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SL. No. : E

ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 40]
Total No. of Questions : 40]

[ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 12
[Total No. of Printed Pages : 12

ಇಲ್ಲಿಂದ ಕತ್ತರಿಸಿ

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REVISED

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-E**

Code No. : 81-E

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Repeater)

ದಿನಾಂಕ : 21. 06. 2019]
[Date : 21. 06. 2019

ಸಮಯ : ಬೆಳಗ್ಗೆ 9-30 ರಿಂದ ಮಧ್ಯಾಹ್ನ–12-30 ರವರೆಗೆ] [Time : 9-30 A.M. to 12-30 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80]
[Max. Marks : 80

TEAR HERE TO OPEN THE QUESTION PAPER
ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

General Instructions to the Candidate :

1. This Question Paper consists of 40 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.

Tear here

I. *Four* alternatives are given for each of the following questions / incomplete statements. Only one of them is correct or most appropriate. Choose the correct alternative and write the complete answer along with its letter of alphabet.

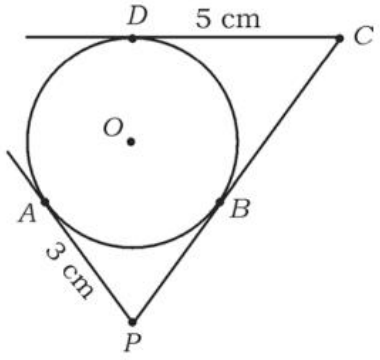
$8 \times 1 = 8$

1. If the n-th term of an arithmetic progression is $5n + 3$, then 3rd term of the arithmetic progression is

(A) 11 (B) 18

(C) 12 (D) 13

2. In the following figure, *PA, PC* and *CD* are tangents drawn to a circle of centre *O*. If *AP* = 3 cm, *CD* = 5 cm, then the length of *PC* is



(A) 3 cm (B) 5 cm

(C) 8 cm (D) 2 cm

3. If the lines drawn to the linear equations of the type $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are coincident on each other, then the correct relation among the following is

(A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (B) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (D) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$

4. The distance between the origin and co-ordinates of a point (x, y) is

(A) $x^2 + y^2$ (B) $\sqrt{x^2 - y^2}$

(C) $x^2 - y^2$ (D) $\sqrt{x^2 + y^2}$

5. If the HCF of 72 and 120 is 24, then their LCM is

(A) 36 (B) 720

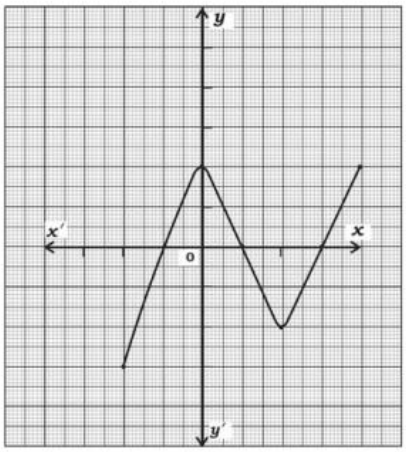
(C) 360 (D) 72

6. The value of sin 30° + cos 60° is

(A) $\frac{1}{2}$ (B) $\frac{3}{2}$

(C) $\frac{1}{4}$ (D) 1

7. In the given graph of $y = P(x)$, the number of zeros is



(A) 4 (B) 3

(C) 2 (D) 7

8. Faces of a cubical die numbered from 1 to 6 is rolled once. The probability of getting an odd number on the top face is

(A) $\frac{3}{6}$ (B) $\frac{1}{6}$

(C) $\frac{2}{6}$ (D) $\frac{4}{6}$

II. Answer the following : $6 \times 1 = 6$

9. Write the formula to find the sum of the first n terms of an Arithmetic progression, whose first term is a and the last term is a_n.

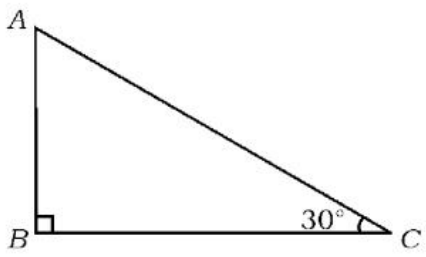
10. If a pair of linear equations represented by lines has no solutions (inconsistent) then write what kinds of lines are these.

11. Write the formula to find area of a sector of a circle, if angle at the centre is 'θ' degrees.

12. Write 96 as the product of prime factors.

13. Find the degree of the polynomial $P(x) = x^3 + 2x^2 - 5x - 6$.

14. In a ΔABC, $\angle ABC = 90°$ and $\angle ACB = 30°$, then find $AB : AC$.



III. Answer the following :

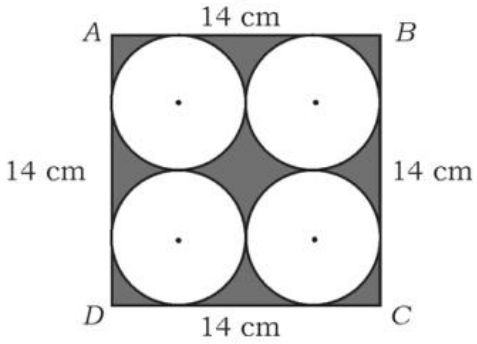
15. Find the solution for the pair of linear equations : 2

$x + y = 14$

$x - y = 4$

16. *ABCD* is a square of side 14 cm. Four congruent circles are drawn in the square as shown in the figure. Calculate the area of the shaded region.

[Circles touch each other externally and also sides of the square] 2



17. Find the distance between the points (2, 3) and (4, 1). 2

18. Find the area of a triangle whose vertices are (1, – 1), (– 4, 6) and (– 3, – 5). 2

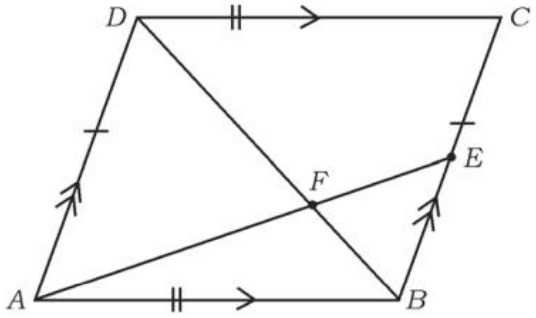
19. Prove that $5 + \sqrt{3}$ is an irrational number. 2

20. $\Delta ABC \sim \Delta DEF$ and their areas are 64 cm^2 and 100 cm^2 respectively. If EF = 12 cm then find the measure of BC. 2

OR

A vertical pole of height 6 m casts a shadow 4 m long on the ground, and at the same time a tower on the same ground casts a shadow 28 m long. Find the height of the tower.

21. The diagonal BD of parallelogram $ABCD$ intersects AE at F as shown in the figure. If E is any point on BC, then prove that $DF \times EF = FB \times FA$. 2



22. Sum and product of the zeroes of a quadratic polynomial $P(x) = ax^2 + bx - 4$ are $\frac{1}{4}$ and -1 respectively. Then find the values of a and b. 2

OR

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

23. Find the value of k, in which one of its zeros is -4 of the polynomial $P(x) = x^2 - x - (2k + 2)$. 2

24. Solve the equation $x^2 - 3x - 10 = 0$ by using formula. 2

25. If $\text{cosec}\,\theta = \frac{13}{12}$, then find the value of $\cos\theta$. 2

26. Show that $(\tan A \times \sin A) + \cos A = \sec A$. 2

27. Draw a pair of tangents to a circle of radius 3·5 cm which are inclined to each other at an angle of 60°. 2

28. A box contains 90 discs, which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears a perfect square number. 2

29. A metallic sphere of radius 9 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder. 2

30. The faces of two cubes of volume 64 cm^3 each are joined together to form a cuboid. Find the total surface area of the cuboid. 2

IV. Answer the following :

31. Prove that "the lengths of tangents drawn from an external point to a circle are equal". 3

OR

Two concentric circles of radii 5 cm and 3 cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle.

32. Construct a triangle with sides 5 cm, 6 cm and 7 cm and then construct another triangle whose sides are $\frac{3}{5}$ of the corresponding sides of the given triangle. 3

33. Find the mode for the following data in the frequency distribution table : 3

Family size	1 - 3	3 - 5	5 - 7	7 - 9	9 - 11
Number of families	7	8	2	2	1

OR

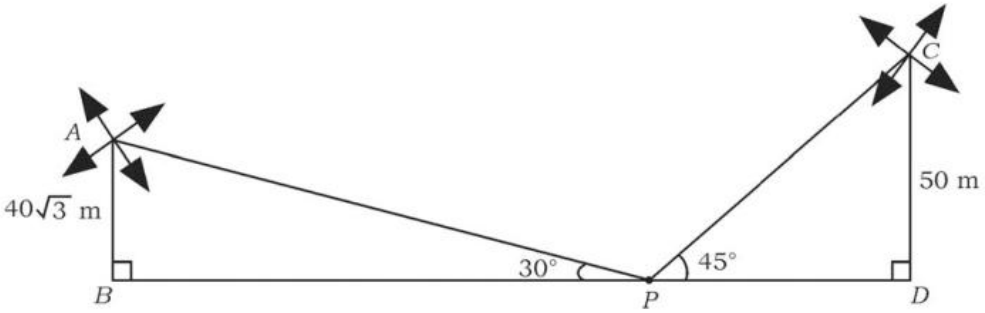
Find the median for the following data in the frequency distribution table :

Weight (in kg)	15-20	20-25	25-30	30-35	35-40
Number of students	2	3	6	4	5

34. From the top of a vertical building of $50\sqrt{3}$ m height on a level ground the angle of depression of an object on the same ground is observed to be 60°. Find the distance of the object from the foot of the building. 3

OR

Two windmills of height 50 m and $40\sqrt{3}$ m are on either side of the field. A person observes the top of the windmills from a point in between them. The angle of elevation was found to be 45° and 30°. Find the distance between the windmills.

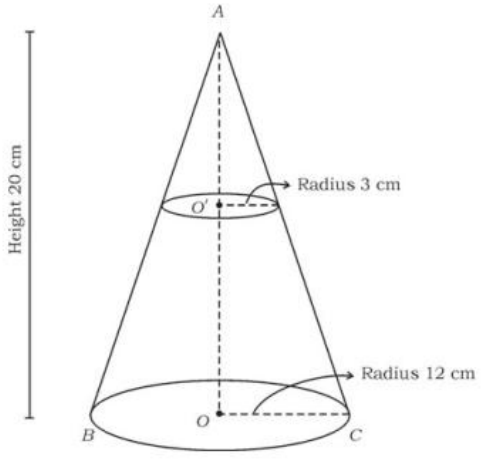


35. The following table gives production yield per hectare of wheat of 100 farms of a village.

Production yield in kg/hectare	50-55	55-60	60-65	65-70	70-75	75-80
Number of farms	2	8	12	24	38	16

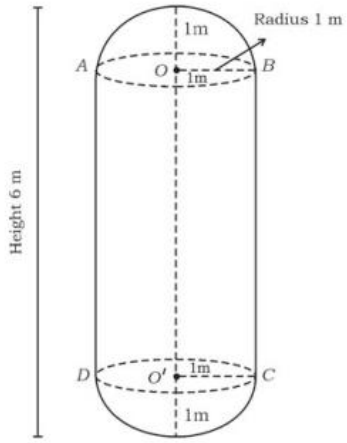
Change the distribution to a more than type distribution, and draw its ogive. 3

36. A cone is having its base radius 12 cm and height 20 cm. If the top of this cone is cut in to form of a small cone of base radius 3 cm is removed, then the remaining part of the solid cone becomes a frustum. Calculate the volume of the frustum. 3



OR

A milk tank is in the shape of a cylinder with hemispheres of same radii attached to both ends of it as shown in figure. If the total height of the tank is 6 m and the radius is 1 m, calculate the maximum quantity of milk filled in the tank in litres. ($\pi = \frac{22}{7}$)



V. Answer the following :

37. The sum of the fourth and eighth terms of an arithmetic progression is 24 and the sum of the sixth and tenth terms is 44. Find the first three terms of the Arithmetic progression. 4

38. Prove that "In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides". 4

39. Solve graphically : 4

$2x + y = 8$

$x - y = 1$

40. The ages of two students A and B are 19 years and 15 years respectively. Find how many years it will take so that the product of their ages becomes equal to 480. 4

OR

If the quadratic equation $(b - c)\ x^2 + (c - a)\ x + (a - b) = 0$ has equal roots, then show that $2b = a + c$.