Saksham

Saksham Institute, Narayan Vishwa , Infront of Pragati mandal 4th floor , near Dmart 388120

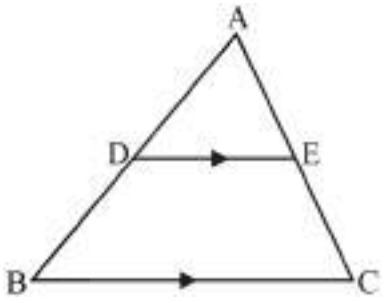
Test / Exam Name: 10cbse Basic **Standard: 10th** **Subject: Mathematics**

Student Name: ---------- **Section:** ---------- **Roll No.:** ----------

Date: 04.01.2024

Questions: 23 **Time: 02:00 hh:mm** **Marks: 50**

Q1. In a $\triangle ABC$, if DE is drawn parallel to BC, cutting AB and AC at D and E respectively such that AB = 7.2cm, AC = 6.4cm and AD = 4.5cm. Then, AE =? **1 Mark**



A 5.4cm **B** 4cm **C** 3.6cm **D** 3.2cm

Q2. If in two triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FE} = \frac{CA}{FD}$, then: **1 Mark**

A $\triangle FDE \sim \triangle ABC$ **B** $\triangle BCA \sim \triangle FDE$ **C** $\triangle FDE \sim \triangle CAB$ **D** $\triangle CBA \sim \triangle FDE$

Q3. If A and B are the points (-6, 7) and (-1, -5) respectively, then the distance 2AB is equal to **1 Mark**

A 20 units **B** 15 units **C** 26 units **D** 13 units

Q4. The distance of the point (5, 12) from the y-axis is: **1 Mark**

A 5 units **B** 12 units **C** 13 units **D** -5 units

Q5. Choose the correct option and justify your choice: **1 Mark**

$\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ} =$

A $\tan 90^\circ$ **B** 1 **C** $\sin 45^\circ$ **D** 0

Q6. The value of $\tan 45^\circ \times \cot 45^\circ$ is: **1 Mark**

A 0 **B** 1 **C** 2 **D** $\frac{1}{2}$

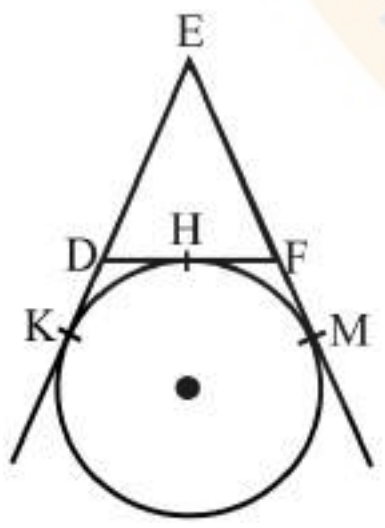
Q7. A ladder 14m long rests against a wall. If the foot of the ladder is 7m from the wall, then the angle of elevation is: **1 Mark**

A 60° **B** 45° **C** 30° **D** 75°

Q8. A pole casts a shadow of length $2\sqrt{3}$m on the ground when the sun's elevation is 60°. The height of the pole is: **1 Mark**

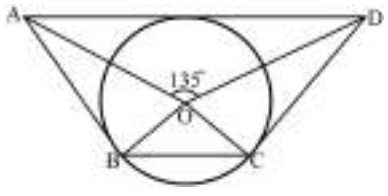
A $4\sqrt{3}$m **B** 6m **C** 12m **D** 3m

Q9. In the given figure, a circle touches the side DF of $\triangle EDF$ at H and touches ED and EF produced at K and M respectively. If EK = 9cm then the perimeter of $\triangle EDF$ is: **1 Mark**



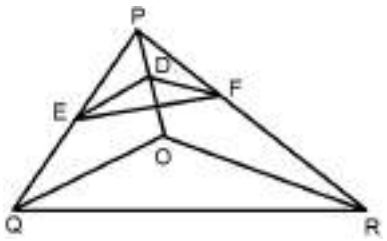
A 9cm **B** 12cm **C** 13.5cm **D** 18cm

Q10. In the given figure, if $\angle AOD = 135^\circ$ then $\angle BOC$ is equal to: **1 Mark**



A 25º **B** 45º **C** 52.5º **D** 62.5º

Q11. In Fig. DE || OQ and DF || OR. Show that EF || QR. **2 Marks**



Q12. If the distance between the points (3, 0) and (0, y) is 5 units and y is positive. then what is the value of y? **2 Marks**

Q13. Evaluate the following: **2 Marks**

If A = 45°, verify that:

$\sin 2A = 2 \sin A \cos A$

Q14. A ladder 15m long just reaches the top of a vertical wall. If the ladders makes an angle of 60° with the wall, then find the height of the wall. **2 Marks**

Q15. The length of tangent from a point A at a distance of 5cm from the centre of the circle is 4cm. What is the radius of the circle? **2 Marks**

Q16. In a $\triangle ABC, D \text{ and } E$ are points on the sides AB and AC respectively such that DE || BC. **3 Marks**

If AD = 8x - 7, DB = 5x - 3, AE = 4x - 3 and EC = (3x - 1), find the value of x.

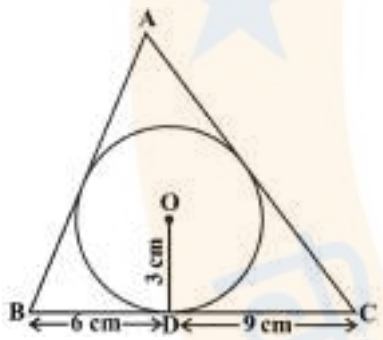
Q17. Find the ratio in which the line segment joining the points A(3, -3) and B(-2, 7) is divided by x-axis. Also find the coordinates of the point of division. **3 Marks**

Q18. If $\tan\theta = \frac{1}{\sqrt{2}}$, find the value of $\frac{\text{cosec}^2\theta - \sec^2\theta}{\text{cosec}^2\theta + \cot^2\theta}$. **3 Marks**

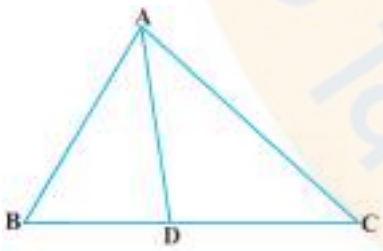
Q19. From the top of a 120m high tower, a man observes two cars on the opposite sides of the tower and in straight line with the base of tower with angles of depression as 60° and 45°. Find the distance between the cars. $(\text{Take } \sqrt{3} = 1.732)$ **3 Marks**

Q20. If the point C(-2, 3) is equidistant from the points A(3, -1) and B(x , 8), find the values of x. Also find the distance BC. **4 Marks**

Q21. In the given figure, a triangle ABC is drawn to circumscribe a circle of radius 3cm such that the segments BD and DC into which BC is divided by the point of contact D are, of lengths 6cm and 9cm respectively. If the area of $\triangle ABC = 54\text{cm}^2$then find the lengths of sides of AB and AC. **4 Marks**



Q22. In Fig. D is a point on side BC of $\triangle ABC$ such that $\frac{BD}{CD} = \frac{AB}{AC}$. Prove that AD is the bisector of $\angle BAC$. **5 Marks**



Q23. The horizontal distance between two towers is 60 metres. The angle of depression of the top of the first tower when seen from the top of the second tower is 30°. If the height of the second tower is 90 metres, find the height of the first tower. $[\text{Use} \sqrt{3} = 1.732]$ **5 Marks**