MATHEMATICS (Standard) PRACTICE TEST

Class: Xth

Max Marks: **60** ; *Time: 2 hour* [Dated: /02 /2023]

AP+Co Geo+Ar C+Trigo HD

General Instructions:

(i) All questions are **compulsory**.
(ii) The question paper consists of **16** questions divided into three **Sections A, B** and **C**.
Section-A comprises of **4** questions of **2 mark** each, **Section-B** comprises of **4** questions of **3 marks** each,
Section-C comprises of **8** questions of **5 marks** each.
(iii) There is no overall choice. (iv) Use of calculator is not permitted.

Section-A

Q1. Find a point on the y- axis which is equidistant from the points A (6, 5) and B (– 4, 3).

Q2. If 2p, p+10 , 3p+2 are in AP then find p.

Q3. An observer 1.5m tall is 20.5 meters away from a tower 22m high. Find the angle of elevation of the top of the tower from the eye of the observer.

Q4. The diameter of a cycle wheel is 21cm. How many revolutions will it make to travel 1.98km ?

Section - B

Q5. Are the points (1, – 1), (5, 2) and (0, 5) are collinear.

Or

Find the coordinates of the points of trisection of the line segment joining the points A (2, –2) and B (–7, 4).

Q6. Mr. Gupta is standing on the deck of a ship which is 12m above water level. He observes that the angle of elevation of the top of a cliff is 45° and the angle of depression of its base is 30°. Calculate the distance of the cliff from ship and height of the cliff. (Use $\sqrt{3}$ = 1.73).

Q7. In an A.P., the sum of first n terms is $\frac{3n^2}{2}+\frac{5n}{2}$. Find its 25th term.

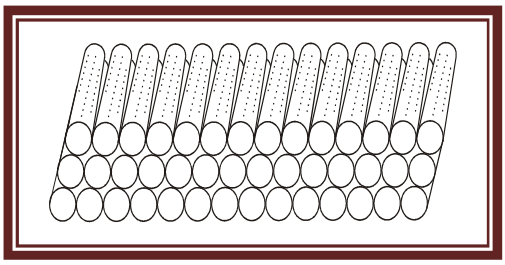
Or

Which term of the A.P. 121, 117, 113 … is its first negative term?

Q8. An electrician has to repair an electric fault on a pole of height 5m. He needs to reach a point 1.3 m below the top of the pole to undertake the repair work . Find the length of the ladder that he should use which when inclined at an angle of 60^o to the horizontal ,would enable him to reach the required position? How far from the foot of the pole should he place the foot of the ladder? (Use $\sqrt{3}$ = 1.

Section-C

Q9. 200 logs are stacked in the following manner:
20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on as shown in figure. In how many rows 200 logs are placed and how many logs are in the top row?



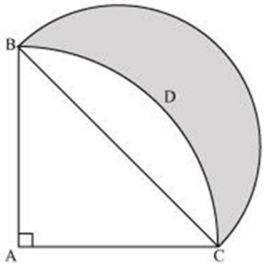
Q10. In an AP (i) Given $a = 7$, $a_{13} = 35$, find d and S_{13}.
(ii) Given $a_3 = 15$, $S_{10} = 125$, find d and a_{10}.

Q11. If $A(5,-1)$, $B(-3,-2)$ & $C(-1,8)$ are the vertices of triangle ABC, find the length of median through A and the coordinates of the centroid.

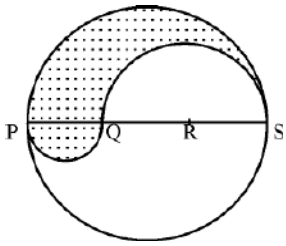
Or

Find the area of the triangle formed by joining the mid – points of the sides of the triangle whose vertices are (0, – 1), (2, 1) and (0, 3). Also find the ratio of area of the triangle formed to the area of the given triangle.

Q12. In the given figure, ABC is a quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.



Q13. PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semi-circles are drawn on PQ and QS as diameters as shown in Figure. Find the perimeter and area of the shaded region.



Q14.

a) Find a relation between x and y such that the point (x, y) is equidistant from the point (3, 6) and (3, 4).

b) Find the coordinates of the point P which divides the line segment joining A(8, 9) and B(–7, 4) internally in ratio 2 : 3.

Or

Find the co-ordinates of the centre of a circle which passes through the point A(1,2), B(3,–4) and C(5,–6). Also find radius of circle.

Q15. Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30º respectively. Find the height of poles and the distance of the point from the poles.

Q16. A man on the top of a vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes 10 minutes for the angle of depression to change from 30° to 45°, how soon after this, will the car reach the observation tower.

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