BLE MODEL QUESTION SET

Compulsory Mathematics

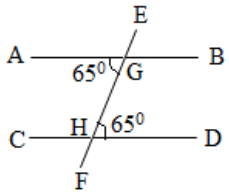
Time: 3 hours | Maximum Marks: 100

Candidates are required to answer in their own words as far as practicable. Credit shall be given to originality in expression, creativity and neatness in hand, not to rote learning.

Attempt all the questions.

Group-A (10 × 1 = 10)

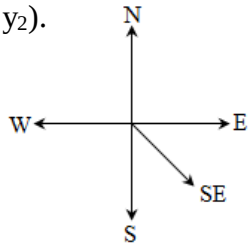
1. (a) Are the lines AB and CD parallel in the given figure? Write with the reason.



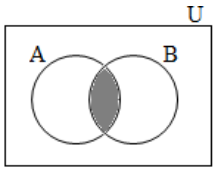
(b) What is the circumference of a wheel of a bicycle whose radius is p cm?

2. (a) What is the distance between the points P (x_1, y_1) and Q (x_2, y_2).

(b) What is the compass bearing of SE? Write it.



3. (a) What does the shaded portion represent in the given Venn-diagram?



(b) Find the range of the given data: 25, 60, 46, 82, 15, 50, 76

4. (a) What is the degree of $x^3y + 5xy^2 - 3x^2y^3$?

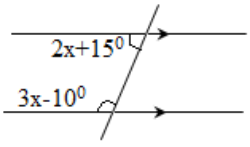
(b) If $3^{2x} = 1$, what is the value of x?

5. (a) If x = 2, y = -3, find the value of y^x

(b) Write 0.00000618 in scientific notation.

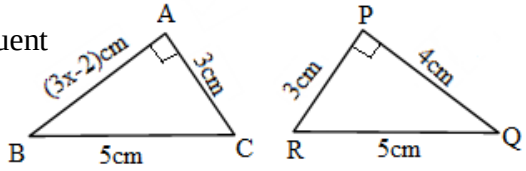
Group-B (17 × 2 = 34)

6. (a) Find the value of x in the given figure.

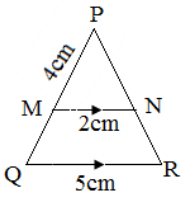


(b) If the sum of interior angles of a polygon is 1080^0, find the number of sides.

(c) By which axiom, are ΔABC and ΔPQR congruent to each other? Also, find the value of x.



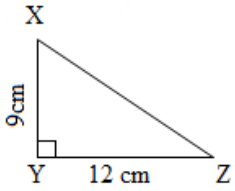
7. (a) In the given figure, if ΔPMN ~ ΔPQR, find the length of PQ.



(b) If the area of a circle is 154 cm^2, what is its diameter? $\left(\pi = \frac{22}{7}\right)$

(c) Draw a net of hexahedron.

8. (a) From the adjoining figure, find the length of side XZ.



(b) Find the distance between the points A (2, 3) and B (5, 7).

(c) If P = {2, 3, 5, 7} and F = {1, 2, 3, 4, 6, 12}, find P – F and show it in a Venn-diagram by shading.

9. (a) Convert 512 into quinary number system.

(b) There are 40 students in a class. If 4 of them are absent, find the percentage of present students.

(c) If the mean of 6, 9, 13, 15, 17 and x is 11, find the value of x.

10. (a) Show $a^2 - b^2 = (a + b)(a - b)$ in a diagram.

(b) Simplify: $\frac{5^{n+1} - 5^n}{4 \times 5^n}$

(c) Simplify by using the law of indices: $\left(x^{m-n} \times x^{2m+3n}\right) \div x^{3m+2n}$

11. (a) Solve the inequality $3x + 1 \leq x + 9$ and show in a number line.

(b) Solve: $x^2 - 5x + 6 = 0$

Group-C (14 × 4 = 56)

12. Construct a rectangle ABCD having diagonal 6cm and angle between the diagonal is 60^0.

13. Verify experimentally that the base angles of an isosceles triangle are equal. (Two figures of different measurement are necessary)

14. Draw a triangle ABC with vertices A (4, 4), B (1, -2) and C (-2, 0) on a graph paper. Draw the graph of its image by shading under rotation through $+90^0$ about origin on the same graph.

15. In a survey of 200 game lovers, it was found that 120 liked football and 95 liked volleyball. If 25 did not like both games.

(i) Represent the above information in a Venn-diagram.

(ii) Find the number of people who liked both the games.

(iii) How many people liked only volleyball? Find.

16. The length of a room is twice the breadth and thrice the height. If the volume of the room is $288m^3$, find the area of its floor.

17. Simplify: $\frac{16}{\sqrt{2}} - \frac{35}{\sqrt{50}} - 2\sqrt{18} + 3\sqrt{72}$

18. Mr. Chaudhary marked a watch set for Rs. 800. He sold it allowing 15% discount and made a profit of Rs. 125, find the cost price of the watch.

19. A group of 20 labours can complete a work in 15 days. How many labours should be added to complete that work in 12 days? Find.

20. Find the sum of money that amounts to Rs. 3450 in 40 months at the rate of $4\frac{1}{2}\%$ per annum.

21. Present the given data in a pie-chart.

Division	Distinction	1st Division	2nd Division	3rd Division
No. of students	40	56	32	16

22. If $x + y = 5$, find the value of $x^3 + y^3 + 15xy$

23. Find the HCF of: $x^3 - 9x$, $x^2 + 5x + 6$ and $x^3 + 27$

24. Simplify: $\frac{x}{(x-y)(x-z)} + \frac{y}{(y-z)(y-x)} + \frac{z}{(z-x)(z-y)}$

25. Solve the following equations by graphical method: $2x + y = 7$ and $x - y = 1$.

The End