

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

MODEL QUESTION PAPER: 2020-21

(Multiple Choice Questions)

Subject: MATHEMATICS (81E)

SET-2

Duration : 1 hour.

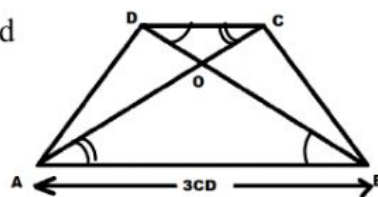
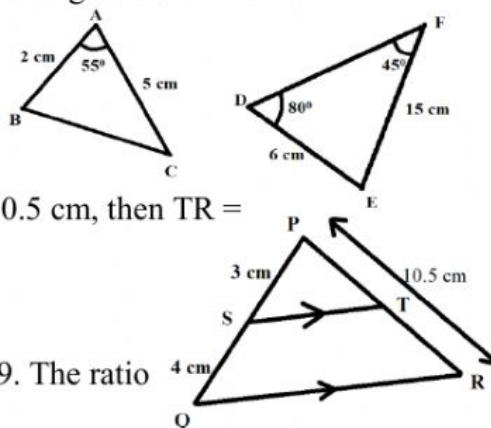
Class: 10th Standard

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 n^{th} 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 , $ST \parallel QR$, $PS = 3$ 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 $AB \parallel DC$, $AB = 3 CD$ and $\text{Ar}(\Delta AOB) = 108 \text{ cm}^2$. $\text{Ar}(\Delta COD)$ 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

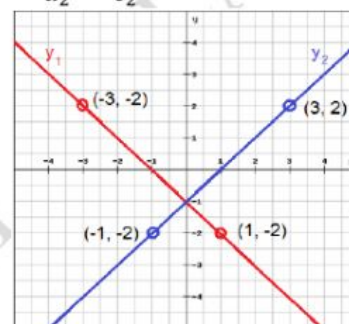
- 11) Pair of linear equations $x + 2y = 6$ and $3x + 6y = 18$ have
 A) Exactly one solution B) Infinitely many solutions
 C) No solution D) Two solutions

- 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

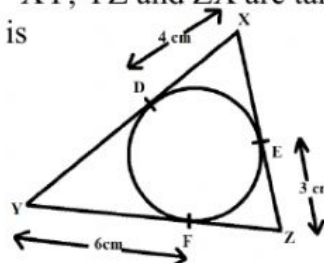
- A) 4 B) 2 C) 3 D) 6

- 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 $\triangle XYZ$ as shown in the figure. XY, YZ and ZX are tangents. D, E and F are points of contact. The Perimeter of $\triangle XYZ$ is

- A) 13 cm B) 7.5 cm
 C) 26 cm D) 15 cm

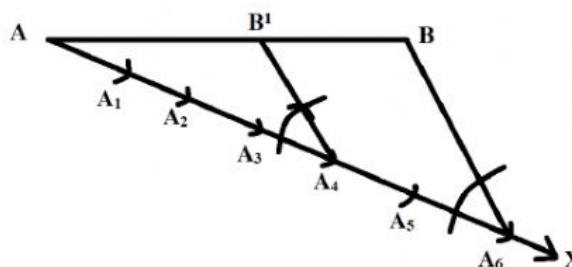


- 17) If tangents PA and PB are drawn from an external point P to a circle with centre O are inclined to each other at an angle of 100° then $\angle POA =$

- A) 40° B) 80° C) 50° D) 60°

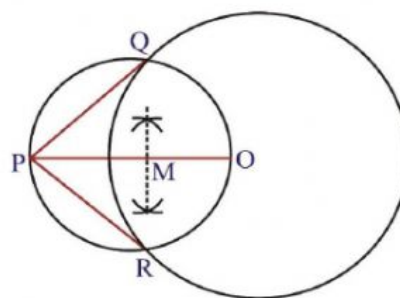
- 18) Line segment AB divided as shown in the figure. $AB^1 : B^1B =$

- 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 =

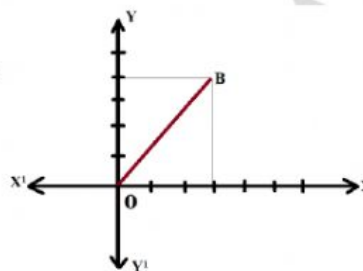
- A) 4
- B) 5
- C) 6
- D) 7

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 $\frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ}$ is

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

29) Value of $(\operatorname{cosec} A + \cot A)(\operatorname{cosec} A - \cot A)$ is

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

30) If $13 \sin \theta = 5$, then value of $\operatorname{cosec} \theta$

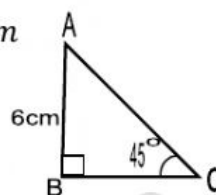
- A) $\frac{13}{5}$
- B) $\frac{5}{13}$
- C) $\frac{13}{12}$
- D) $\frac{12}{13}$

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

- A) $\operatorname{cosec}^2 25^\circ$ B) $\cos^2 65^\circ$ C) $\sin^2 65^\circ$ D) $\operatorname{cosec}^2 65^\circ$

32) In the figure, in $\triangle ABC$ if $AB=6\text{cm}$ and $\angle ACB=45^\circ$, then the length of BC is

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



33) Mode of the given set of scores is

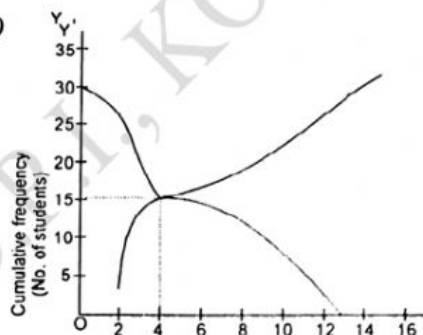
- A) Middle most value B) Least frequent value
C) Most frequent value D) None of these

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

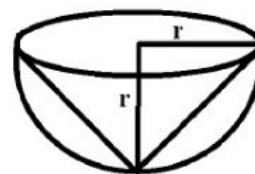
- A) 2 cm B) 3 cm C) 6 cm D) 7 cm

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



~*~*~*~