SL. No. : J

ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 50]
Total No. of Questions : 50]

CCE PR

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

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-E**

Code No. : 81-E

ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ ಸಂಕೇತ ಸಂಖ್ಯೆಯನ್ನು ಇಲ್ಲಿ ಬರೆಯಿರಿ

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

ದಿನಾಂಕ : 16. 06. 2017] [Date : 16. 06. 2017

ಸಮಯ : ಬೆಳಿಗ್ಗೆ 9-30 ರಿಂದ ಮಧ್ಯಾಹ್ನ–12-45 ರವರೆಗೆ] [Time : 9-30 A.M. to 12-45 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 100] [Max. Marks : 100

TEAR HERE TO OPEN THE QUESTION PAPER
ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು –ರೆದಿಯಲು ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

General Instructions to the Candidate :

1. This Question Paper consists of 50 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 $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$, $A = \{1, 2, 3\}$ and $B = \{2, 3, 4, 5\}$ then $(A \cup B)^{\prime}$ is

   (A) $\{5, 6, 7\}$

   (B) $\{6, 7, 8\}$

   (C) $\{3, 4, 5\}$

   (D) $\{1, 2, 3\}$

2. LCM of 18 and 45 is

   (A) 9

   (B) 45

   (C) 90

   (D) 81

3. The mean ($\overline{X}$) and the standard deviation (σ) of certain scores are 60 and 3 respectively. Then the co-efficient of variation is

   (A) 5

   (B) 6

   (C) 7

   (D) 8

4. Rationalising factor of $\sqrt{x-y}$ is

(A) $x-y$

(B) $\sqrt{x}$

(C) $\sqrt{x+y}$

(D) $\sqrt{x-y}$

5. If $f(x) = x^2 - 2x + 15$ then $f(-1)$ is

(A) 14

(B) 18

(C) 15

(D) 13

6. In a circle, the angle subtended by a chord in the major segment is

(A) a straight angle

(B) a right angle

(C) an acute angle

(D) an obtuse angle.

7. The length of the diagonal of a square of side 12 cm is

(A) $5\sqrt{2}$ cm

(B) 144 cm

(C) 24 cm

(D) $12\sqrt{2}$ cm.

8. The distance between the origin and the point $(-12, 5)$ is

(A) 13 units

(B) – 12 units

(C) 10 units

(D) 5 units.

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

9. Write the value of ${}^{100}P_0$.

10. What is the probability of a certain event ?

11. Find the mid-point of the class-interval 5 – 15.

12. Find the value of $\cos 48° - \sin 42°$.

13. Write the slope and y-intercept of the line $y = 3x$.

14. Write the formula used to find the total surface area of a solid hemisphere.

III. 15. If A and B are the sets such that $n(A) = 37$, $n(B) = 26$ and $n(A \cup B) = 51$, find $n(A \cap B)$. 2

16. Write the formula used to find

a) arithmetic mean between a and b $(a > b)$

b) harmonic mean between a and b $(a > b)$. 2

17. Find the sum to infinity of the geometric series $2 + \frac{2}{3} + \frac{2}{9} + \ldots$. 2

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

19. Find how many triangles can be drawn through 8 points on a circle. 2

20. If $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$ then find the value of x. 2

21. A box has 4 red and 3 black marbles. Four marbles are picked up randomly. Find the probability that two marbles are red. 2

22. Calculate standard deviation for the following scores :

5, 6, 7, 8, 9. 2

23. Solve $x^2 - 2x - 4 = 0$ by using formula. 2

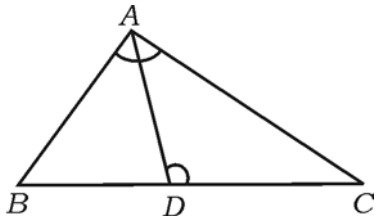
OR

Determine the nature of the roots of the equation $x^2 - 2x - 3 = 0$.

24. In a circle of radius 3·5 cm draw two radii such that the angle between them is 80°. Construct tangents to the circle at the non-centre ends of the radii. 2

25. In ΔABC, D is a point on BC such that $B\hat{A}C = A\hat{D}C$. Prove that

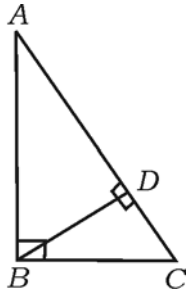
$AC^2 = BC \times DC$. 2



OR

In $\triangle ABC$, $A\hat{B}C = 90°$ and $BD \perp AC$. Prove that

$$\frac{AB^2}{BC^2} = \frac{AD}{CD}$$



26. Find the value of $\sin 30° \cdot \cos 60° - \tan^2 45°$. 2

27. Find the radius of a circle whose centre is $(-5, 4)$ and which passes through the point $(-7, 1)$. 2

28. The radii of two right circular cylinders are in the ratio 2 : 3 and the ratio of their curved surface areas is 5 : 6. Find the ratio of their heights. 2

29. The radius of a solid metallic sphere is 10 cm. It is melted and recast into small cones of height 10 cm and base radii 5 cm. Find the number of small cones formed. 2

30. Draw a plan by using the information given below :

[Scale : 25 metres = 1 cm]

	Metre to D	
100 to E	200 125 75 50	75 to C 25 to B
	From A	

2

31. If A and B are non-disjoint sets, draw Venn diagram to illustrate $A \cup B$.

2

32. In a geometric progression if the first term is 1 and the common ratio is 2, find the 5th term by using formula. 2

33. Simplify $\left(3\sqrt{2} + 2\sqrt{3}\right)\left(2\sqrt{3} - 4\sqrt{2}\right)$. 2

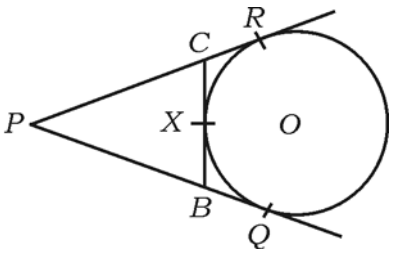
34. Draw pie chart for the survey carried out in the class regarding places of visit for excursion and the number of students who opted each place : 2

Places	*Mysuru*	*Vijayapura*	*Gokarna*	*Chitradurga*
Number of students	14	6	2	18

35. Write sum of the roots and product of the roots of the equation

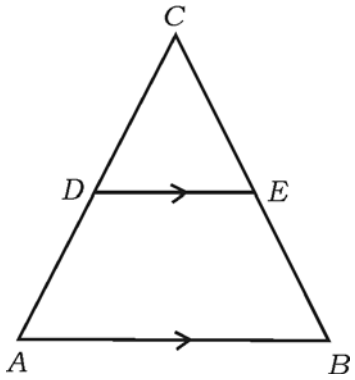
$ax^2 + bx + c = 0$. 2

36. In the figure PQ, PR and BC are the tangents to the circle. BC touches the circle at X. If $PQ = 7$ cm, find the perimeter of ΔPBC. 2



37. In the figure, $DE \parallel AB$, $AD = 7$ cm, $CD = 5$ cm and $BC = 18$ cm. Find CE.

2



38. Verify whether the following measures represent the sides of a right angle triangle :

1, 2, $\sqrt{3}$. 2

39. Given $\tan A = \frac{3}{4}$, find the value of $\sin A$ and $\cos A$. 2

40. Find the curved surface area of a right circular cylinder whose height is 30 cm and radius of its circular base is 3·5 cm. 2

IV. 41. Rationalise the denominator and simplify : 3

$$\frac{\sqrt{6} + \sqrt{3}}{\sqrt{6} - \sqrt{3}}.$$

42. Find the quotient $q(x)$ and remainder $r(x)$ on dividing

$p(x) = x^3 + 4x^2 - 5x + 6$ by $g(x) = x + 1$ and hence verify

$p(x) = [g(x) \times q(x)] + r(x)$. 3

OR

Find the quotient and remainder by using synthetic division :

$(4x^3 - 16x^2 - 9x - 36) \div (x + 2)$.

43. Find three consecutive positive integers such that the sum of the square of the first integer and the product of the other two is 92. 3

OR

Sum of the squares of any two numbers is 180. If square of the smaller number is equal to 8 times the bigger number, find the two numbers.

44. Prove that "If two circles touch each other externally, the centres and the point of contact are collinear". 3

45. In an equilateral triangle ABC, $AN \perp BC$, prove that $4AN^2 = 3AB^2$. 3

OR

In ΔABC, $AD \perp BC$, prove that $AB^2 + CD^2 = AC^2 + BD^2$.

46. Prove that $\tan^2 A - \sin^2 A = \tan^2 A \cdot \sin^2 A$. 3

OR

From the top of a building $50\sqrt{3}$ m high the angle of depression of an object on the ground is observed to be 30°. Find the distance of the object from the foot of the building.

V. 47. The sum of 3rd and 5th terms of an arithmetic progression is 30 and the sum of 4th and 8th terms of it is 46. Find the arithmetic progression. 4

OR

If the fourth term of a geometric progression is 8 and its eighth term is 128, find the sum of first ten terms of the progression.

48. Solve $x^2 - 2x - 3 = 0$ graphically. 4

49. Construct a pair of direct common tangents to two circles of radii 4 cm and 2 cm whose centres are 8 cm apart. Measure and write the length of the direct common tangent. 4

50. Prove that "If two triangles are equiangular, then their corresponding sides are in proportion". 4