ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 12]

Total No. of Printed Pages : 12]

ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 48]

Total No. of Questions : 48]

ಸಂಕೇತ ಸಂಖ್ಯೆ : 81-E

Code No. : 81-E

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CCE PR REVISED

Question Paper Serial No. 11

ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

TEAR HERE TO OPEN THE QUESTION PAPER

ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

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ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

ದಿನಾಂಕ : 21. 09. 2020] [Date : 21. 09. 2020

ಸಮಯ : ಬೆಳಗ್ಗೆ 10-30 ರಿಂದ ಮಧ್ಯಾಹ–1-45 ರವರೆಗೆ] [Time : 10-30 A.M. to 1-45 P.M.

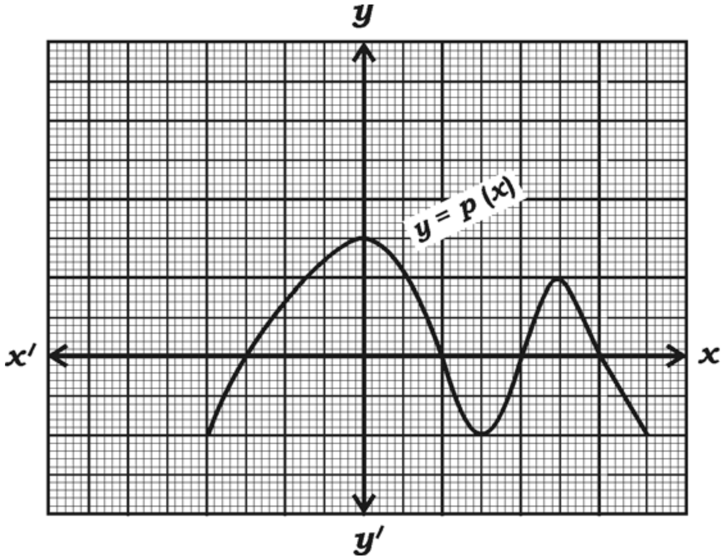
ಗರಿಷ್ಠ ಅಂಕಗಳು : 100] [Max. Marks : 100

General Instructions to the Candidate :

1. This Question Paper consists of 48 objective and subjective types of questions.
2. This question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.
3. Follow the instructions given against both the objective and subjective types of questions.
4. Figures in the right hand margin indicate maximum marks for the questions.
5. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.

I. *Four* alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet. $8 \times 1 = 8$

1. In the given graph, the number of zeros of the polynomial $y = p(x)$ is



(A) 3 (B) 5

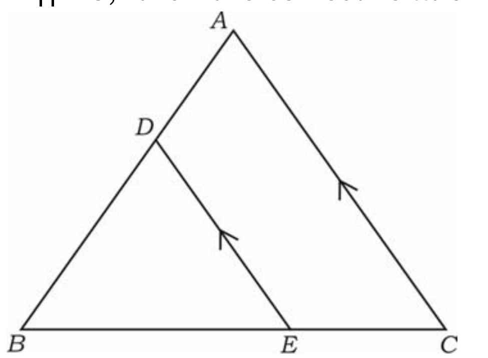
(C) 4 (D) 2.

2. The value of $\sec^2 26° - \tan^2 26°$ is

(A) $\frac{1}{2}$ (B) 0

(C) 2 (D) 1.

3. In the ΔABC, if $DE \parallel AC$, then the correct relation is



(A) $\frac{BD}{AB} = \frac{AC}{DE} = \frac{BC}{BE}$ (B) $\frac{BD}{AB} = \frac{DE}{AC} = \frac{BE}{BC}$

(C) $\frac{AB}{BD} = \frac{AC}{DE} = \frac{BE}{EC}$ (D) $\frac{AD}{BD} = \frac{DE}{AC} = \frac{BE}{EC}$.

4. The base radius and height of a right circular cylinder and a right circular cone are equal and if the volume of the cylinder is 360 cm^3, then the volume of cone is

(A) 120 cm^3 (B) 180 cm^3

(C) 90 cm^3 (D) 360 cm^3.

5. The lines represented by $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ are,

(A) intersecting lines

(B) parallel lines

(C) coincident lines

(D) perpendicular lines to each other.

6. If the n^{th} term of an arithmetic progression $a_n = 3n - 2$, then its 9^{th} term is

(A) -25 (B) 5

(C) -5 (D) 25.

7. If $P(A) = \frac{2}{3}$, then $P(\overline{A})$ is

(A) $\frac{1}{3}$ (B) 3

(C) 1 (D) $\frac{3}{2}$.

8. The surface area of a sphere of radius 7 cm is

(A) 154 cm^2 (B) 616 cm^3

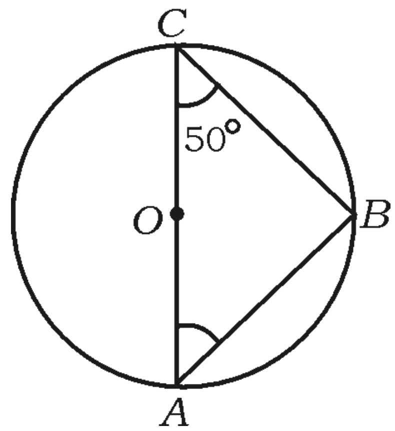
(C) 616 cm^2 (D) 308 cm^2.

II. Answer the following questions : $8 \times 1 = 8$

9. In two linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then write the number of solutions these pair of equations have.

10. If $\cos\theta = \frac{24}{25}$, then write the value of $\sec\theta$.

11. In the figure, O is the centre of a circle, AC is a diameter. If $\angle ACB = 50°$, then find the measure of $\angle BAC$.



12. Write the formula to find the total surface area of a right-circular cone whose circular base radius is 'r' and slant height is 'l'.

13. Find the H.C.F. of the smallest prime number and the smallest composite number.

14. If $P(x) = 2x^3 + 3x^2 - 11x + 6$, then find the value of $P(1)$.

15. If one root of the equation $(x + 4)(x + 3) = 0$ is -4, then find the another root of the equation.

16. If $\sin^2 A = 0$, then find the value of $\cos A$.

III. Answer the following questions : $18 \times 2 = 36$

17. Solve the following pair of linear equations :

$$2x + 3y = 11$$

$$2x - 4y = -24$$

18. Find the sum of first 20 terms of arithmetic series 5 + 10 + 15 + ... using suitable formula.

19. Find the value of k of the polynomial $P(x) = 2x^2 - 6x + k$, such that the sum of zeros of it is equal to half of the product of their zeros.

20. Find the value of the discriminant of the quadratic equation $2x^2 - 5x - 1 = 0$, and hence write the nature of its roots.

21. Prove that cosec A (1 – cos A) (cosec A + cot A) = 1.

OR

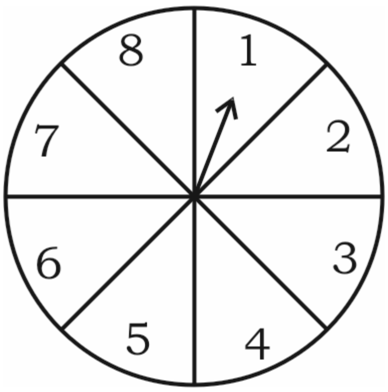
Prove that $\frac{\tan A - \sin A}{\tan A + \sin A} = \frac{\sec A - 1}{\sec A + 1}$.

22. Find the coordinates of the mid-point of the line segment joining the points (2, 3) and (4, 7).

23. Letters of English alphabets *A* *B* *C* *D* *E* *I* are marked on the faces of a cubical die. If this die is rolled once, then find the probability of getting a vowel on its top face.

OR

A game of chance consists of rotating an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally possible outcomes. Find the probability that it will point at an odd number.



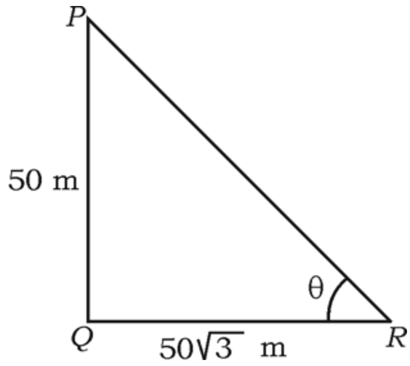
24. Draw a circle of radius 4 cm, and construct a pair of tangents to the circle, such that the angle between the tangents is 60°.

25. Express 25 and 7 using Euclid's division lemma, and hence find the quotient and remainder.

26. Find the number of two digit numbers which are divisible by 3.

27. Find the quotient and the remainder when $p(x) = 2x^2 + 3x + 1$ is divided by $g(x) = x + 2$.

28. Find the angle of elevation, if an object on a vertical building of height 50 m which is viewed from a point R situated at a distance of $50\sqrt{3}$ m from the foot of the building.



29. Find the distance of point (+ 12, + 5)

(a) from the x-axis

(b) from the y-axis.

30. Two coins are tossed together. Find the probability of getting at least one tail.

31. Draw a line segment of length 6 cm and divide it in the ratio 2 : 3.

32. Draw a circle of radius 4 cm and construct a pair of tangents to it from an external point 10 cm away from the centre.

33. If the perimeter (circumference) and the area of a circle are numerically equal, then find the radius of the circle.

34. A hemispherical bowl of internal radius 18 cm is full of fruit juice. The juice is to be filled into cylindrical shaped bottles each of radius 3 cm and height 9 cm. Find the number of bottles required to empty the bowl.

IV. Answer the following questions : $9 \times 3 = 27$

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

OR

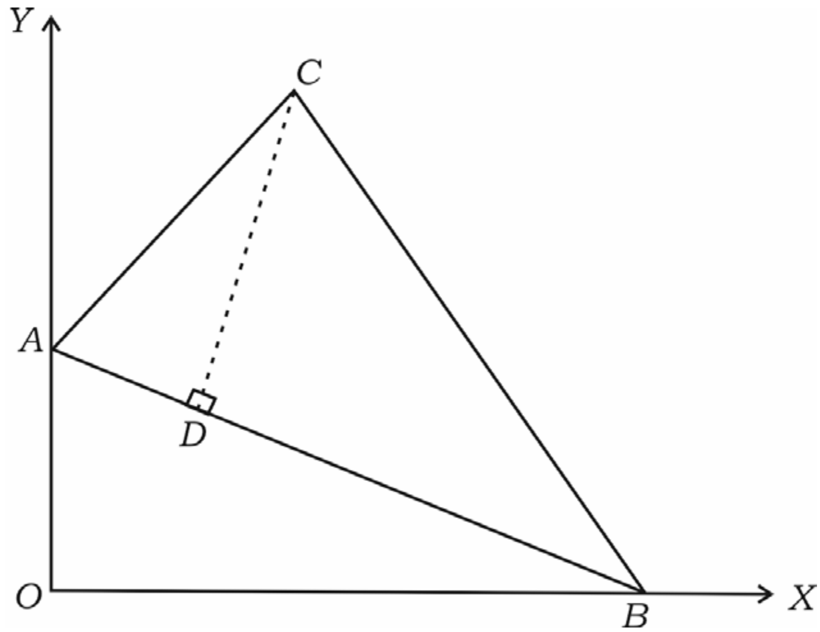
Find L.C.M. of H.C.F. (306, 657) and 12.

36. The diagonal of a rectangular playground is 60 m more than the smaller side of the rectangle. If the longer side is 30 m more than the smaller side, find the sides of the playground.

OR

The altitude of a triangle is 6 cm more than its base. If its area is 108 cm^2, find the base and height of the triangle.

37. In the figure, the vertices of ΔABC are $A(0, 6)$, $B(8, 0)$ and $C(5, 8)$. If $CD \perp AB$, then find the length of altitude CD.



OR

Show that the triangle whose vertices are $A(8, -4)$, $B(9, 5)$ and $C(0, 4)$ is an isosceles triangle.

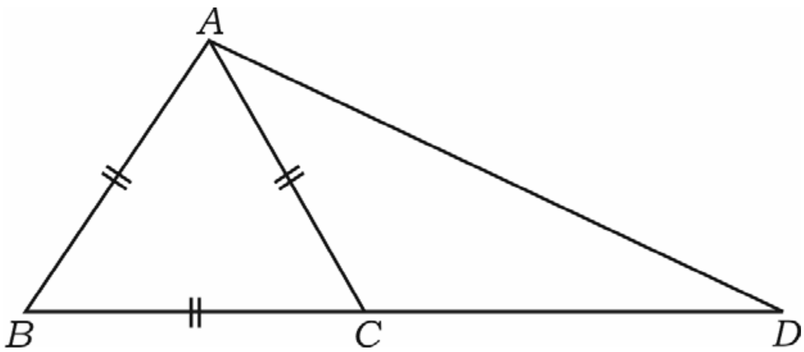
38. Calculate the mode for the following frequency distribution table :

Class-interval	*Frequency* (f_i)
0 — 5	8
5 — 10	9
10 — 15	5
15 — 20	3
20 — 25	1
	$\Sigma f_i = 26$

39. An insurance policy agent found the following data for distribution of ages of 35 policy holders. Draw a "less than type" (below) of ogive for the given data :

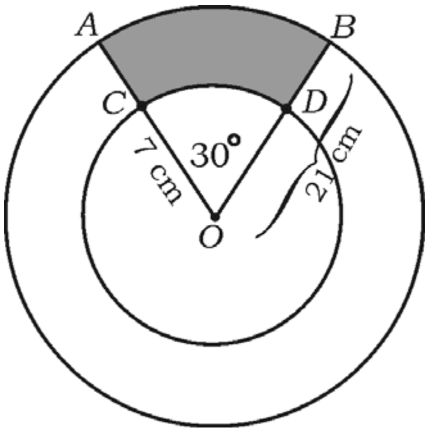
Age (in years)	*Number of policy holders*
Below 20	2
Below 25	6
Below 30	12
Below 35	16
Below 40	20
Below 45	25
Below 50	35

40. In the $\Delta\, ABD$, C is a point on BD such that $BC : CD = 1 : 2$, and $\Delta\, ABC$ is an equilateral triangle. Then prove that $AD^2 = 7AC^2$.



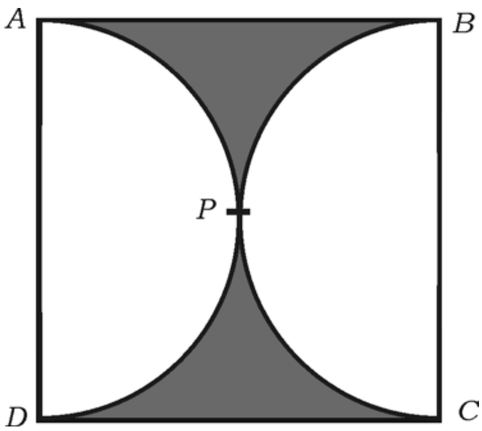
41. Prove that "the lengths of tangents drawn from an external point to a circle are equal".

42. *AB* and *CD* are the arcs of two concentric circles with centre *O* of radius 21 cm and 7 cm respectively. If $\angle AOB = 30°$ as shown in the figure, find the area of the shaded region.



OR

In the figure, *ABCD* is a square, and two semicircles touch each other externally at *P*. The length of each semicircular arc is equal to 11 cm. Find the area of the shaded region.



43. Construct a triangle with sides 6 cm, 7 cm and 8 cm and then construct another triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the constructed triangle.

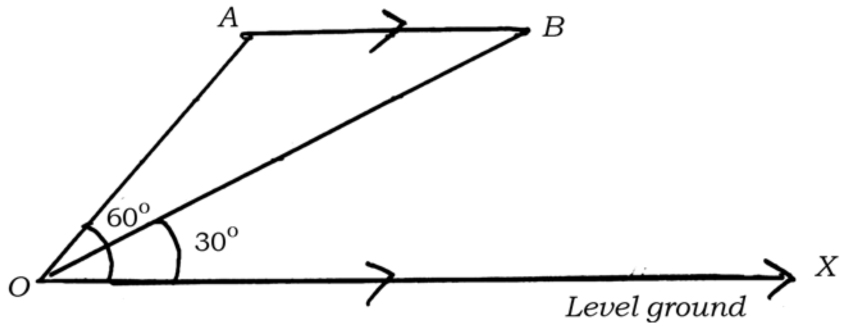
V. Answer the following questions : $4 \times 4 = 16$

44. Find the solution of the following pair of linear equations by the graphical method.

$$2x + y = 8$$

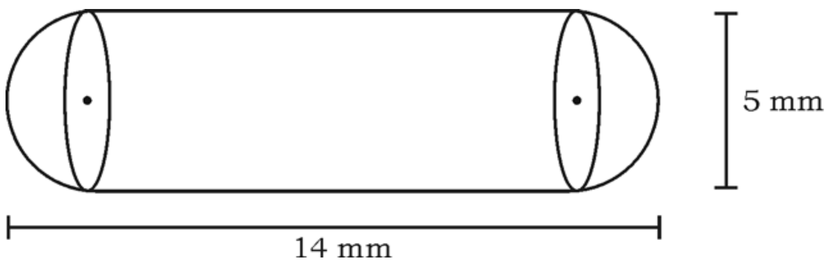
$$x + y = 5$$

45. An aircraft flying parallel to the ground in the sky from the point A through the point B is observed, the angle of elevation of aircraft at A from a point on the level ground is 60°, after 10 seconds it is observed that the angle of elevation of aircraft at B is found to be 30° from the same point. Find at what height the aircraft is flying, if the velocity of aircraft is 648 km/hr. (Use $\sqrt{3} = 1{\cdot}73$)



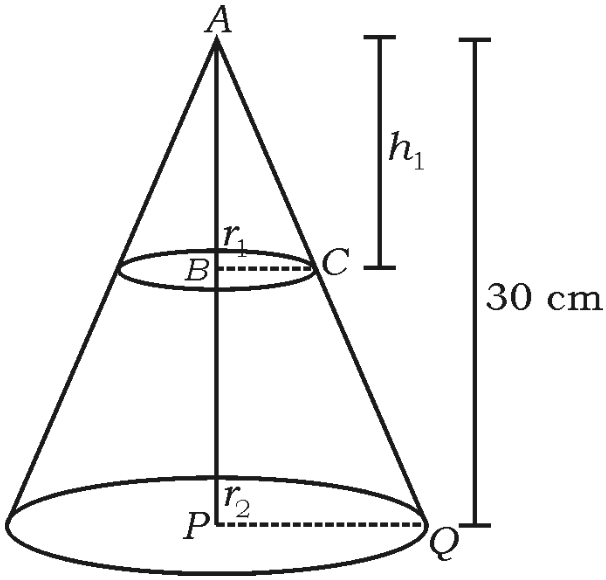
46. Prove that "if in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar".

47. A medicine capsule is in the shape of a cylinder with hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.



OR

A right circular cone of height 30 cm is cut and removed by a plane parallel to its base from the vertex. If the volume of smaller cone obtained is $\frac{1}{27}$ of the volume of the given cone, calculate the height of the remaining part of the cone.



VI. Answer the following question : $1 \times 5 = 5$

48. The common difference of two different arithmetic progressions are equal. The first term of the first progression is 3 more than the first term of second progression. If the 7th term of first progression is 28 and 8th term of second progression is 29, then find the both different arithmetic progressions.