OFFICE OF THE D.D.P.I., KOLAR

MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-1** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1) If $a_1, a_2, a_3, a_4, \ldots$ are in arithmetic progression, then the common difference is

A. $a_2 - a_1$ B. $a_1 - a_2$ C. $a_2 - a_3$ D. $a_3 - a_4$

2) If the n^{th} term of an arithmetic progression is 3n+2 , then its fifth term is

A. 5 B. 10 C. 17 D. 12

3) In the series 5+7+9+……+43 , if $a_{20} = 43$, then S_{20} is

A. 43 B. 45 C. 430 D. 480

4) 25^{th} term of the arithmetic progression 3,8,13,18…… is

A. 25 B. 123 C. 128 D. 80

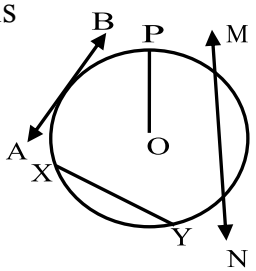
5) Sum of the first 30 odd natural numbers is

A. 300 B. 600 C. 150 D. 900

6) In the figure, secant of the circle with centre 'O' is

A. XY B. OP

C. MN D. AB



7) From an external point, two tangents are drawn to a given circle . If length of one of them is 8cm, then length of the other is

A. 4cm B. 2cm C. 8cm D. 16cm

8) In a given circle, the angle between the tangent and the radius at the point of contact is

A. 45^o B. 90^o C. 60^o D. 30^o

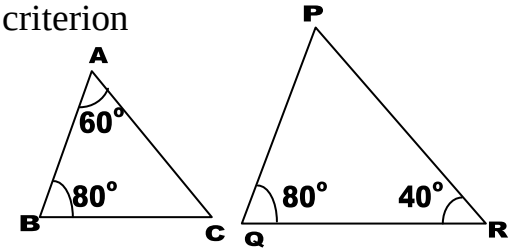
9) In two similar triangles, if the ratio of the corresponding sides is 3: 4, then the areas of these triangles are in the ratio

A. 4:3 B. 6:8 C. 9:16 D. 16:9

10) In a right angled triangle, if lengths of the perpendicular sides are 3cm and 4cm, then the length of the hypotenuse is

A. 5cm B. 9cm C. 16cm D. 7cm

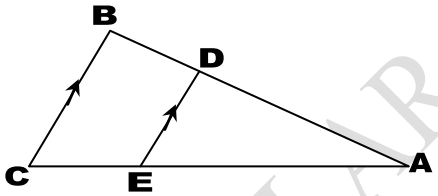
11) In the figure, to state $\Delta ABC \sim \Delta PQR$, the similarity criterion used is



A. A.A.A. B. S.S.S.

C. S.A.S. D. A.S.A .

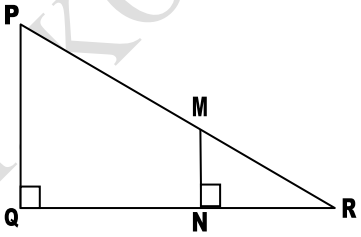
12) In the figure DE || BC, then $\frac{AD}{DB} =$



A. $\frac{BD}{AD}$ B. $\frac{BC}{DE}$

C. $\frac{CE}{AE}$ D. $\frac{AE}{EC}$

13) In the figure, if QR= 24m, NR= 4m and MN= 6m, then the length of PQ is



A. 16m B. 36m

C. 1m D. 42m

14) If two lines representing the pair of linear equations intersect each other, then the pair of equations is

A. dependent consistent pair B. inconsistent pair

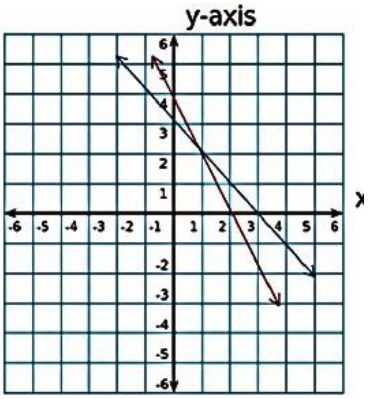
C. consistent pair D. having no solution.

15) The lines representing the pair of equations $2x + 3y - 9 = 0 \; and \; 4x + 6y - 18 = 0$ are

A. intersecting lines B. consistent pair

C. parallel lines D. coinciding lines

16) In the adjoining graph, the solution to the pair of equations representing the lines



A. (1, 2) B. (2,0)

C. (2,1) D. (3,0)

17) Solution for the pair of equations $x + y = 5 \; and \; x - y = 1$ is

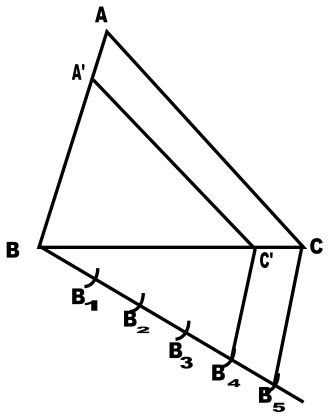
A. $x = 4 \; and \; y = 1$ B. $x = 2 \; and \; y = 3$

C. $x = 3 \; and \; y = 2$ D. $x = 2 \; and \; y = 1$

18) While constructing a pair of tangents a given circle such that, the angle between the tangents to be 60^o, then the measure of angle between the radii to be taken is,

A. 90^o B. 30^o C. 180^o D. 120^o

19) In the figure, $\Delta A'BC'$ is constructed similar to the ΔABC with the scale factor,



A. $\frac{4}{5}$ B. $\frac{1}{5}$

C. $\frac{5}{4}$ D. $\frac{1}{4}$

20) If the roots of the quadratic equation $ax^2 + bx + c = 0$ are real and equal, then

A. $b^2 - 4ac > 0$ B. $b^2 - 4ac < 0$ C. $b^2 - 4ac = 0$ D. $b^2 - 4ac \geq 0$

21) Quadratic equation among the following is

A. $x^2 + 2x = x^2 - 3$ B. $x^2 - 3 = 0$ C. $x^2 + 5 = 2x + x^2$ D. $x^2 + 3x + 1 = (x - 2)^2$

22) Roots of the quadratic equation $x^2 + 10x + 25 = 0$ is/are,

A. -5 B. $+5$ C. $+5\ and\ -5$ D. 0

23) The formula used to find the roots of the equation $ax^2 + bx + c = 0$ where $a \neq 0$, is

A. $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$ B. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ C. $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ D. $x = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$

24) The distance to a point P(x, y) from the origin is

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

25) Co-ordinates of the midpoint of the line joining points A(2,3) and B$(-4, 1)$ is

A. $(1, 2)$ B. $(-1, 1)$ C. $(-1, 2)$ D. $(-2, 4)$

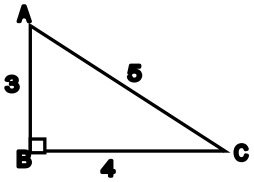
26) Area of the triangle with vertices P(0, 6), Q(0,2) and R(2, 0) is

A. 4 square unit B. 0 C. 8 square unit D. 6 square unit.

27) Distance between the points A(2,4) and B(6,1) is

A. 25 unit B. 5 unit C. $\sqrt{5}$ unit D. 7 unit

28) In the figure, value of $tanA$ is



A. $\frac{4}{5}$ B. $\frac{3}{5}$ C. $\frac{4}{3}$ D. $\frac{3}{4}$

29) If $2sin\theta = 1$, then the value of angle $'\theta'$ is

A. 60^o B. 90^o C. 45^o D. 30^o

30) Value of $cosec30^o - sec60^o$ is

A. 1 B. 0 C. $\frac{2}{\sqrt{3}}$ D. $\frac{1}{2}$

31) $\frac{1+tan^2A}{1+cot^2A} =$

A. sec^2A B. cos^2A C. cot^2A D. tan^2A

32) Tip of a tower is observed from a point 30m away from its base on the ground. If angle of elevation is 45^o, then the height of the tower is

A. $30m$ B. $30\sqrt{3}m$ C. $3\sqrt{10}m$ D. $10\sqrt{3}m$

33) Volume of a cube of edge 3cm is

A. $9cm^2$ B. $27cm^3$ C. $27cm^2$ D. 54 cm^2

34) A cylinder and a cone are of same heights and same radii of their bases. If the volume of the cylinder is 924cm^3 then, the volume of the cone is

A. $924cm^3$ B. $308cm^3$ C. $462cm^3$ D. $231cm^3$

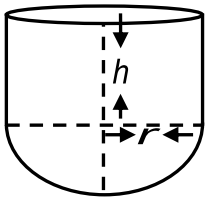
35) If the slant height of a frustum of a cone is 4cm and radii of its two circular ends are 5cm and 2cm, then its curved surface area is

A. $88cm^2$ B. $22cm^3$ C. $48cm^2$ D. $108cm^3$

36) Surface area of a sphere of radius $7cm$ is

A. $308cm^2$ B. $154cm^2$ C. $616cm^2$ D. $462cm^2$

37) A container is made by surmounting a cylinder of height $'h'\ cm$ on the base of a hemisphere as shown in the figure. If radii of bases of both the cylinder and hemisphere are $'r'cm$, then the curved surface area of the container is



A. $4\pi rh\ cm^2$ B. $\pi r^2(h+\frac{2}{3}r)\ cm^3$ C. $\frac{2}{3}\pi r^2h\ cm^3$ D. $2\pi r(r+h)cm^2$

38) The measure of central tendency that gives the middle most value of the data is

A. midpoint B. mean C. median D. mode

39) In a class test, the total marks scored by all the students is 1875 and if its mean is 75, then the number of students in the class is

A. 35 B.25 C. 15 D. 45

40) The formula used to find the mode of the grouped data with usual notations is

A. $Mode = l + \left(\frac{f_1-f_2}{2f_1-f_0-f_2}\right) \text{x } h$ B. $Mode = l - \left(\frac{f_1-f_2}{2f_1-f_0-f_2}\right) \text{x } h$

C. $Mode = l \text{ x} \left(\frac{f_1-f_2}{2f_1-f_0-f_2}\right) + h$ D. $Mode = l \text{ x} \left(\frac{f_1-f_2}{2f_1-f_0-f_2}\right) - h$

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MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-2** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1) If nth term of an Arithmetic progression is $a_n = 7n - 3$, then second term is

A) 4 B) 11 C) 8 D) 20

2) The common difference of A.P. : 1, -1, -3, . . . is

A) -2 B) 2 C) 3 D) -3

3) Formula to find the sum of the first 'n' natural numbers is

A) $s_n = \frac{2n(n-1)}{2}$ B) $s_n = \frac{2n(n+1)}{2}$ C) $s_n = \frac{n(n+1)}{2}$ D) $s_n = \frac{n(n-1)}{2}$

4) Arithmetic progression with first term 3 and the common difference -2 in the following is

A) 3, -2, -5, . . . B) 3, 5, 7, . . . C) 3, -2, -7, . . . D) 3, 1, -1, . . .

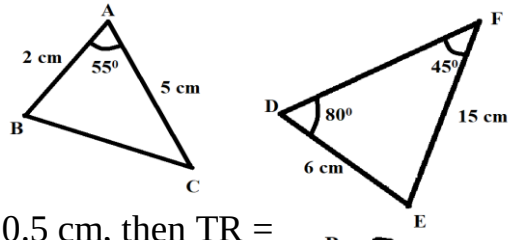
5) If 2nd and 5th terms of an arithmetic progression are 7 and 19 respectively, then its first term is

A) 3 B) 4 C) 5 D) 6

6) In the figure similarity criterion used to say that, the triangles are similar is

A) S.S.S. B) S.A.S.

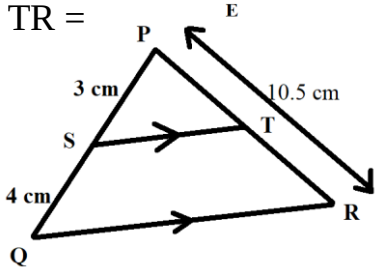
C) A.A.A. D) A .S.A.



7) In ΔPQR, ST∥QR, PS = 3 cm, SQ = 4 cm and PR = 10.5 cm, then TR =

A) 7 cm B) 7.5 cm

C) 6 cm D) 6.5 cm



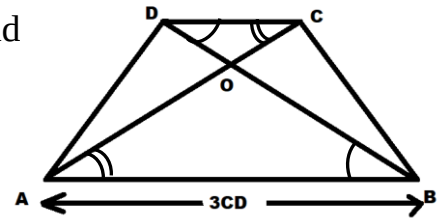
8) The ratio of the areas of two similar triangles is 16 : 9. The ratio of their corresponding sides is

A) 256 : 81 B) 4 : 3 C) 81 : 256 D) 3 : 4

9) ABCD is a trapezium in which AB ∥ DC, AB = 3 CD and Ar(ΔAOB)=108 cm^2. Ar(ΔCOD) is

A) 24 cm^2 B) 18 cm^2

C) 48 cm^2 D) 12 cm^2



10) A 25 m long ladder is placed against a vertical wall touches window which is 24 m above the ground. The distance between foot of the ladder and foot of the wall is

A) 7 cm B) 15 cm C) 16 cm D) 18 cm

11) Pair of linear equations x + 2y = 6 and 3x + 6y = 18 have

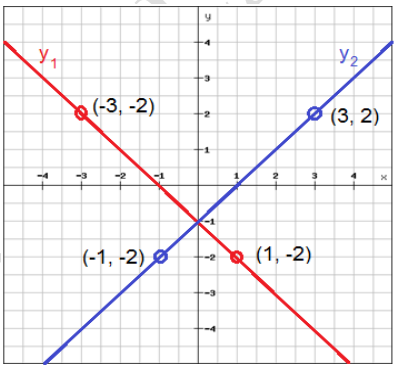
A) Exactly one solution B) Infinitely many solutions

C) No solution D) Two solutions

12) Pair of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are inconsistent. The correct relation of the following is

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

13) In the given graph solution for pair of linear equations is



A) (0, -1) B) (-1, 0)

C) (-1, 1) D) (1, -1)

14) In 3x + 2y = 12, if x = 0, then the value of y is

A) 4 B) 2 C) 3 D) 6

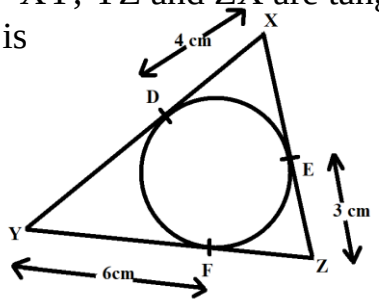
15) The length of the tangent from an external point A to the circle, of radius 6 cm, is 8 cm. The distance of A from the centre of the circle is

A) 12 cm B) 5 cm C) 10 cm D) 14 cm

16) A circle is inscribed in ΔXYZ as shown in the figure. XY, YZ and ZX are tangents. D, E and F are points of contact. The Perimeter of ΔXYZ is

A) 13 cm B) 7.5 cm

C) 26 cm D) 15 cm



17) If tangents PA and PB are drawn from an external point P to a circle with centre O are inclined to each other at an angle of 100^0 then ∠POA=

A) 40^0 B) 80^0 C) 50^0 D) 60^0

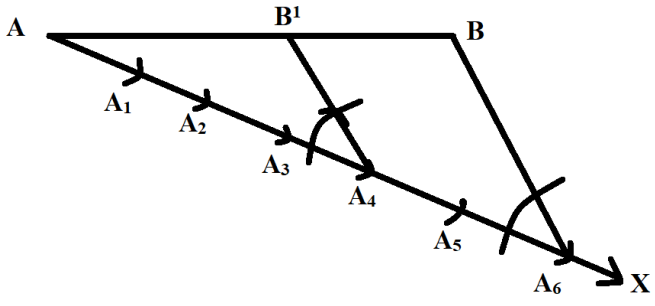
18) Line segment AB divided as shown in the figure. $AB^1 : B^1B$ =

A) 6 : 4

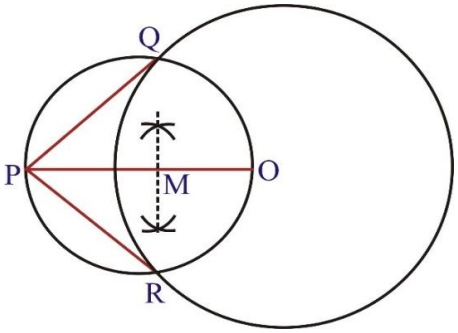
B) 4 : 6

C) 2 : 4

D) 4 : 2



19) In adjacent construction PQ and PR are



A) Tangents to the circle of radius PO

B) Tangents to the circle of diameter PO

C) Tangents to the circle with centre 'O'

D) Tangents to the circle of radius PM

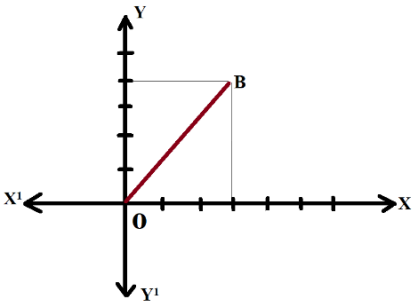
20) If points (1, 2), (-5, 6) and (S, -2) are collinear, then S =

A) 4 B) 5 C) 6 D) 7

21) The distance of the point (-7, 5) from y-axis

A) 5 units B) 7 units C) 2 units D) 13 units

22) In the graph, measure of OB is



A) 5 units B) 4 units

C) 3 units D) 7 units

23) If M(6, 3) is the midpoint of line joining P(4, 5) and Q(8, y) then y =

A) 4 B) 3 C) 2 D) 1

24) If $ax^2 + bx + c = 0$ has equal roots, then value of 'c' is

A) $\frac{b}{2a}$ B) $-\frac{b}{2a}$ C) $\frac{b^2}{4a}$ D) $-\frac{b^2}{4a}$

25) If One root of $x^2 + kx + 6 = 0$ is 1, then value of k is

A) 7 B) –7 C) 6 D) –6

26) If $(x + 2)(x + 3) = 0$ is expressed in the standard form of quadratic equation

A) $x^2 + 2x + 5 = 0$ B) $x^2 + 3x + 6 = 0$ C) $x^2 + 5x + 5 = 0$ D) $x^2 + 5x + 6 = 0$

27) Mathematical form of the statement: "Sum of a number and twice the square of the same is 56" is

A) $2x + x^2 = 56$ B) $2x^2 + 2x = 56$ C) $2x^2 + x = 56$ D) $x^2 + x = 56$

28) Value of $\frac{1-tan^2 45^0}{1+tan^2 45^0}$ is

A) 0 B) 1 C) $\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

29) Value of (cosec A + cot A)(cosec A – cot A) is

A) $\frac{1}{\sqrt{2}}$ B) $\frac{1}{2}$ C) 2 D) 1

30) If 13 sin θ = 5, then value of cosec θ

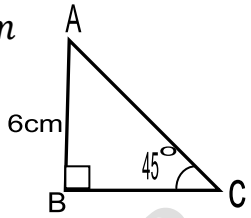
A) $\frac{13}{5}$ B) $\frac{5}{13}$ C) $\frac{13}{12}$ D) $\frac{12}{13}$

31) $1 - \sin^2 25^0$ is same as

A) $\text{cosec}^2 25^0$ B) $\cos^2 65^0$ C) $\sin^2 65^0$ D) $\text{cosec}^2 65^0$

32) In the figure, in ΔABC if AB=6cm and $\angle$ACB=45^0, then the length of BC is

A) $8cm$ B) $10cm$ C) $6cm$ D) $12cm$



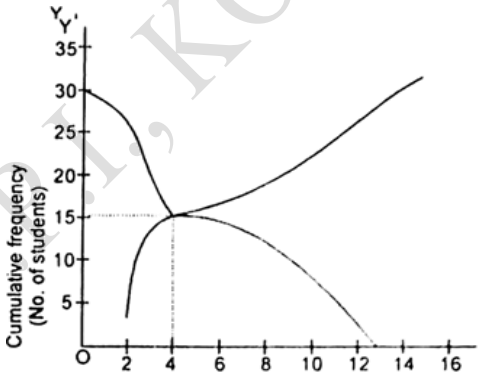
33) Mode of the given set of scores is

A) Middle most value B) Least frequent value
C) Most frequent value D) None of these

34) An average marks scored by a student in a test of 6 subjects is 17. The sum of the marks scored by him in 5 subjects is 83. Then the marks scored by him in the sixth subject is

A) 20 B) 21 C) 18 D) 19

35) Median of the given Ogive is



A) 2 B) 30

C) 15 D) 4

36) The formula to calculate the curved surface area of the frustum of a cone of slant height $'l'$ and radii of its two ends r_1 and r_2 is,

A) $\pi(r_1 + r_2)l$ B) πrl

C) $\pi(r_1 + r_2)l + \pi r_1^2 + \pi r_2^2$ D) $\frac{1}{3}\pi h[r_1^2 + r_2^2 + r_1 r_2]$

37) The volume of cylinder is 198 cm^3. If the radius of its base is 3cm , then its height is

A) 35 cm B) 3.5 cm C) 7 cm D) 14 cm

38) The radius of cone with slant height 7 cm and curved surface area 66 cm^2 is

A) 2 cm B) 3 cm C) 6 cm D) 7 cm

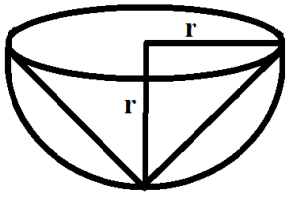
39) Three cubes of edge 4 cm are joined end to end, then the volume of cuboid so formed is

A) 162 cm^3 B) 172 cm^3 C) 182 cm^3 D) 192 cm^3

40) The maximum volume of cone that can be carved out of a solid hemisphere of radius 'r' is

A) $\frac{\pi r^3}{3}$ Cubic units B) $\frac{\pi r^2}{3}$ Cubic units

C) $3\pi r^2$ Cubic units D) $3\pi r^3$ Cubic units



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MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-3** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1. If the nth term of an Arithmetic Progression is a_n = 4n + 2,then its third term is

   A)14 B)3 C)10 D)15

2. The common difference of the arithmetic progression 3,0,-3,-6,…… is

   A) 3 B) 0 C) -3 D) 6

3. The sum of the first 'n' natural numbers is

   A) $\frac{n(n+1)}{2}$ B) $\frac{n(n-1)}{2}$ C) n^2 D) $n(n+1)$

4. In an arithmetic progression, if the first term is 'a' and the common difference is 'd' then the sum of its first n term is

   A) $S_n = \frac{2}{n}[a+(n-1)d]$ B) $S_n = 2[a+(n-1)d]$

   C) $S_n = \frac{n}{2}[a+(n-1)d]$ D) $S_n = \frac{n}{2}[2a+(n-1)d]$

5. In an arithmetic progression, if the first term is 'a' and the common difference is 'd' then the correct relation among the following is

   A) a_5= a+5d B) a_5= a+4d C) a_5=a_5+d D) a_5= a+6d

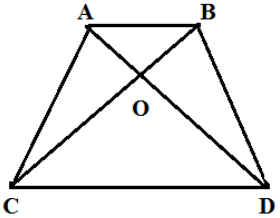
6. In ΔABC, DE||BC if DE=5cm,BC=8cm and AD =3.5cm,then length of AB is

   A) 4.8cm B)5.6cm C)5.2cm D)6.4cm

7. In the trapezium ABCD , AB || CD. Correct relation among the following is

   A) $\frac{AO}{OD} = \frac{BO}{OC}$ B) $\frac{AO}{OD} = \frac{OC}{OB}$

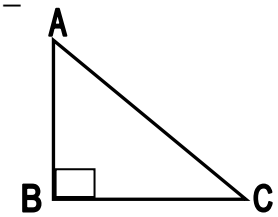
   C) $\frac{AB}{OD} = \frac{OC}{CD}$ D) $\frac{AO}{OC} = \frac{OB}{OD}$



8. Given ΔABC~ΔDEF, Ar(ΔABC) =64cm^2 and Ar(ΔDEF) =121cm^2 then the value of BC is

   A) 9cm B)10cm C)11cm D) 8cm

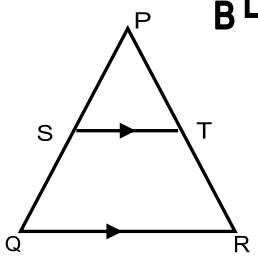
9. In the figure, ABC is a right angled triangle. Then BC^2 =



A) $AB^2 + AC^2$ B) $AB^2 - AC^2$

C) $AC^2 - AB^2$ D) AB^2 x AC^2

10. In a given figure, if ST||QR then $\frac{PS}{SQ}$=



A) $\frac{PS}{TR}$ B) $\frac{PT}{SQ}$

C) $\frac{PT}{SR}$ D) $\frac{PT}{TR}$

11. The values of x and y which satisfies the equations $x + y = 9$ and $x - y = 1$ are respectively

A) 6 and 3 B) 5 and 4 C) 3 and 6 D) 4 and 5

12. If two straight lines representing the pair of equations 3x +2ky =2 and 2x + 5y +1=0 are parallel to each other then the value of 'k' is

A) $\frac{-5}{4}$ B) $\frac{-2}{5}$ C) $\frac{15}{4}$ D) $\frac{3}{2}$

13. If the lines of the pair equations a_1 x + b_1y + c_1 = 0 and a_2 x + b_2y + c_2 = 0 are coinciding then the correct statement in 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) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$

14. Distance of the point P(x,y) from the origin is

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

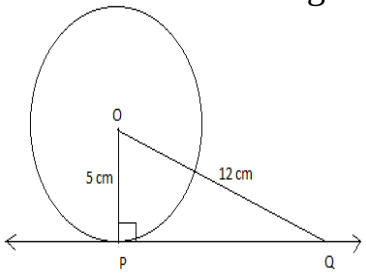
15. Distance between the points M(2,3) and N(4,1) is

A) $\sqrt{2}$ units B) $2\sqrt{2}$ units C) 2 units D) 8 units

16. The coordinates of a point which divides the line joining the points A(4,-3) and B(8,5) internally in the ratio 3:1 is

A) (7,4) B) (7,3) C) (3,7) D) (4,7)

17. A tangent PQ at a point P of a circle of radius 5cm meets a line through the centre O at a point Q so that OQ= 12cm.Length PQ is



A) 12cm B) 13cm

C) 8.5cm D) $\sqrt{119}$

18. PA and PB are tangents drawn from an external point P to a circle with centre 'O' if ∠APB=80°then the measure of ∠POA is

A)100° B) 50° C) 60° D)80°

19. Mathematical form of the statement "product of two consecutive positive integers is 306" is

A) x^2+2x-306=0 B) x^2-2x-306=0 C) x^2+x-306=0 D) x^2-x-306=0

20. Maximum number of roots for a Quadratic equation is

A) 0 B) 1 C) 2 D) 4

21. Roots of the Quadratic equation $x^2 - 6x + 8 = 0$ are

A) $4, -2$ B) $-4,2$ C) $-4, -2$ D) $4,2$

22. If the discrimininat of a Quadratic equation ax^2+bx+c=0, where a≠0 is greater than 0, then the nature of the roots is

A)Distinct and Real B)Equal and Real C)Complex D)imaginary

23. The roots of the Quadratic equation ax^2+bx+c=0, a≠0 can be found by using

A) x=$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ B) x=$\frac{b\pm\sqrt{b^2-4ac}}{2a}$ C) x=$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ D) x=$\frac{b\pm\sqrt{b^2+4ac}}{2a}$

24. If sinA=$\frac{4}{5}$,then the value of tanA is

A) $\frac{3}{5}$ B) $\frac{5}{4}$ C) $\frac{4}{3}$ D) $\frac{3}{4}$

25. The value of cos30° is

A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{1}{\sqrt{3}}$ D) $\frac{2}{\sqrt{3}}$

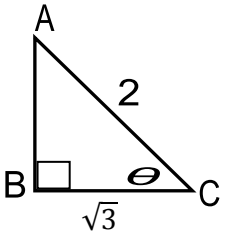
26. Value of $\frac{\tan 26^\circ}{\cot 64^\circ}$ is

A) 1 B) 0 C) 26 D) not defined

27. Value of $9sec^2$A-9$\tan^2$A is

A) 1 B) 9 C) 8 D) 0

28. In the given figure, the angle of elevation θ measures



A) 30° B) 45°

C) 90° D) 60°

29. A tower stands vertically on the ground. From a point on the ground, which is 15m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60°,then the height of the tower is

A)15m B) $15\sqrt{3}$m C) $\sqrt{3}$ D) $1.5\sqrt{3}$m

30. The volume of hemisphere of radius 'r' is

A) πr^2 B) $\frac{4}{3}\pi r^3$ C) $4\pi r^3$ D) $\frac{2}{3}\pi r^3$

31. During conversion of a solid from one shape to another, the volume of the new shape will

A)increase B)decrease C)remain unaltered D) get doubled

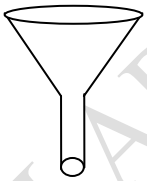
32.If two solid hemispheres of same base radius are joined together along their bases, then curved surface area of this new solid is

A)$6\pi r^2$ B) $5\pi r^2$ C) $4\pi r^2$ D) $3\pi r^2$

33. A big solid metal sphere of diameter 48cm is melted and casted into small solid spheres of radius 3cm, then the number of small solid spheres formed is

A)7 B)6 C)14 D)8

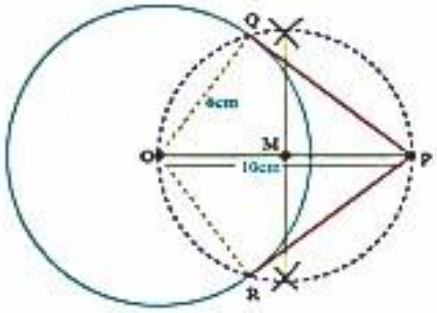
34.A funnel given in the figure is the combination of



A)two cylinders B)Hemisphere and cylinder

C)frustum of a cone and cylinder D)cone and cylinder

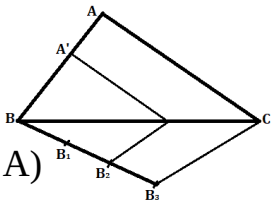
35. In the figure, tangents to the circle with centre 'O' are,

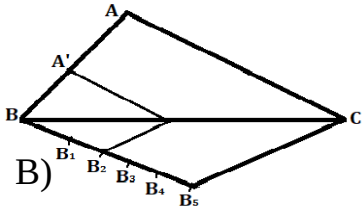


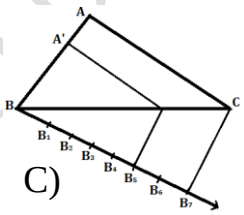
A) PQ and OQ B) PO and PQ

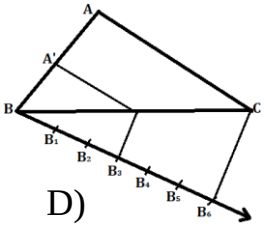
C) PQ and PR D) PR and PM

36.Identify the triangle whose corresponding sides are in the ratio $\frac{5}{7}$ with the help of construction of triangle.

A) 

B) 

C) 

D) 

37. For the given scores Mode is the

A) middle most frequent value B) least frequent value

C) maximum frequent value D) cumulative frequency

38.The abscissa of the point of intersection of the less than type and of the more than type Ogive curves of the same grouped data gives its

A)mean B)mode C)Cumulative frequency D)median

39.In the given frequency distribution table the median class is

C.I	0-10	10-20	20-30	30-40	40-50
Frequency	5	8	12	15	20

A)10-20 B)0-10 C)20-30 D)30-40

40.If the average of 65,50,55,x is 60 then the value of 'x' is

A)65 B)60 C)50 D)70

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MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-4** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1) The solution of the pairof equations $x - y = 2$ and $x + y = 4$ is

A) 3,1 B) 4,3 C) 5,1 D) – 1, - 3

2) In the pair of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, if $\frac{a1}{a2} \neq \frac{b1}{b2}$, then the equations have

A) No solution B) Unique solution C) Two solutions D) Many solutions

3) The lines represented by the equations $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ are

A) Intersecting lines B) Perpendicular lines

C) Parallel lines D) Coincident lines

4) If the pair of linear equations, $x + 2y = 3$ and $2x + 4y = k$ are dependent pair then the value of 'k' is

A) 3 B) 6 C) – 6 D) – 3

5) If 'n' th term of an arithmetic progression is $a_n = 5n - 2$, then its common difference is

A) – 5 B) 8 C) – 8 D) 5

6) If 5, x, y, 14 are in arithmetic progression, then the value of 'y' is

A) 11 B) 8 C) 22 D)16

7) 30th term of the arithmetic progression 10, 7, 4, ... is

A) 97 B) 77 C) – 77 D) – 87

8) Two arithmetic progressions have the same common difference. If, the first term of a progression is 10 and that of the other is 6, then the difference between their 3rd term is.

A) 4 B) 6 C) 2 D) 3

9) If sum of the first n terms of an arithmetic progression is $4n - n^2$, then its 3rd term is

A) 4 B) 3 C) – 1 D) – 4

10) The coefficient of 'x' in the quadratic equation $x^2 - 2x = (-2)(3 - x)$ when it is reduced to the standard form $ax^2 + bx + c = 0$ is

A) 4 B) – 4 C) 2 D) – 2

11) If One root of the quadratic equation $x^2 - 3x - 10 = 0$ is -2, then the other root is

A) -5 B) 2 C) -2 D) 5

12) The nature of the roots of the quadratic equation $2x^2 - 3x + 5 = 0$ is

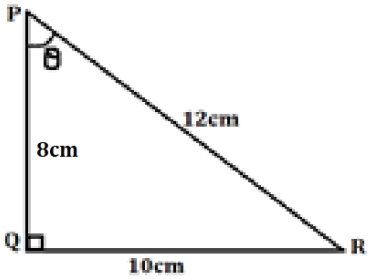
A) Real roots do not exist B) Real and equal

C) Real and distinct D) Complex

13) The value of the discriminant of the quadratic equation $2x^2 - 7x + 3 = 0$ is

A) 25 B) -25 C) 24 D) -24

14) In the given figure $\angle Q = 90^0$, PQ= 8cm, QR=10 cm, PR =12cm then the value of $cot(90^o - \theta)$ *is*



A) $\frac{12}{10}$ B) $\frac{4}{5}$ C) $\frac{5}{4}$ D) $\frac{10}{12}$

15) If $2\cos 2\theta = \sqrt{3}$, then value of angle 'θ' is

A) 15^0 B) 30^0 C) 60^0 D) 90^0

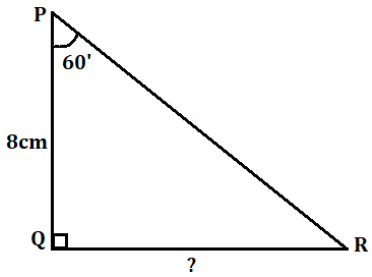
16) If $\sec\theta = \frac{7}{4}$, then $\cos\theta =$

A) 7 B) 4 C) $\frac{7}{4}$ D) $\frac{4}{7}$

17) If $\sec A - \sec^2 A = -1$, then the value of $\tan^2 A - \tan^4 A$ is

A) 2 B) -2 C) 1 D) -1

18) In the triangle PQR, $\angle Q = 90^0$, $\angle P = 60^0$ and PQ =8cm then the length of QR is



A) $8\sqrt{3}$cm B) $\sqrt{3}$ cm

C) 4 cm D) 6 cm

19) The distance between the points (2, 3) and (4, 1) is

A) $\sqrt{2}$units B) $2\sqrt{2}$units C) 2 units D) 3 units

20) The coordinates of a point lying on Y-axis is of the form

A) (x, y) B) $(x, 0)$ C) (0, y) D) (y, 0)

21) The distance between the origin and the point P(x, y) is

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

22) The co-ordinates of the midpoint of the line joining the points (3, 2) and (1, 4) is

A) (3, 2) B) (7, 2) C) (2, 3) D) (1, 3)

23) If, the average of 30, 42, x and 20 is 40, then the value of 'x' is

A) 40 B) 68 C) 32 D) 22

24) In the given frequency distribution table the modal class is

Class interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	7	10	21	6	4

A) 40 – 50 B) 20 – 30 C) 30 – 40 Ds) 50 – 60

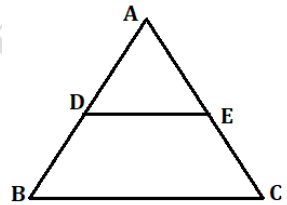
25) The Median of 2, 8, 1, 10 and 13 is

A) 8 B) 1 C) 10 D) 3

26) In two similar triangles, if corresponding sides are in the ratio 4:9, then the areas of these triangles are in the ratio.

A) 81:16 B) 16:81 C) 9:4 D) 2:3

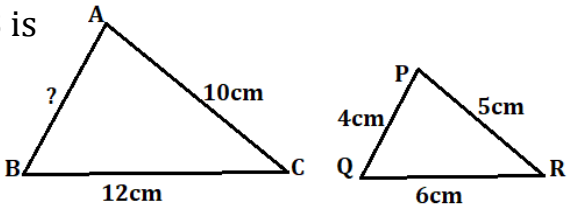
27) In the figure DE||BC, AB=8cm, AD=4cm and AE=3cm then the length of AC is



A) 3cm B) 4cm

C) 5cm D) 6cm

28) In the given figure, $\Delta ABC \sim \Delta PQR$. The length of AB is



A) 4cm B) 6cm

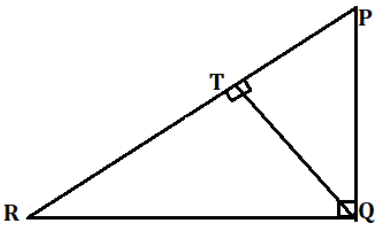
C) 5cm D) 8cm

29) The length of the sides of some triangles are given below. Identify group that does not form a right angled triangle.

A) 7cm, 24cm, 25cm B) 50cm, 80cm, 100cm

C) 13cm, 12,cm, 5cm D) 8cm, 15cm, 17cm

30) In the given figure, $\angle PQR=90^0$, QT_|_ PR , PQ=7cm, QR=24cm and PR=25cm then length of TR is



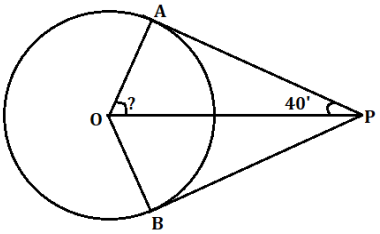
A) 11.04cm B) 10.60cm

C) 10cm D) 23.04cm

31) Maximum number of tangents that can be drawn from an external point to a circle is

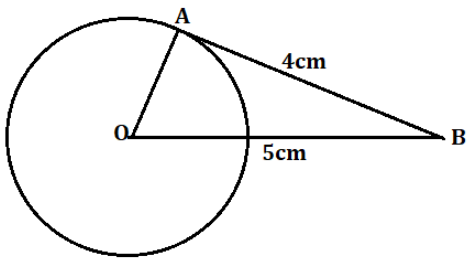
A) 1 B) 2 C) 3 D) Infinite

32) In the figure $\angle APO=40^0$ then $\angle POA$ is



A) 50^0 B) 60^0 C) 70^0 D) 80^0

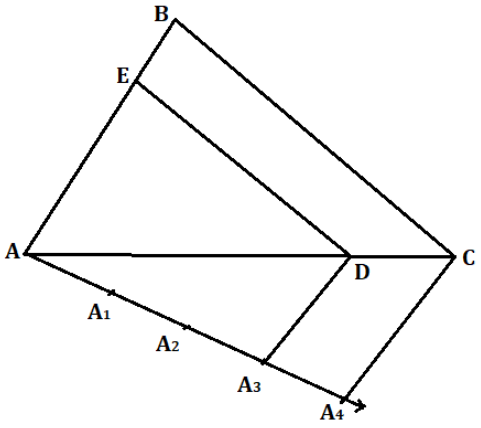
33) In the figure AB=4cm & BO=5cm then the length of the radius OA is



A) 9cm B) 3cm

C) 4cm D) 5cm

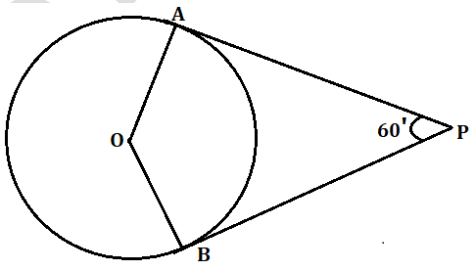
34) A student constructed ΔABC with sides AB=7cm, BC=8.5cm and AC=9cm. Then he constructed a ΔADE similar to ΔABC such that each of its sides are $\frac{3}{4}$ of the corresponding sides of ΔABC. Then the length of AD and AE obtained by calculation are respectively,



A) 8cm and 6cm B) 5cm and 6cm

C) 5.25cm and 6.75cm D) 6.9cm and 8cm

35) In the figure, ∠APB=70^0 then ∠AOB is



A) 110^0 B) 100^0

C) 120^0 D) 130^0

36) The formula to find curved surface area of a Frustum of a cone is

` A) πrl B) $\pi r^2 h$ C) $\pi(r_1 + r_2)l$ D) $2\pi rh$

37) The volume of a solid cone is 90cm^3 . The volume of a cylinder whose height and radius are same as that of the cone is

A) 30cm^3 B) 45cm^3 C) 90cm^3 D) 270cm^3

38) The surface area of a sphere of radius 7cm is

A) 661cm^2 B) 616cm^2 C) 616cm^3 D) 661cm^3

39) The measurement that is equal to 'one liter' among the following is

A) $100cm^3$ B) $1000cm^3$ C) $10000cm^3$ D) $1cm^3$

40) The radius of the base of a cone is 9cm and slant height is 15cm, then its height is

A) 6cm B) 3cm C) 5cm D) 12cm

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MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-5** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1. The pair linear equations x+2y-4=0 and 2x+4y-12=0 is a

A .consistent pair B. inconsistent pair

C. dependent pair D .none of the above

2. In a graph representing the pair of linear equations, if the lines intersect each other, then equations have

A.no solutions B. many solutions C. exactly one solution D. two solutions

3. The solution of the equation x + y = 4 and x – y = 2 is

A. x=3, y=1 B. x=1, y=3 C .x=2, y=2 D. x=5, y=3

4 If the pair of linear equations 2x - 3y = 8 and 2(K-4) x - Ky = k + 3 are inconsistent, then the value of 'k' is

A .k=4 B. k=6 C. k=8 D. k=10

5. If 2, x, 26 are in arithmetic progression then the value of 'x' is

A.14 B.16 C.18 D.20

6. The common difference of the arithmetic progression 3, 1 -1, -3 … is

A.2 B. −2 C. 3 D. −3

7. If the n^{th} term of an arithmetic progression is $a_n=5n+3$, then its third term is

A.11 B.18 C.12 D.13

8. The sum of the first 10 natural numbers is

A.50 B.45 C.55 D.100

9. The sum of 1+3+5+7+…… to 10 terms is

A.50 B.75 C.100 D.150

10. Choose the correct option $9\sec^2 A - 9\tan^2 A =$

A.1 B.2 C.3 D.9

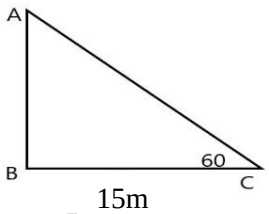
11. The value of $\sin 30^0 + \cos 60^0$ is

A.1 B.0 C.2 D.3

12. The value of $\frac{sin18^0}{cos72^0}$ is

A.0 B.1 C.2 D.10

13. A tower stands vertically on the ground. At a point on the ground, 15m away from the foot of the tower, the angle of elevation of the top of the tower is 60◦.Then the height of the tower is



A.15m B.30m

C.15√3m D.45m

14. The nature of the roots of equation $ax^2 + bx + c = 0$ depends on the value of

A.b^2+4ac B.b^2-4ac C.b-4ac D.b+4ac

15. The value of the discriminant of the quadratic equation $x^2+3x-5=0$ is

A.20 B.30 C.29 D.9

16.” The sum of the squares of two consecutive odd numbers is 290. This statement is expressed in the form of an equation as

A.$x^2+(x+1)^2=290$ B. $x^2+(x+2)^2=290$ C. $x^2+(x+1)=29$ D. $x^2-(x+1)=290$

17.If One root of the quadratic equation $(3x-2)(2x+1)=0$ is $\frac{2}{3}$ then the other root is

A. $\frac{3}{2}$ B. $\frac{1}{2}$ C. $-\frac{1}{2}$ D. $\frac{1}{3}$

18. The co-ordinates of the mid-point of the line joining the points A (2, 3) and B (4, 5) is

A. (3, 4) B. (4, 3 C. (6, 8) D. (8, 6)

19. The distance of point P (6, 8) from the origin is

A.6 units B.8 units C.10 units D.14 units

20. In the two similar triangles, if the corresponding sides are in the ratio 4 : 9, then the areas of these triangles are in the ratio

A. 81 : 16 B. 16 :81 C. 9 : 4 D. 2 : 3

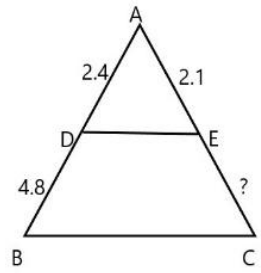
21. The distance between the point P (4, 3) and the y- axis is

A.4 units B.3 units C.5 units D.8 units

22. In the triangle ABC, DE ‖ BC, if AD=2.4cm,BD=4.8cm and AE=2.1cm ,then CE=

A.4cm B.6cm

C.4.2cm D.5cm



23. Which of the following statement is always not true?

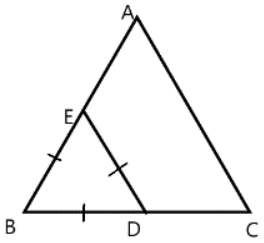
A. All circles are similar B. All squares are similar

C. All rectangles are similar D. All equilateral triangles are similar

24.ABC and BDE are two equilateral triangles such that 'D' and 'E' are the midpoints of BC and AB respectively. Then the ratio of the area of ∆ABC to ∆EBD is

A.2:1 B.1:2

C.4:1 D.1:4



25.The edge of a cube is 5cm .Then its total surface area is

A.25cm^2 B.50cm^2 C.100cm^2 D150cm^2

26. The formula used to find the volume of the frustum of a cone is

A.$\pi r^2 h$ B.$\frac{1}{3}r^2h$ C.$\frac{1}{3}\pi h\,(r_1{}^2+r_2{}^2+r_1r_2)$ D.$\frac{4}{3}\pi r^3$

27. The total surface area of a solid hemisphere of radius of radius 7cm is

A.154 cm^2 B. 308 cm^2 C. 462 cm^2 D. 616 cm^2

28. If the area of base of a right circular cylinder is 38.5cm^2 and its height is 6cm, then the volume of the cylinder is

A. 231cm^3 B. 77cm^3 C. 66cm^3 D. 462cm^3

29. If the surface area of a sphere is 154 cm^2, then its radius is

A.7cm B.14cm C.21cm D.3.5cm

30.If the side of a square is 12cm, then the length of its diagonal is

A.24cm B.144cm C.12√2cm D.15cm

31. In the triangle ABC,$\angle ABC=90^0$.AB=3cm,BC=4cm then AC=

A.5cm B.7cm C.6cm D.8cm

32. The mid-point of the class interval 10-15 is

A.10 B.15 C.20 D.12.5

33. The median of the scores 5, 8,14,16,19 and 20 is

A.10 B.15 C.20 D.25

34. The empirical relationship between the three measures of central tendencies is

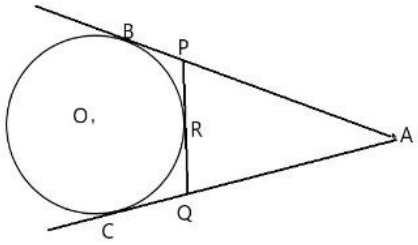
A.3median=mode+2mean B.3median= mode-2mean

C.2mean=3median+mode D. mode=3median+2mean

35. The number of tangents that can be drawn to a given circle from an external point is

A.1 B.2 C.3 D.4

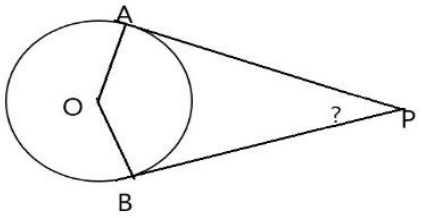
36. In the figure 'O' is the center of the circle .AB, AC and PQ are the tangents . If AB=7cm then the perimeter of ΔAPQ is



A.14cm B.10cm

C.21 D.3.5cm

37. In the figure, PA and PB are the tangents; OA and OB are the radii. If $\angle AOB=120^0$ then $\angle APB=$



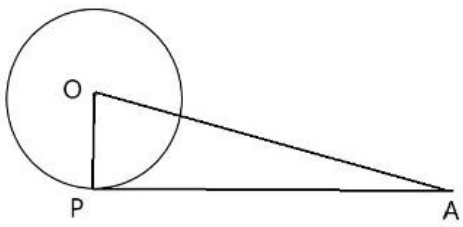
A.60^0 B.80^0

C100^0 D.240^0

38. The distance between the two parallel tangents of a circle of radius 3.5 cm is

A.4cm B.7cm C.10.5cm D.8cm

39. In the figure OP is the radius, PA is the tangent .If $\angle OAP=30^0$ then $\angle AOP=$



A.60^0 B.70^0

C.80^0 D.15^0

40. Pythagorean triplet among the following is

A.3,4,5 B.5,6,7

C.6,7,8 D.8,9,10

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OFFICE OF THE D.D.P.I., KOLAR

MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: **MATHEMATICS (81E)** **SET-6** Duration : 1hour.

Class: 10th Standard Maximum Marks: 40

Four alternatives are given for each of the following incomplete statement/ question. Choose the most appropriate alternative and shade the correct choice in the OMR given to you with blue/ black ball point pen. **1 x 40 = 40**

1) If two lines representing the pair of linear equations $a_1x + b_1y + c_1 = 0$ *and* $a_2x + b_2y + c_2 = 0$ intersect each other, then the correct among the following is

A) $\frac{a1}{a2} \neq \frac{b1}{b2}$ B) $\frac{a1}{a2} = \frac{b1}{b2} = \frac{c1}{c2}$ C) $\frac{a1}{a2} = \frac{b1}{b2} \neq \frac{c1}{c2}$ D) $\frac{a1}{a2} = \frac{b1}{b2}$

2) In the equation x + y = 5, if x= – 12, then the value of 'y' is

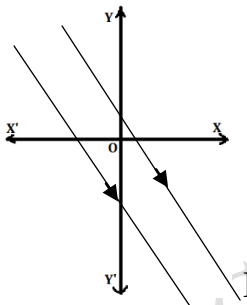
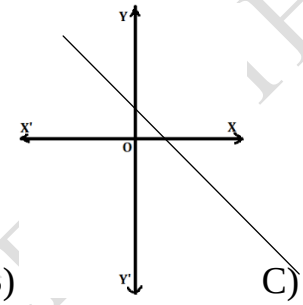
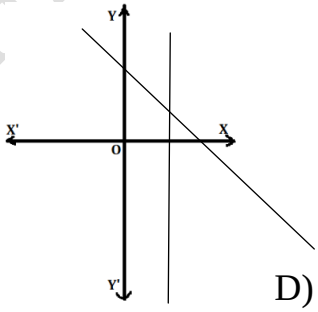
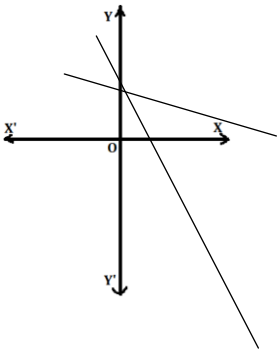
A) 17 B) – 17 C) 7 D) – 7

3) The pair of linear equations x + 2y – 3 = 0 and 2x + 4y – 6 = 0 have

A) Exactly two solution B) Infinitely many solutions

C) No solution D) Unique solution.

4) In which of the following graphs the pair of linear equations have no solutions?

A)  B)  C)  D) 

5) In an arithmetic progression $a_n = 3 + 4n$, then its second term is

A) 10 B) 11 C) 12 D) 13

6) In an arithmetic progression, first term is 'a' and the common difference is 'd', then its 15th term is

A) a+15d B) a x 15d C) a+14d D) a x 14d

7) Which one of the following is in arithmetic progression?

A) 2, 3, 5,. . . . B) 5, - 5, 10. . . . . C) 0, 0, 0 . . . . . D) $\frac{1}{2}$, 1, $\frac{3}{4}$, ...

8) In the arithmetic progression 8, 3, - 2 , ... the common difference is.

A) – 5 B) 5 C) 4 D) – 4

9) The missing term of the arithmetic progression 45, 30, 15, **?**, - 15 , -30 . . . .is

A) 0 B) 10 C) 5 D) – 5

10) The quadratic equation among the following is

A) $(x + 2)^3 = 2x (x^3 - 1)$ B) $x^2 + 3x + 1 = (x – 2)^3$

C) (x - 2) (x + 1) = (x + 1) (x + 3) D) $(x + 1)^2 = 2(x – 3)$

11) Standard form of the quadratic equation $– x^2 + 45x – 200 = 124$ among the following is

A) $x^2 + 45x + 324 = 0$ B) $x^2 + 45x – 324 = 0$

C) $x^2 - 45x – 324 = 0$ D) $x^2 - 45x + 324 = 0$

12) A rectangular field is of length $(2x + 1)\ unit,$ breadth $'x'unit$ and its area is 300 sq.units. The equation that represents the area of field is

A) (2x + 1) + x =300 B) (2x + 1)300 = x

C) (2x + 1) x = 300 D) 300 x = (2x + 1)

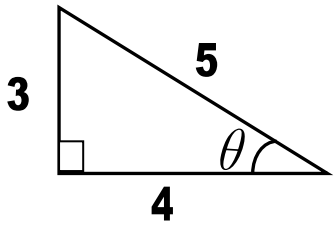
13) If a quadratic equation has real and equal roots, then the value of its discriminant is

A) 21 B) 15 C) 0 D) -10

14) The value of $\sqrt{1 - cos^2\theta}$ is.

A) $\sin^2\theta$ B) $\sin\theta$ C) $\cos^2\theta$ D) $\cos\theta$

15) In the figure, $\tan\theta$ =



A) $\frac{3}{5}$ B) $\frac{3}{4}$ C) $\frac{4}{5}$ D) $\frac{5}{3}$

16) The top of a building whose height is 20m is viewed from a point on the ground which is $20\sqrt{3}$m apart from the foot of the building, then the angle of elevation formed is.

A) 30^0 B) 45^0 C) 60^0 D) 90^0

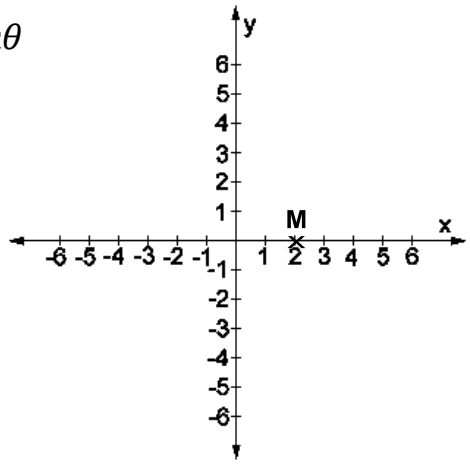
17) $\frac{\sin(90^o - \theta)}{\cos(90^o - \theta)}$ is same as

A) $tan\theta$ B) $cosec\theta$ C) $cot\theta$ D) $sec\theta$

18) The value of $sin30^o$ x $cos60^o$ is

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 1 D) 0

19) in the figure, the coordinates of point 'M' is.



A) (1,2) B) (2,1) C) (0,2) D) (2,0)

20) Distance between the points M(1,1) and N(2,2) is.

A) $\sqrt{1}$ B) $\sqrt{2}$ C) 2 D) 1

21) The coordinates of the midpoint of the line joining points A(3,7) and B(5,3) is.

A) (8,10) B) (2,4) C) (4,5) D) (1,2)

22) The distance of the point M(5,7) from the Y-axis is.

A) 5units B) 7units C) 12units D) 2units

23) The median of the scores 5, 6, 7, 7, 5, 6, 7. Is

A) 5 B) 6 C) 7 D) 8

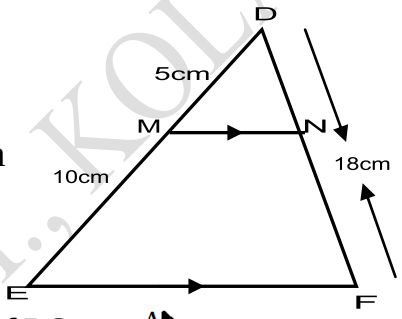
24) If the Mean of 10, 11, 12, x, 17, 19 is 14 then the value of 'x' is

A) 13 B) 14 C) 15 D) 16

25) The mode of the scores 16,13,15,12,15,14,15,11 is

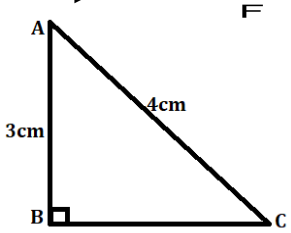
A) 15 B) 16 C) 13 D) 14

26) In triangle DEF, MN||EF, DM= 5cm, ME= 10cm DF= 18cm the value of NF is.



A) 12cm B) 11cm C) 10cm D) 13cm

27) In triangle ABC $\angle B = 90^0$, AC= 4cm, AB= 3cm, measure of BC is.

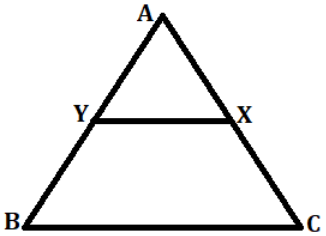


A) 5cm B) 2cm C) $\sqrt{7}$cm D) $\sqrt{6}$cm

28) In the given figure $\Delta ABC \sim \Delta AYX$ the correct ratio of their corresponding sides is

A) $\frac{AX}{AC} = \frac{AB}{AY} = \frac{CB}{XY}$ B) $\frac{AB}{AY} = \frac{BC}{XY} = \frac{AX}{AC}$

C) $\frac{AB}{AX} = \frac{AC}{AY} = \frac{BC}{XY}$ D) $\frac{AX}{AC} = \frac{AY}{AB} = \frac{XY}{CB}$



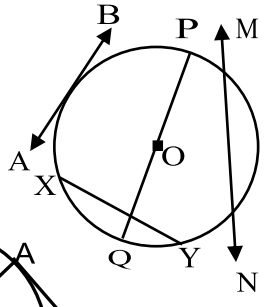
29) $\Delta ABC \sim \Delta DEF$ and the corresponding sides BC= 3cm, EF= 4cm.If the area of $\Delta ABC = 54cm^2$, then area of ΔDEF is.

A) $96cm^2$ B) $86cm^2$ C) $46cm^2$ D) $66cm^2$

30) In ΔXYZ, XY= 4cm, YZ= $4\sqrt{3}$cm, XZ= 8cm then the measure of angle Y is.

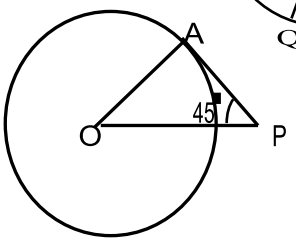
A) 120^0 B) 30^0 C) 90^0 D) 60^0

31) In the figure, tangent to the circle with centre 'O'



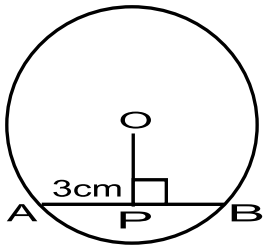
A) PQ B) XY C) MN D) AB

32) In the figure AO is radius tangent AP=12cm $\angle P = 45^0$ value of OP is



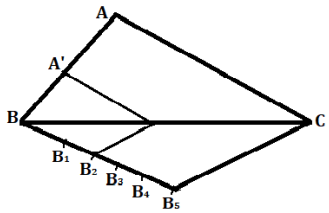
A) 12cm B) $12\sqrt{2}$cm C) 10cm D) 14cm

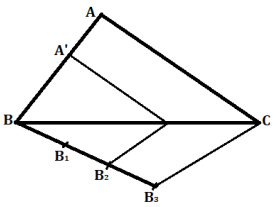
33) In the figure, 'O' is the centre of the circle. AB is the chord and OP _|_ AB,
if AP=3cm, then length AB is

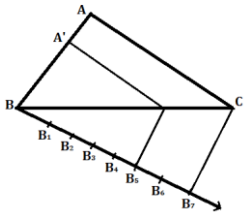


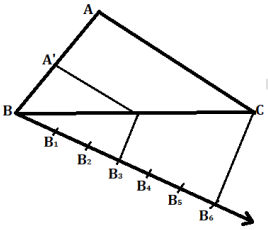
A) 6cm B) 9cm C) 12cm D) 10cm

34) Identify the triangle whose corresponding sides are in the ratio $\frac{2}{3}$ with the help of construction of triangle.

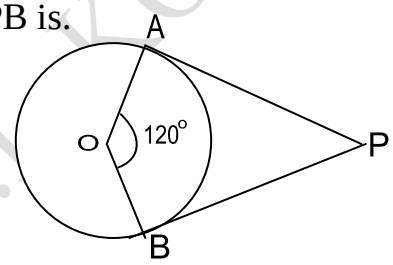
A) 

B) 

C) 

D) 

35) In the adjoining figure $\angle AOP = 120^0$ then the value of $\angle APB$ is.



A) 100^0 B) 180^0 C) 70^0 D) 60^0

36) A metal sphere of radius is 2 cm is melted to form the hemispheres of radius 1cm each. the number of hemispheres so formed is.

A) 2 B) 4 C) 16 D) 8

37) Total Surface Area of a cube is 96 cm^2, measure of its each side is.

A) 4cm B) 8cm C) 16cm D) 32cm

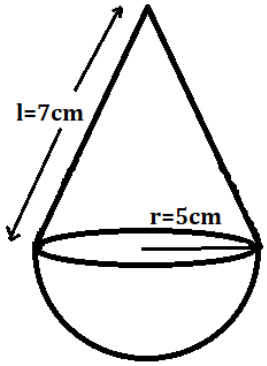
38) Slant height of a right circular cone is 2cm and its curved surface area is 14π cm^2 , then the circumference of the base is.

A) 14π cm B) $7\pi\ cm$ C) $\frac{7}{2}\pi$ cm D) 28π cm

39) Total surface area of a cylinder is 500cm^2 and its lateral surface area is 300 cm^2 , then the area of its each circular base is.

A) 100cm^2 B) 75cm^2 C) 50cm^2 D) 200cm^2

40) A cone is surmounted on a hemisphere. The slant height of the cone is 7cm and its radius is 5cm, then total surface area of the solid is.



A) 400cm^2 B) 440cm^2 C) 380cm^2 D) 350cm^2

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