Tripura Board Class 10 Maths Sample Question Paper

Sample Question Paper

Mathematics

Class –X

Time : 3 Hours **Full Marks : 80**

1. All questions are compulsory.

2. The question paper consists of 27 questions which have been divided into four Groups A,B,C and D. Group A contains 3 questions of one mark each, Group B contains 5 questions of two marks each, Group C contains 9 questions of three marks each and Group D contains 10 questions of four marks each.

3. There are three questions for internal choice one in Group C and two in Group D.

4. **Use of calculator is not permitted.**

Group- A

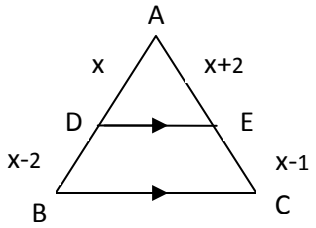
Answer the following questions:- **1x3=3**

1. Write Euclid's division lemma.
2. If $\log_3 27 = x$, write the value of x.
3. What will be the length of a tangent drawn on a circle with radius 8 cm from a point 15 cm apart from the centre of the circle?

Group- B

Answer the following questions:- **2x5=10**

4. Form a polynomial whose zeros are -3 and 2.
5. For what value of k, the pair of linear equations kx + 2y=3 and (5k-7)x + 3y= 1 will have no solution?
6. In the given figure, D and E are points on the sides AB and AC of△ ABC respectively such that DE || BC. If, AD=x, DB= x-2, AE= x+2 and EC= x-1, find the value of x.



7. C(1,3) is the centre of a circle and A(-1,2) is one of the extremities of a diameter AB of the circle. Find the co-ordinates of the other extremity B.
8. Show that the points (0,-2), (2, 4) and (-1,-5) are collinear.

Group- C

Answer the following questions:- **3x9=27**

9. Prove that $\sqrt{3}$ is an irrational number.

10. Find the zeros of the polynomial $P(x)= 6x^2-13x+6$ and verify the relationships between its zeros and coefficients.

11. Solve: $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$

12. --3 is one root of the quadratic equation $2x^2+px-12=0$ and both the roots of the quadratic equation $px^2+3x+k=0$ are equal. Find the value of k.

13. Show that

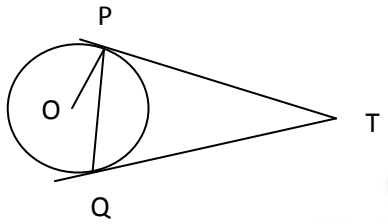
$$7\log\frac{10}{9} - 2log\frac{25}{24} + 3\log\frac{81}{80} = log2.$$

14. ABC is a triangle right angled at C. If CD $\perp$ AB, Prove that $\frac{CB^2}{CA^2} = \frac{BD}{AD}$

or

P and Q are the mid points of the sides CA and CB respectively of a $\triangle$ABC, right angled at C. Prove that $4(AQ^2+BP^2)=5AB^2$.

15. Two tangents TP and TQ are drawn to a circle with Centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$



16. Evaluate : $\frac{tan^2 30°+sin^2 60°+Sec^2 30°+cot^2 60°}{cos^2 60°+cosec^2 30°+cot^2 30°}$

17. Prove that

$$\frac{cotA+cosecA-1}{cotA-cosecA+1} = \frac{1+CosA}{SinA}$$

Group – D

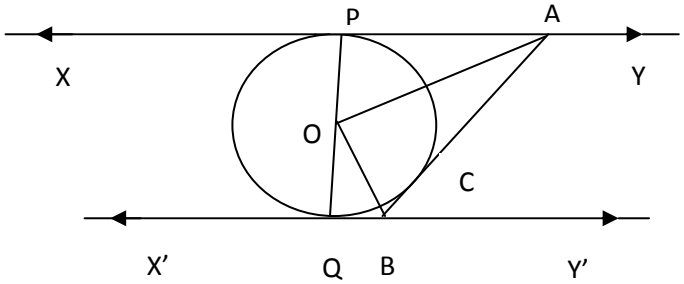
Answer the following questions : **4x10=40**

18. Solve the following system of linear equations graphically:
3x +2y-4=0 and 2x-3y-7=0.
Shade the region bounded by these two lines and the X axis. Also calculate the area of shaded region.

19. The sum of first 9 terms of an A.P is 162. The ratio of its 6th term to its 13th term is 1:2. Find the first and 15th terms of the A.P.

20. Prove that, if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points then the other two sides are divided in the same ratio.

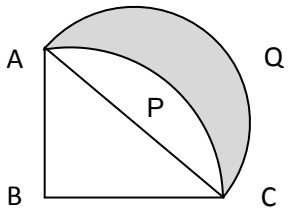
21. In the figure given below, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB=90^0$



22. Draw a $\triangle ABC$ with sides AC=6cm, AB=5cm and $\angle BAC=60^0$. Construct a similar triangle whose sides are $(\frac{3}{4})$th of the corresponding sides of $\triangle ABC$.

23. The shadow of a vertical tower standing on a level ground is found to be 40m longer when the sun's angle of elevation decreases from 60^0 to 45^0. Find the height of the tower.

24. In the given figure ABCPA is a quadrant of a circle of radius 14 cm. With AC as diameter, a semi-circle is drawn. Find the area of the shaded portion.



25. A cylindrical bucket, 32 cm high and with radius of base 18cm is filled with sand. This bucket is emptied out on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap.

or

A solid is in the shape of a frustum of a cone. The diameters of two circular ends are 60 cm and 36 cm and the height of the frustum is 9 cm. Find the area of its whole surface and the volume.

26. If the median of the following frequency distribution is 32, find the values of x and y

Class	0-10	10-20	20-30	30-40	40-50	50-60	Total
Frequency	10	x	25	30	y	10	N=100

or

Find the mean of the following frequency distribution:

Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Frequency	6	12	18	20	16	8	4

27. An unbiased dice is thrown 100 times and the data is recorded as below :

Outcome	1	2	3	4	5	6
Frequency	10	25	15	20	15	15

(i) What is the probability of getting an odd number.

(ii) What is the probability of getting a number less than 4.