the third is 5 : 8. Find the second number?   (5)

5. a) 10 men can make 20 toys in 12 days working 12 hrs a day. In how many days can 24 men make 32 toys working 16 hrs a day?

    b) Anu can do a work in 6 days and Binu alone in 9 days. Anu and Binu undertook to do it for $Rs.4500$. With help of Minu, they completed the work in 3 days. How much is to be paid to Minu and Anu?(2+3)

6. A person travelled from his house to office at 30 kmph; then he was late to his office by 5 minutes. If he increases his speed by 10 kmph he would be early by 15 minutes to his office. What should be his speed so that he reaches his office on time?   (5)

7. The height of a room to its semi-perimeter is 2 : 5. It costs Rs.260 to paper the walls of the room with paper 50cm wide at Rs.2 per meter allowing an area of 15sq.m for doors and windows. Find the height of the room?
                                                                           (5)

8. A circular wire of radius 42cm is cut and bent into the form of a rectangle whose sides are in the ratio of 6:5. Find the smaller side of the rectangle ?   (5)

9. The following pie-chart shows the percentage distribution of the expenditure incurred in publishing a book. Study the pie-chart and the answer the questions based on it.

Various Expenditures (in percentage) Incurred in Publishing a Book

a) If for a certain quantity of books, the publisher has to pay Rs. 30, 600 as printing cost, then what will be amount of royalty to be paid for these books?

b) What is the central angle of the sector corresponding to the expenditure incurred on Royalty?

c) The price of the book is marked 20% above the C.P. If the marked price of the book is Rs. 180, then what is the cost of the paper used in a single copy of the book?   (2+1+2)

10. Study the following line graph and answer the questions based on it..

a) What is the difference between the number of vehicles manufactured by Company Y in 2000 and 2001 ?

b) What is the difference between the total productions of the two Companies in the given years

c) The production of Company Y in 2000 was approximately what percent of the production of Company X in the same year ?

d) What is the average numbers of vehicles manufactured by Company X over the given period ? (rounded off to nearest integer)   (1+2+1+1)