SECOND TERM EXAM MATHEMATICS 2022-23

Class = 8 Class
Total Time = 2H
Date = 29-01-2023 **MM=40**

***All Questions are mandatory**

Section A (2 Marks Each)

Q1. Find the Product

(i) (5 – 2x) (3 + x)

(ii) (x + 7y) (7x – y)

Q2. Show that

(i) $(3x + 7)^2 – 84x = (3x – 7)^2$

(ii) $(9p – 5q)^2 + 180pq = (9p + 5q)^2$

Q3. Find the value of *m* for which $5^m \div 5^{-3} = 5^5$

Q4. In a library 136 copies of a certain book require a shelf-length of 3.4 metre. How many copies of the same book would occupy a shelf length of 5.1 metres?

Q5.

If $\left(\frac{x}{y}\right) = \left(\frac{3}{2}\right)^{-2} \div \left(\frac{3}{7}\right)^{0}$, find the value of $\left(\frac{x}{y}\right)^{-3}$.

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Section B (3 Marks Each)

Q6. Factorise the following expressions.

(i) p^2+6p+8

(ii) $q^2–10q+21$

(iii) $p^2+6p–16$

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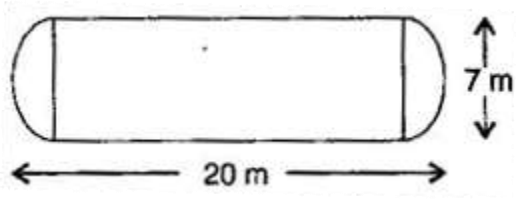
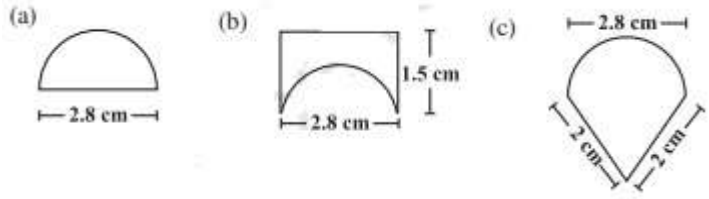
Q7. The shape of a garden is rectangular in the middle and semi-circular at the ends as shown in the diagram. Find the area and the perimeter of this garden.



Q8. An ant is moving around a few food pieces of different shapes scattered on the floor. For which food-piece would the ant have to take a longer round? Remember, circumference of a circle can be obtained by using the expression C = 2πr ,where r is the radius of the circle.



Q9. A 5 m 60 cm high vertical pole casts a shadow 3 m 20 cm long. Find at the same time (i) the length of the shadow cast by another pole 10 m 50 cm high (ii) the height of a pole which casts a shadow 5 m long.

Q10. Factorise the given expressions and divide that as indicated.

(a) $39n^3(50n^2 - 98) \div 26n^2(5n - 7)$

(b) $44(p^4 - 5p^3 - 24p^2) \div 11p(p - 8)$

Section C (5 Marks Each) [Solve any three questions)

Q11. A suitcase with measures 80 cm x 48 cm x 24 cm is to be covered with a tarpaulin cloth. How many meters of tarpaulin of width 96 cm is required to cover 100 such suitcases?

Q12. Simplify the following expressions:

$$(a)\ \frac{(x-1)(x-2)\left(x^2-9x+14\right)}{(x-7)\left(x^2-3x+2\right)}$$

$$(b)\ \frac{\left(x^2-8x+12\right)\left(x^2-16\right)}{\left(x^2-36\right)\left(x^2-4\right)}$$

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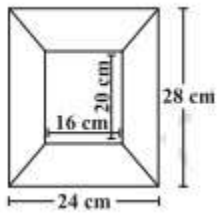
Q13. Diagram of the adjacent picture frame has outer dimensions = 24 cm×28 cm and inner dimensions 16 cm×20 cm. Find the area of each section of the frame, if the width of each section is same.



Q14. Diameter of cylinder A is 7 cm and the height is 14 cm. Diameter of cylinder B is 14 cm and height is 7 cm. Without doing any calculations can you suggest whose volume is greater? Verify it by finding the volume of both the cylinders. Check whether the cylinder with greater volume also has greater surface area.