CHAMARAJANAGARA ZILLA PANCHAYATH

OFFICE OF THE DEPUTY DIRECTOR OF PUBLIC INSTRUCTION
CHAMARAJANAGARA DISTRICT CHAMARAJANAGARA

COLLABORATION

DISTRICT INSTITUTE OF EDUCATION AND TRAINING
CHAMARAJANAGARA

Multiple Choice Question Based
Model Question Papers
SSLC Examination-20- 2021

MATHEMATICS

"The Only Thing That Overcomes Hard Luck Is Hard Work"

OFFICE OF THE DEPUTY DIRECTOR OF PUBLIC INSTRUCTION
CHAMARAJANAGARA DISTRICT

Multiple Choice Questions Based Model Question Paper– 01
2020-21
Subject: Mathematics

Medium: English **Subject code : 81 E** **Max. Marks: 40**

Four choices are given for each of the questions/incomplete statements. Choose the correct answer and shade the correct choice in the OMR given to you with blue / black ball point pen

$\mathbf{1 \times 40 = 40}$

1. $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ pair of linear equations which forms intersecting lines then the ratio of their co-efficient 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) $\frac{a_1}{b_2} = \frac{c_1}{a_2}$

2. By solving a pair of linear equations $2x + y = 7$ and $x - y = -1$ the value of x and y are
   (a) $x = -2, y = 3$ (b) $x = 2, y = -3$
   (c) $x = -2, y = -3$ (d) $x = 2, y = 3$

3. Roots of the quadratic equation $x^2 - 4x + 4 = 0$ are
   (a) $1, 2$ (b) $0, 2$ (c) $2, 2$ (d) $-2, -2$

4. $2x - 3y = -1$ and $x = 4$ then the value of ' y'
   (a) -3 (b) 3 (c) 4 (d) 2

5. The nth term of an Arithmetic progression is given by $a_n = 4 - 3n$ then the common difference is
   (a) 4 (b) -3 (c) 1 (d) 3

6. There are four terms in an A.P. In which sum of the first and last term is 13 and the product of middle terms is 40. Then the terms of the given A.P
   (a) 3,5,7,9 (b) 2,5,8,11
   (c) 2,6,10,14 (d) 2,6,8,11

7. The sum of first 'n' terms of an arithmetic progression is given by$S_n = 2n^2 + n$ then the A.P is
   (a) 3,8,13,18 (b) 4,7,10,13
   (c) 2,6,10,14 (d) 3,7,11,15
8. The sum of first10 natural number is.
   (a) 55 (b) 550 (c) 65 (d) 110

9. In an A.P first term and common difference are 5 and 3 then its 20^{th} is

(a) 62 (b) 670 (c) 620 (d) 67

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

(a) 25 (b) 49 (c) 1 (d) -1

11. The roots of the quadratic equation $ax^2 + bx + c = 0$

(a) $x = \frac{-b \pm \sqrt{b^2+4ac}}{2a}$ (b) $x = \frac{b \pm \sqrt{b^2-4ac}}{2a}$

(c) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2}$ (d) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

12. The length of a rectangle is twice of its breadth. If it's area 50sq.units then its length and breadth are

(a) $5\ units\ and\ 10\ units$ (b) $5\ units\ and\ \ 5\ units$

(c) $10\ units\ and\ \ 5\ units$ (d) $25\ units\ and\ \ 5\ units$

13. Which of the following is a quadratic equation

(a) $(x+1)^2 = 3x$ (b) $x^2 + 2 = (x+1)^2$

(c) $2x + 3 = 0$ (d) $x^2 + \frac{1}{x} = 2$

14. Which of the following standard trigonometric angles are not defined

(a) $\cot 90°$ (b) $\sin 90°$ (c) $\cos 90°$ (d) $\tan 90°$

15. $\sin\theta = \frac{12}{13}$ then thre value of $\tan\theta$

(a) $\frac{5}{12}$ (b) $\frac{13}{12}$ (c) $\frac{12}{5}$ (d) $\frac{5}{13}$

16. $\sin(\alpha - \beta) = \frac{1}{2}$ and $\cos(\alpha + \beta) = \frac{1}{2}$ where $\alpha + \beta < 90°$ then the value of α and β

(a) $30°\ and\ 45°$ (b) $45°\ and\ 15°$

(c) $30°\ and\ 90°$ (d) $45°\ and\ 30°$

17. The value of $sin^2\ 48° + sin^2\ 42°$

(a) 1 (b) -1 (c) 2 (d) 0

18. A man observes a car from the top of a building of height 50m if the angle of depression is 45° then distance between the car and foot of the building.

(a) $25\ m$ (b) $\frac{50}{\sqrt{3}}\ m$

(c) $50\sqrt{3}\ m$ (d) $50\ m$

19. The co-ordinates of the point $P(x, y)$ which divides the line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$ in the ratio is $m_1 : m_2$ is

(a) $\left(\frac{m_1x_2+m_2x_1}{m_1-m_2}, \frac{m_1y_2+m_2y_1}{m_1-m_2}\right)$ (b) $\left(\frac{m_1x_1-m_2x_2}{m_1-m_2}, \frac{m_1y_1-m_2y_2}{m_1-m_2}\right)$

(C) $\left(\frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2}\right)$ (d) $\left(\frac{m_1x_1+m_2x_2}{m_1+m_2}, \frac{m_1y_1+m_2y_2}{m_1+m_2}\right)$

20. Distance of the point $(6, 8)$ from the origin

(a) $10\ units$ (b) $-10\ units$ (C) $8\ units$ (d) $100\ units$

21. If midpoint of the line joining co-ordinate points $A(2, -5)$ and $B(x, y)$ is origin then co-ordinates of $B(x, y)$ is

(a) $(2, -5)$ (b) $(-2, 5)$ (C) $(5, 2)$ (d) $(-5, -2)$

22. Distance of the point $A(4, -5)$ from the $x - axis$?

$(a)\ -2\ units$ (b) $2\ units$ (C) $5\ units$ (d) $-5\ units$

23. In the following distribution table the class interval which containing median is

$C.I.$	$0-10$	$10-20$	$20-30$	$30-40$	$40-50$
f_i	2	3	5	3	2

(a) $10 - 20$ (b) $20 - 30$ (c) $30 - 40$ (d) $40 - 50$

24. The mean of the following distribution table is

X_i	10	20	30	40
f_i	2	3	4	1

$(a)\ 20$ $(b)\ 22$

$(c)\ 25$ $(d)\ 24$

25. The mean and median of the scores are 30 and 32 respectively then its mode is.

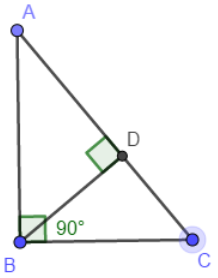
$(a)\ 32$ $(b)\ 30$

$(c)\ 34$ $(d)\ 36$

26. . In the given figure $\angle ABC = 90°$, $BD \perp AC$. $AC = 9cm$ and $AD = 4cm$ then the length of AB

$(a)\ 4cm$ $(b)\ 6cm$

$(c)\ 9cm$ $(d)\ 3cm$



27. Which of the following set of numbers forms a right angled triangle ?

$(a)\ 5cm, 13cm, 15cm$ $(b)\ 10cm, 12cm, 13cm$

$(c)\ 7cm, 24cm, 25cm$ $(d)\ 5cm, 6cm, 7cm$

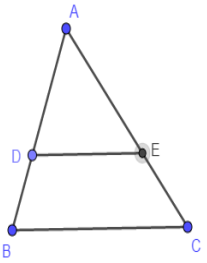
28. $\Delta LMN \sim \Delta XYZ$ and the ratio of their perimeters $9:4$ The ratio of their areas is

$(a)\ 3:2$ $(b)\ 16:81$ $(c)\ 81:16$ $(d)\ 9:4$

29. $In\ \Delta ABC \quad DE \parallel BC.\ AD = 4cm,\ AB = 6cm$ & $AE = 6cm$ then the length of $EC\ is$

$(a)\ 3cm$ $(b)\ 6cm$

$(c)\ 4cm$ $(d)\ 10cm$



30. In a triangle square of one side is equal to the sum of the square of the other two sides then the angle between other two sides is

$(a) equal\ angles$ $(b)\ right\ angle$ $(c)\ acute\ angle$ $(d)\ obtuse\ angle$

31. The number of tangents drawn to a circle from a point inside it.

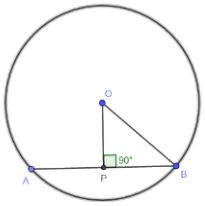
$(a)\ 0$ $(b)\ 1$ $(c)\ 2$ $(d)\ infinite$

32. The distance between the centres of externally touching circles of radii 4cm and 2cm i

$(a)\ 6cm$ $(b)\ 4cm$ $(c)\ 2cm$ $(d)\ 5cm$

33. In the fig. O is the centre of the circle. -AB is a chord, OP⊥AB radius $= 5cm,\ OP = 3cm$. Then the length of AB

$(a)\ 4cm$ $(b)\ 8cm$ $(c)\ 3cm$ $(d)\ 5cm$



34. The sides of the given triangle $4cm,\ 5cm$ and $6cm$ and The corresponding sides of the other triangle which is similar to given triangle are $6cm,\ 7.5cm$ and $9cm$, then the ratio of their corresponding side.

$(a)\ \frac{2}{5}$ $(b)\ \frac{1}{2}$ $(c)\ \frac{3}{4}$ $(d)\ \frac{3}{2}$

35. At a certain time a tree of 8m high casts a shadow of length 6m at the same time the length of shadow of building 60m high is.

$(a)\ 60\ m$ $(b)\ 40\ m$ $(c)\ 30\ m$ $(d)\ 45\ m$

36. Volume of tanker formed by using a sphere and a cylinder of volumes $100cm^3$ and $200cm^3$ respectively is

$(a)\ 100cm^3$ $(b)\ 200cm^3$

$(c)\ 300cm^3$ $(d)\ 150cm^3$

37. If the surface area of the sphere is $616cm^2$ then the diameter is

(a) 308 cm (b) 3.5 cm (c)14 cm (d) 7 cm

38. The relation between the slant height 'l' height 'h' and the radii r_1 & r_2 of frustum of a cone is

$(a)\ l^2 = h^2 - (r_1 - r_2)^2$ $(b)\ l^2 = h^2 + (r_1 - r_2)^2$

$(c)\ l^2 = h^2 + (r_1 + r_2)^2$ $(d)\ h^2 = l^2 + (r_1 - r_2)^2$

39. The radius of the cylinder of height 20cm formed by melting a sphere of radius 15 cm

(a) 30 cm (b) 7.5 cm (c)20 cm (d) 15 cm

40. The ratio of heights of frustum of cones having same base $1:2$ then the ratio of their volumes,

(a) $1:2$ (b) $2:1$ (c) $3:2$ (d) $1:4$

KEY - ANSWEWRS

Q.No	Answer with option	Q.No	Answer with option
1	$(a)\ \frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	21	(b) $(-2,5)$
2	(d) $x = 2, y = 3$	22	(C) 5 $units$
3	(c) $2, 2$	23	(b) $20 - 30$
4	(b) 3	24	(d) 24
5	(b) -3	25	(d) 36
6	(b) 2,5,8,11	26	(b) $6cm$
7	(d) 3,7,11,15	27	(c) $7cm, 24cm, 25cm$
8	(a) 55	28	(c) $81:16$
9	(a) 62	29	(a) $3cm$
10	(c) 1	30	(b) $right\ angle$
11	(d) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	31	(a) 0
12	(c) 10 $units\ and$ 5 $unit$	32	(a) $6cm$
13	$(a)\ (x+1)^2 = 3x$	33	(b) $8cm$
14	(d) $\tan 90°$	34	$(d)\ \frac{3}{2}$
15	(c) $\frac{12}{5}$	35	(d) 45 m
16	(b) $45°\ and\ 15°$	36	(c) $300cm^3$
17	(a) 1	37	(c)14 cm
18	(d) 50 m	38	$(b)\ l^2 = h^2 + (r_1 - r_2)^2$
19	(C) $\left(\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right)$	39	(d) 15 cm
20	(a) 10 $unit$	40	(a) $1:2$

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Multiple Choice Questions Based Model Question Paper– 02
2020-21
Subject: Mathematics

Medium: English **Subject code : 81 E** **Max. Marks: 40**

Four choices are given for each of the questions/incomplete statements. Choose the correct answer and shade the correct choice in the OMR given to you with blue / black ball point pen

$\mathbf{1 \times 40 = 40}$

1). If the common difference of an AP is 4 then $a_{15} - a_{11}$ is ----------
A)12 B)16 C) 20 D)24

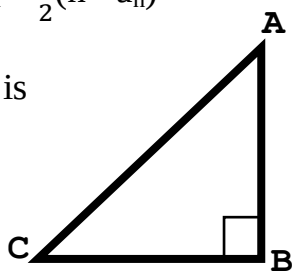
2).If the sum of 15 term of an AP is 234 and 14 terms is 198 then 15^{th} term is …….
A) 34, B) 98 C) 36 D) 64

3). If X , 13,Y,3 is an AP then the value of x & Y is ……..
A).16,6 B).13,3 C). 18,8 D) 14,4

4). Sum of first 25 odd natural numbers ……..
A) 650 B) 625 c)325 D)50

5). The formula to find the sum of n terms of an AP is ……..
A) $S_n = \frac{n}{2}(a+a_n)$ B) $S_n = \frac{n}{2}(2a+a_n)$ C) $S_n = \frac{n}{2}(a-a_n)$ D) $S_n = \frac{n}{2}(n+a_n)$

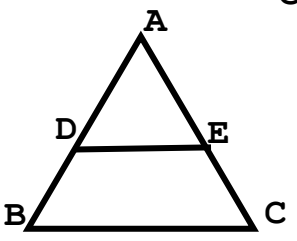
6). In the given fig if $\angle B = 90°$ & AB=BC =5cm then the length of AC is
A)10cm B)25cm
C) 5cm D)$5\sqrt{2}$cm



7). In ΔABC, DE‖ BC then . $\frac{AB}{AD}$ = ……

A) $\frac{AD}{AB}$ B) $\frac{AE}{AC}$

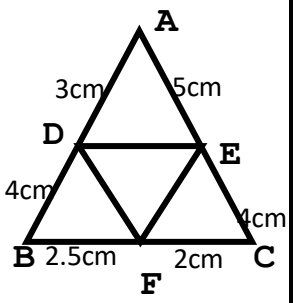
C) $\frac{AC}{AE}$ D) $\frac{AE}{DE}$



8). If ΔABC ~ΔXYZ and the ratio of their area is196 : 81 then the ratio of their similar sides ……

A) 14:9 B) 7:3
C) 9:14 D) 3:7

9).In the given fig, AD=3cm, AE=5cm, BD=4cm, CE=4cm, CF=2cm BF=2.5cm then ……



A)DE∥BC B) DF∥AC

C) EF ∥ AB D). AD∥CE

10). The correct statement among the given below.

A) The two opposite sides are always congruent

B) A square and a rectangle are always congruent.

C) The two equilateral triangles are always congruent.

D) Trapezium and a square is always congruent.

11). The given equation 2X + 3Y =16 is correct to the values of x & y …….

A). X=5,Y=2 B) X=2,Y=5

C)X = -5,Y = -2 D). X=-5,Y=2

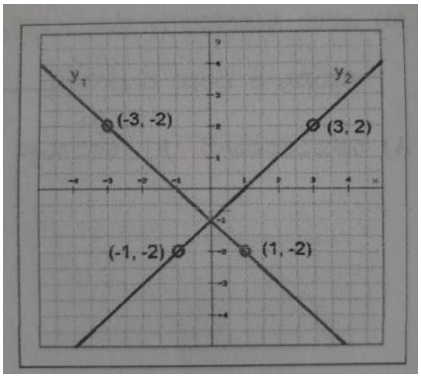
12). In the given equations X+Y=8 & 2Y – X=1 the value of y is ……

A)5 B)4

C)3 D) -3

13). The two pair of linear equation is represented graphically.

The solution is ……



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

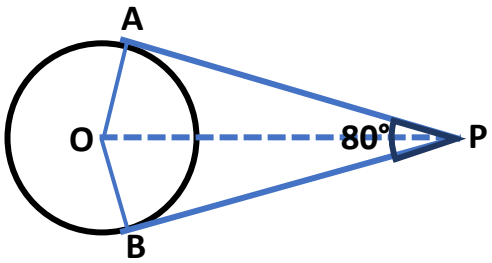
C) (1,0) D) (0,1)

14).The no of tangents that can be drawn on a point on the circle.

A). 0 B)1

C)2 D) infinity

15).The length of the tangent drawn from a point 10 cm away from the circle of radius 6cm is ……



A)14cm, B) 5cm

C) 8cm D)10cm

16) In the given fig if ∠APB = 80^0then ∠AOP ……..

A) 50° B)60°

C)80° D)160°

17).If a straight line AB = 5cm is divided into the ratio 2 : 8 , the length of second part is

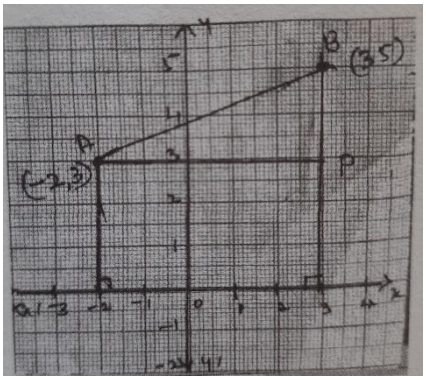
A) 4cm B)1cm C)3cm D)3.5cm

18).The ratio of the volume of a cylinder and cone of same base and height is ……..

A) 1:3 B)3:1 \ C) 1: ⅓ D)3:4

19) The distance between (5,-5) and the origin is ……..

A) 0 units B) 5 units C) $5\sqrt{2}$ units D) 10 units



20). The length of BP in the given fig is …….

A) 2 units B) 3 units C) 4 units D) 5 units

21) The midpoint between two points (6,4) & (4,6) is ……

A)(6,6) B)(4,4)

C) (5,5) D) (2,2)

22). Find the area of the triangle formed by the given points (0,1), (2,0), (0,2) ?

A). 2 sq cm B). 4 sq cm C). 1 sq cm D) 0 sq cm

23). If the roots of the equation $x^2 - 4x + K = 0$ are equal , what is the value of k ?

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

24) The sum of a number and its square is 42 then the equation is …….

A) $X^2+x-42=0$ B) $x - x^2 = 42$ C) $x^2 + 42 = 0$ D) $x^2 + x = 0$

25). Identify the roots of the given quadratic equation $Px^2 + Qx + R = 0$.

A) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ B) $x = \frac{-Q \pm \sqrt{Q^2-4PR}}{2P}$

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

26) Which of the following is a quadratic equation ?

A). $x^2 - 3\sqrt{x} + 2 = 0$ B) $x^2 + \frac{1}{x} = x^2$

C) $x^2 + \frac{1}{x} = 5$ D) $2x^2 - 5x = (x-1)^2$

27) The nature of the roots of the given equation $2X^2 - X - 3 = 0$ is ……..

A) real & equal B) real and distinct

C) imaginary D) none of these

28) In a right angled triangle $\angle B = 90°$, if Sin C=$\frac{\sqrt{3}}{2}$ then $\angle A = \cdots$ ... .

A) 30° B)45° C) 60° D)90°

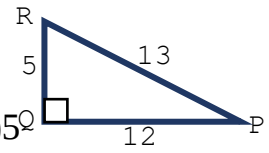
29) If $\tan\theta = \frac{3}{4}$ then $(\sec^2\theta - 1) =$ ……

A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{9}{16}$ D) $\frac{16}{25}$

30) The angle of elevation of a Sun is 45^0 then the length of shadow formed by a building of height 10m is …….

A) 10m B)5m C)30m D)15m

31). In the given fig the value of tan P – cot R is ……



A) 0 B)1 C)12 D)5

32). What is the value of sin 60°X sin30° ?

A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{4}$

33). In the given frequency distribution table which is the class interval of median ?

CI	0-10	10-20	20-30	30-40	40-50	50-60
F	4	6	12	23	7	8

A)20-30 B)30-40 C)40-50 D)50-60

34) Observe the below table : The number of students scored marks between 30 – 50

Marks	More than 10	More than 20	More than 30	More than 40	More than 50	More than 60	More than 70
No of students	80	75	60	55	30	20	10

A)30 B)45

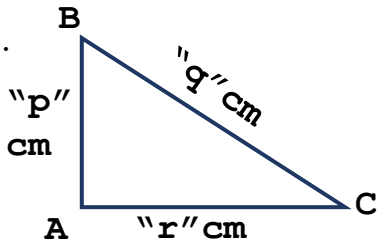
C)15 D)10

35).If the median of some scores is 40 and mean is 18 then mode is …….

A) 86 B)75

C)38 D)84

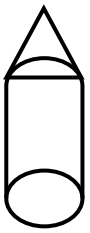
36) In the given fig ΔABC the relationship between the three sides …



A) $p^2 = q^2 + r^2$ B)$q^2 = r^2 + p^2$

C) $r^2 = p^2 + q^2$ D) $q^2 = p^2 - r^2$

37). Which are the solid combined in the given figure ?



A) cone & cylinder B) circle & rectangle

C) hemisphere & cylinder D) circle, rectangle & triangle

38). A sphere of radius r is melted to form a cone of height r then the radius of cone is …

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

39). A cylindrical pipe is attached with two equal parts of a sphere then the volume of the combination of solid is ……..

A) $4\pi r^2 + \pi rh$ B)$4\pi r^3 + \pi rh$

C)$\pi r^2 + 2\pi rh$ D)$4\pi r^2 + 2\pi rh$

40) A cylinder shaped gold necklace is melted to form a pair of rings, the volume of the ring is …….

A) Equal to volume of necklace B) Equal to half of the volume of necklace

C) equal to twice the volume of necklace D) equal to thrice the volume of necklace

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Key Answers

Ques No	Correct Answer		Ques No	Correct Answer
1	B) 16		25	B)$x = \frac{-Q \pm \sqrt{Q^2-4PR}}{2P}$
2	C)36		26	D) $2x^2 - 5x = (x-1)^2$
3	C)18, 8		27	B) real & distinct
4	B) 625		28	A) 30°
5	A) $S_n = \frac{n}{2}(a + a_n)$		29	C)$\frac{9}{16}$
6	D)$5\sqrt{2}$cm		30	A) 10m
7	C)$\frac{AC}{AE}$		31	A).0
8	A)14:9		32	D)$\frac{\sqrt{3}}{4}$
9	C) EF ‖ AB		33	B)30-40
10	C) Two equilateral triangles are congruent			
11	A). X=5,Y=2		34	A)30
12	C)3		35	D)84
13	B) (0,-1)		36	B)$q^2 = r^2 + p^2$
14	B) 1		37	A) cone & cylinder
15	C) 8		38	D) 4r
16	A). 50°		39	D) $4\pi r^2 + 2\pi rh$
17	A). 4cm		40	B) equal to half of the necklace
18	B). 3:1			
19	C) $5\sqrt{2}$ units			
20	A) 2 units			
21	C) (5,5)			
22	C). 1 sq units			
23	D) 4			
24	A) $X^2+x -42=0$			

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Multiple Choice Questions Based Model Question Paper– 03
2020-21
Subject: Mathematics

Medium: English **Subject code : 81 E** **Max. Marks: 40**

Four choices are given for each of the questions/incomplete statements. Choose the correct answer and shade the correct choice in the OMR given to you with blue / black ball point pen

$\mathbf{1 \times 40 = 40}$

1. The 10^{th} term of an Arithmetic Progression: 2, 7, 12, …. is-
   A) 17 B) 47 C) 27 D) 37

2. The common difference of an Arithmetic Progression: 3, 6, 9, 12,….is-
   A) 3 B) 4 C) 9 D) -3

3. The sum of first ten natural numbers is-
   A) 45 B) 50 C) 55 D) 65

4. The next two terms of the following arithmetic Progression: 4, -1, -6, __, __, is-
   A) -10, -15 B) -12, -15 C) 11, 16 D) -11,-16

5. The first term of an Arithmetic Progression is ‘a’ and its n^{th} term is ‘l’, then the sum of ‘n’ terms of an A.P. is-

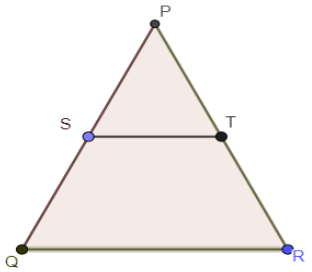
   A) $S_n=\frac{a}{2}(n+l)$ B) $S_n=\frac{n}{2}(a+l)$

   C) $S_n=\frac{1}{2}(a+n)$ D) $S_n=\frac{n}{4}(a+l)$

6. In the given figure ST∥QR, then $\frac{PS}{SQ}$ = _____

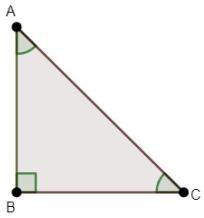
   A) $\frac{PT}{TR}$ B) $\frac{PS}{TR}$

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



7. If the ratio of corresponding sides of two similar triangles is 4: 9, then the ratio of their areas is-
   A) 2:3 B) 4:9
   C) 81:16 D) 16:81

8. In the following figure, $\angle B=90^0$, Then the correct relation with respect to is-



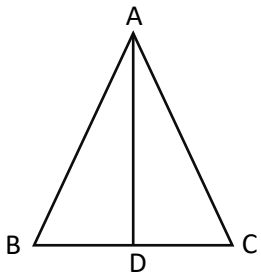
A) $BC^2+AB^2=AC^2$ B) $AB^2+AC^2=BC^2$

C) $AB^2-AC^2=BC^2$ D) $AC^2+BC^2=AB^2$

9. In a right angled triangle, hypotenuse and one of its sides are 13cm and 12cm respectively. Then the length of another side of it is-

A) 11cm B) 14cm C) 7cm D)5cm

10. In ΔABC, $\frac{AB}{AC}=\frac{BD}{CD}$, $\angle B=70°$, and $\angle C=50°$, then $\angle BAD$ = ____



A) 30° B) 40° C) 45° D) 50°

11. The ratio of Pair of linear equations in two variables is $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$. Then the lines are-

A) Parallel lines B) Coincide lines

C) Intersecting lines D) Perpendicular lines

12. The number of solutions for the pair of linear equations: x+2y=3 and 5x+10y=1 have-

A) 2 B) Unique C) Infinite D) No solutions

13. If pair of linear equations 3x+2ky=2 and 2x+5y=-1 are parallel, then the value of 'k' is-

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

14. The condition for the pair of linear equations in two variables to be inconsistent is-

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

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

15. A straight line which intersects a circle at two distinct points is called-

A) chord B) secant

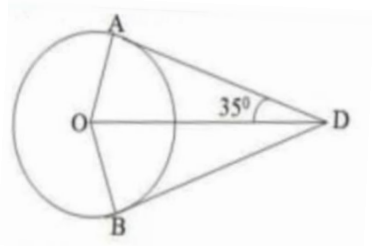
C) tangent D) diameter

16. The maximum number of tangents can be drawn from an external point to a circle is-

A) 1 B) infinite

C) 3 D) 2

17. In the figure, $\angle ADO=35°$ then the measurement of $\angle BOD$ is-



A) 55° B) 65°

C)145° D) 135°

18. In a circle, the tangent and the radius drawn at the point of contact will make -

A) An obtuse angle B) An acute angle

C) A right angle D) A straight angle

19. On the X-axis, point of coordinates is in the form-

A) (x.0) B) (y.0) C) (0.x) D) (0.y)

20. The distance between the coordinates P(p,q) from its origin is-

A) p^2+q^2 B) $\sqrt{p2+q2}$ C) $\sqrt{p2-q2}$ D) p^2-q^2

21. The distance between the vertices of the point (4, 5) and (3, 7) is-

A) -25units B) 25units C) -5units D) $\sqrt{5}$units

22. The coordinates of the mid-point (x, y) of the line segment joining the points: (5, 3) and (-3, 1) is-

A) (4, 1) B) (2, 1) C) (4, 2) D) (1, 2)

23. If the angle between the two tangents of a circle is 60^0 then angle between their radii is-

A) 60° B) 75° C) 90° D) 120°

24. cotA = $\frac{12}{5}$ then tanA= ____

A)$\frac{12}{5}$ B)$\frac{5}{12}$ C) $-\frac{12}{5}$ D) $\frac{-17}{5}$

25. If sinθ=cosθ then, θ =____

A) 0° B) 30° C) 45° D) 60°

26. The value of: $cosec^2\theta$ - $cot^2\theta$ is-

A) 0 B) 1

C) -1 D) 2

27. sin$\theta = \frac{3}{5}$ then the value of $cos^2\theta$= ----

A)$\frac{4}{5}$ B)$\frac{5}{4}$

C) $\frac{25}{16}$ D) $\frac{16}{25}$

28. The angle of elevation at a distance 100m from the foot of the building is 60^0, then the height of the tower is

A)$100\sqrt{3}$m B) $\frac{100}{\sqrt{3}}$m

C)$50\sqrt{3}$m D)$\frac{200}{\sqrt{3}}$m

29. One of the roots of the quadratic equation x^2-7x+k=0 is 3, then the value of 'k' is-

A) 3 B) 12 C) -3 D) -12

30. The discriminant of the Quadratic equation is 25. Then its nature of the roots is-

A) Real and distinct B) Real and equal

C) No real D) Different roots

31. The nature of the roots of quadratic equation $ax^2+bx+c=0$ are real and distinct, if and only if its discriminant $\Delta =$ __

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

32. "*The product of two consecutive positive integers is 30".* This can be expressed as-

A) x(x+2)=30 B) x(x-2)=30

C) x(x-3)=30 D) x(x+1)=30

33. The mean value of the following data: **6, 5, 0, 7, 8, 9** is-

A) 6 B) 7 C) 8 D) 9

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

A) 2Median = Mode + 3 Mean B) 3Median =Mode+ 2 Mean

C) Median = Mode + Mean D) Median = Mode - Mean

35. The mid-point of the class interval (65 - 80) is-

A) 72.5 B) 73.5 C) 72 D) 73

36. The curved surface area of a cone having slant height 10cm and radius of base 14cm is -

A)140cm^2 B)240cm^2

C) 340cm^2 D)440cm^2

37. A sphere of 6cm diameter is melted and recast into a cone of 12cm diameter. Then the height of the newly formed cone is-

A) 8cm B) 5cm

C) 3cm D) 2cm

38. The formula used to find the volume of the frustum of the cone whose height is 'h' and radii are 'r_1' and 'r_2' is-

A) $\frac{1}{3}\pi h(r_1 + r_2 + r_1 r_2)$ B) $\frac{1}{3}\pi h(r_1^2+r^2_2+r_1^2 r^2_2)$

C) $\frac{1}{3}\pi h(r_1^2+r^2_2+r_1 r_2)$ D) $\frac{1}{3}\pi h(r_1+r_2+r_1^2 r^2_2)$

39. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of π.

A) πcm^3 B)$\frac{\pi}{3}$cm^3 C) $\frac{\pi}{2}$cm^3 D)$\frac{\pi}{4}$cm^3

40. If the volume of a right circular cylinder is 360cm^3 units, then the volume of a cone with the same height and base as the cylinder is-

A)90cm^3 B)120cm^3 C) 180cm^3 D)360cm^3

KEY - ANSWERS

Q. No	Correct Answer	Q. No	Correct Answer
1	B) 47	**21**	D) $\sqrt{5}$ units
2	A) 3	**22**	D) (1, 2)
3	C) 55	**23**	D) $120°$
4	D) -11,-16	**24**	B)$\frac{5}{12}$
5	B) Sn=$\frac{n}{2}$(a+l)	**25**	C)$45°$
6	A) $\frac{PT}{TR}$	**26**	B) 1
7	D) 16:81	**27**	A)$\frac{4}{5}$
8	A) $AB^2+BC^2=AC^2$	**28**	A) $100\sqrt{3}$m
9	D)5cm	**29**	B)4
10	A) $30°$	**30**	A) real and distinct
11	C) intersecting lines	**31**	B) $b^2-4ac> 0$
12	D) no solution	**32**	B) x(x-2)=30
13	C) $\frac{15}{4}$	**33**	A) 6
14	C) $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$	**34**	B) 3Median=mode+2mean
15	B) secant	**35**	A) 72.5
16	D) 2	**36**	D)440cm^2
17	A) $55°$	**37**	C) 3cm
18	C) right angle	**38**	C) $\frac{1}{3}\pi h(r_1{}^2+r^2{}_2+ r_1r_2)$
19	A) (x.0)	**39**	A)πcm^3
20	B) $\sqrt{p2 + q2}$	**40**	B)120cm^3

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Multiple Choice Questions Based Model Question Paper– 04
2020-21
Subject: Mathematics

Medium: English **Subject code : 81 E** **Max. Marks: 40**

Four choices are given for each of the questions/incomplete statements. Choose the correct answer and shade the correct choice in the OMR given to you with blue / black ball point pen

$\mathbf{1 \times 40 = 40}$

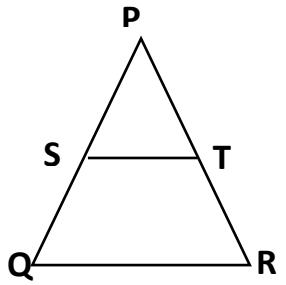
1. The n^{th} term of an Arithmetic progression is $a_n = 5n - 5$ then the 5^{th} term is
   A) 9 B)12 C) 5 D) 20

2. The first term "p" and common difference "q" . nth term of an A.P
   A) p+(n+1)q B) p – (n+1)q C) p+(n+1)q D) p –(n-1)q

3. For natural numbers, the value of $S_{50} - S_{40}$ is
   A) 355 B) 365 C) 455 D) 475

4. The sum of 20 terms 0f an A.P 1+2+3 ..... is
   A) 110 B)210 C) 310 D) 375

5. In the given figure, ST // QR . $\frac{PS}{SQ}$ is equal to :
   A) $\frac{PS}{SQ}$ B) $\frac{PT}{TR}$
   C) $\frac{PS}{TR}$ D) $\frac{PT}{SQ}$



6. If $\Delta AOB \approx \Delta COD$. And AB=3CD then the ratio of ΔAOB and ΔCOD is
   A) 4:9 B) 9:1 C) 1:9 D) 9:4

7. Choose the correct Statement of Basic Proportionality theorem is :
   A) A line drawn parallel to a side of a triangle divides the other two sides in the same ratio.
   B) If two triangles are similar, then the ratio of corresponding sides are equal.
   C) If a line divides two sides of a triangle in the same ratio, then it is parallel to the third side.
   D) In a right angle triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides

8. Identify the triplets of Pythagoras
   A) 6, 8,11 B) 7,10, 12 C) 2,3,5 D) $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$

9. In a graph representing a pair of linear equations, if the line intersect each other, then the equation have :

A) Exactly Two Solutions B) infinitely many Solutions

C) Unique Solution D) No Solution

10. The line represented by $2x + 3y - 9=0$ and $4x +6y -18=0$ is

A) Intersecting lines B) Perpendicular lines

C) Parallel lines D) Co incident lines

11. If the pair of linear equation $X + 2y = 3$ and $2x +4y = K$ Coincides then the value of "K" is

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

12. $x – y =2$ and $x + y = 4$ solutions of this two linear equation

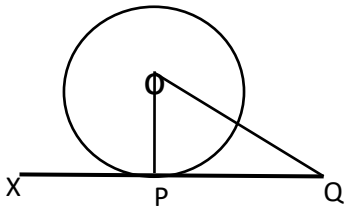
A) (-3, -1) B)(4,3)

C) (5,1) D) (3, 1)

13. In the figure, the radius of the circle is equal to PQ,

Then the value of $\angle POQ$ is

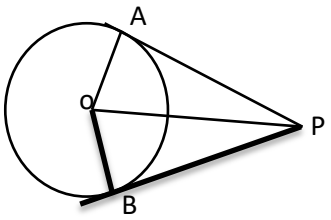
A) 90^0 B) 30^0 C) 60^0 D) 45^0



14. In figure $\angle APB = 40^0$, then find the value of $\angle AOP$

A) 70^0 B) 80^0

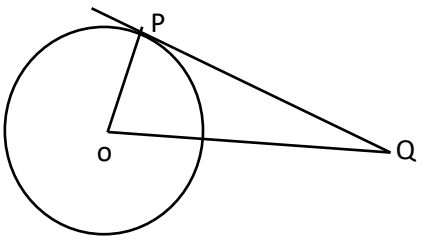
C) 60^0 D)140^0



15. "O" is the center of the circle, from the External point Q a tangent length 13 cm is drawn to the circle. If length of OQ = 12 cm . then radius of the circle is

A) 25 cm B)15cm

C) 5cm D) 7cm



16. P(4, 3) , Find the distance of the point from X-axis

A) 2 Units B) 5 Units C) 4 Units D) 3 Units

17. Find the distance of this point (4 , -3) from Origin :

A) 2 Units B) 5 Units C) 4 Units D) 3 Units

18 (3, 8) and (-7, 4) find the mid-point of line, joining these points:

A) (-5,6) B) (2,-6) C) (5, 6) D) (6,5)

19. A (2, -2) and B(-1, x) if the distance between line joining between these points is 5 units. Then find the value of X is :

A) X = -3 or X = 4 B) X = 3 or X = - 4

C) X = 2 or X = -6 D) X = -2 or X = 6

20. A(-4, 0), B(4,0), C(0,3) find the type of triangle formed by joining these points in a Cartesian co-ordinate system:

A) Isosceles . B) Equilateral C) Scalene D) Right – Angled À

21. $ax^2 + bx + c = 0$ If the value of the roots of the equation are equal then value of "C" is

A) $\frac{-b}{2a}$ B) $\frac{b}{2a}$ C) $\frac{b2}{4a}$ D) $\frac{b2}{4a}$

22. $3x^2 + 7x + 4 = 0$ the nature of the roots of this Quadratic equation is :

A) Imaginary roots . B) Real and distinct C) No real roots D) Real and Equal

23. Standard form of the Quadratic equation in the variable "X " is :

A) $ax^2 + bx + c = 0$ B) $ax^2 - bx + c = 0$ C) $ax^2 – bx - c = 0$ D) $ax^2 + bx^2 + c^2 = 0$

24. $(x + 3)(3x – 2) = 0$ roots of this Quadratic equation is -3 and another one is :

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

25. The sum of square of two consecutive natural numbers is 25. This statement can be written in the form of a equation as :

A) $X^2 + (x-1)^2 + 25 = 0$ B) $X^2 - (x-1)^2 = 25$

C) $X^2 + (x+1)^2 = 25$ D) $X^2 + (x-1)^2 = 25$

26. $\cos(90 - \theta)$ is Equal to:

A) $\cos\theta$ B) $\sin\theta$

C) $\tan\theta$ D) $\operatorname{Cosec}\theta$

27. $\sin 60^0 . \sin 30^0$ Product of this equal to:

A) $\frac{1}{4}$ B) $\frac{1}{2}$

C) $\sqrt{3}/4$ D) $\sqrt{3}/2$

28. Find value of $\cos 48^0 - \sin 42^0$

A) 1 B) 0 C) 48^0 D) 42^0

29. $(1 - \sin^2\theta)\ \sec^2\theta$ is equal to:

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

30. The ladder is inclined to a wall making of an angle 60^0, if the distance from foot of the ladder to wall is 9.5 m. then length of the ladder is :

A) 16 m B)18m C) 19m D) 20m

31. A $100\sqrt{3}$ mt building is wiewed is from a point 100 mt away from the foot of the \ building. The angle of elevation is :

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

32. Mean =27, median=33, then the value of mode is:

A) 30 B)43 C) 45 D) 47

33. 5, 8, 14, 16, 19, and 20 Calculate the value of Mode is :

A) 14 B) 19 C) 16 D) 15

34. The calculation of cumulative frequency is used for determine, which of the following:

A) Mean B) Mode C) Median D) All of these choices

35. A cylindrical; shaped pencil is sharpened, after sharpening the solid formed will have these solids in joint form are:

A) Cylinder and hemisphere B) Cylinder and frustum

C) Cylinder and cone D) Cylinder and rectangular

36. The ratio of the volume of a cone to the volume of a cylinder if both solids have same radius "r" and the height "h" is :

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

37. The Surface area of the sphere having radius 7 cm is :

A) 154 cm^2 B) 308 cm^2 C) 616 cm^2 D) 770 cm^2

38. The correct formula to find the value of a frustum is :

A) $\frac{1}{3}\ \pi h(r_1^2 + r_2^2 - r_1r_2)$ B) $\frac{1}{3}\ \pi h(r_1^2 - r_2^2 + r_1r_2)$

C) $\frac{1}{3}\ \pi h(r_1^2 + r_2^2 + r_1r_2)$ D) $\frac{1}{3}\ \pi h(r_1^2 - r_2^2 - r_1r_2)$

39. The volume of a cylinder formed by two solid sphere will:

A) Increases B) Decreases

C) Increase by twice D) Remains Same

40. If a point "P" divides a line segment of AB. Such that $\frac{PB}{AB} = \frac{3}{7}$ then AP : PB is

A) 4 : 7 B) 7 : 4

C) 7 : 3 D) 4 : 3

KEY - ANSWERS

Q. NO	Correct Answers	Q. NO	Correct Answers
1	D) 20	**21**	D) $\frac{-b^2}{4a}$
2	C) p+(n- 1)q	**22**	C) No real roots
3	C) 455	**23**	A) $ax^2 + bx + c = 0$
4	B)210	**24**	C) $\frac{2}{3}$
5	B) $\frac{PT}{TR}$	**25**	C) $X^2 + (x + 1)^2 = 25$
6	B) 9:1	**26**	B) Sin θ
7	A) A line drawn parallel to a side of a triangle divides the other two sides in the same ratio	**27**	C)$\sqrt{3}$ / 4
8	D) $\sqrt{2}$,$\sqrt{3}$,$\sqrt{5}$	**28**	B) 0
9	A) Exactly Two Solutions .	**29**	A) 1
10	D) Coincident lines	**30**	C) 19m
11	A) 6	**31**	C) 60^0
12	D) (3, 1)	**32**	C) 45
13	D) 45^0	**33**	D) 15
14	A) 70^0	**34**	D) All the above
15	D) 7cm	**35**	C) Cylinder and cone
16	D) 3 units	**36**	A) 1 : 3
17	B) 5 units	**37**	C) 616 cm^2
18	B) (- 2, 6)	**38**	C) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1 r_2)$
19	A) X = -3 or X = 4	**39**	D) Remains Same
20	A) Isosceles	**40**	D) 4 : 3

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Multiple Choice Questions Based Model Question Paper– 05
2020-21
Subject: Mathematics

Medium: English **Subject code : 81 E** **Max. Marks: 40**

Four choices are given for each of the questions/incomplete statements. Choose the correct answer and shade the correct choice in the OMR given to you with blue / black ball point pen

$\mathbf{1 \times 40 = 40}$

1) 2,6,10_ _ _ _ _94 **The number of terms in the following AP are**

a) 23 b) 24 c)25 d)9

2) The sum of first two terms of the AP whose nth term is a_n= 3n-5 is

a)-2 b)1 c)2 d)-1

3) The nth term of the Arithematic progression is

a)a+(2a-1)d b)2a+(n-1)d c)a+(n-1)d d)a+(n-1)d

4) In an Arithematic progression a = 1, a_n = 19 **and** s_n = 400 **then** n is equal to

a)19 b)21 c)40 d)42

5) In an AP S15=360 and S14=305 then the a15 is

a)50 b)65 c)45 d)55

6) **Out of the following options identify the sides of a Right angled triangle**

a)5,6,8 b)6,8,10 c)4,5,6 d)9,10,12

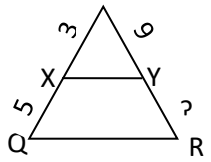
7) The ratio of the sides of two similar triangles is 4: 9 then the ratio of their areas is

a) 2:3 b)16:81 c) 4:9 d) 81:16

8) If A pole of height 10m cast a shadow of length 6m then the length of shadow of a building of height 15m is

a) 9m b) 25 c) 4m d) 10m

9) **In the given figure if** XY||QR then YR is equal to



a) 4.2 b) 15

c) 45 d) 27

10) **ABC is an Equilateral triangle with side 2a then its height is**

a) $\sqrt{5}a$ b) $\sqrt{3}a$ c) $\sqrt{3a}$ d) $\sqrt{5a}$

11) Which of the following triangles is always similar?

a) **Isoceles triangle** b) **Equilateral triangle**

c) **Right angle triangle** d) **Obtuse angled triangle**

12) If X+Y=10 **and** X-Y=6 **then the value for X and Y are**

a) x=4 & y=6 b) x=8 &y=2

c)x=6 & y=4 d) x=6 & y=2

13) Number of solutions the linear equations x-y=4 **and** 2X-4Y=3 have

a) Infinite b) 2 c) unique d) no solution

14) **General form of the linear equation** 2x=8-3y is

a) 2x-3y=8 b) 2x+3y=8

c) 2x-3y-8=0 d) 2x+3y-8=0

15) The length of the tangent which is drawn to a circle of radius 5cm from a point 13cm away from the centre of the circle is

a) 6 cm b) 12cm

c) 5cm d) 13cm

16) **If angle between the tangents is** 130^0 **then the angle between the radii is**

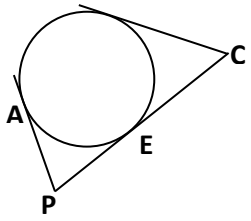
a) 50^0 b) 180^0

c) 40^0 d) 90^0

17) **In the given figure if** AP = 3 cm and PC= 8cm **then the length of the tangent CE is**

a) 3cm b)5cm

c) 8cm d)11cm



18) If the line segment of length 10 cm is divided in the ratio 3:2 then the measure of each part of the line segment so obtained is in the ratio

a) 6:4 b) 4:6 c) 5:5 d) 8:2

19) The distance between the point (6, - 8)and origin is

a)12 b)14 c)10 d)5

20) The coordinates of the midpoints which divides the line segment joining the points (3, 7) & (-3, 1)

a)(3,4) b) (-3,4) c)(0,4) d) (3,0)

21)If the points A (2, 3) B (4, K) & C (6, - 3)are collinear then the value of k is

a)1 b)-1 c)2 d)0

22) The formula to find the distance between the points P(x_1 ,y_1)and Q(x_2 ,y_2) is

a)$\sqrt{(x2 + x1) - (y2 + y1)}$ b) $\sqrt{(x2 - x1) + (y2 - y1)}$

c) $\sqrt{(x2 + x1)^2 - (y2 + y1)^2}$ d)$\sqrt{(x2 - x1)^2 + (y2 - y1)^2}$

23) **Roots of the equation** $5x^2$-125=01

a) 5 b) -5 & -4

c) 5 & -5 d) -5

24) If the roots of the equation $2x^2$-8x+k=0 are real and equal then the value of K is

a) 8 b) 4

c) 16 d) 2

25) Sheela have 1rupee and 2 rupee coins the sum of them is 16 rupees. choose the equation which satisfy the following statement.

a) x+2y+16=0 b) x-2y-16=0

c) x+2y-16=0 d) x-2y+16=0

26) **General form of a Quadratic equation is**

a) ax^2+bx-c b) ax^2+bx+c c) $ax^2+bx+c=0$ d) $ax^2+bx-c=0$

27) Nature of roots of the quadratic equation $4x^2-4x+1=0$

a) Real & Equal b) Imaginary

c) Imaginary &Equal d) Real & Different

28) $sin\theta = \frac{12}{13}$ then cosθ value is

a) $\frac{12}{13}$ b) $\frac{5}{13}$ c) $\frac{5}{12}$ d) $\frac{12}{5}$

29) $\text{cosec}\theta = 2$ then $\sin\theta =$

a) $\frac{1}{2}$ b) 2

c)3 d) $\frac{1}{\sqrt{2}}$

30)The value of $\frac{(\text{sinA}+\text{cosA})^2-1}{sinA.cosA}$ is

a) 1 b) $\frac{1}{2}$

c) 2 d) 0

31) sin15°. Cos75° + cos15°. Sin75° is equal to

a) 4 b) 0

c) 1 d) 2

32) $tan^2A =$

a) $1 - sec^2A$ b) $sec^2A - 1$

c) sec^2A d) 1

33) Median of a data is 40 and their mean is 19 **then mode of the data is**

a) 72 b) 82

c)59 d) 21

34) **In the following frequency distribution table the Modal class is**

Class interval	0-10	10-20	20-30	30-40
Frequency	3	7	4	2

a) 0-10 b) 10-20 c) 20-30 d) 30-40

35) $\sum fixi$ =1860 and $\sum fi$=30 then $\bar{x}$ is

a) 72 b)62 c) 52 d) 82

36) Lateral surface area of a cylinder whose **Radius is** 7 cm & **height is** 10 cm

a) 748 sq. cm b) 440 sq. cm c) 220 sq. cm d) 880 sq. cm

37) The water in a cylindrical shaped vessel having volume 27cu.cm is poured into a conical vessel with same height and radius then what is the volume of water in the conical vessel?

a) 81 cu.cm b) 9 cu.cm

c) 27cu.cm d) 13cu.cm

38) **The formula to find the volume of a Frustrum of a cone is**

a) $\frac{1}{3}\pi h\left(r_1^2 + r_2^2 + r_1 r_2\right)$ b) $\pi(r_1 + r_2)l$

c) $\pi(r_1 + r_2) + \pi r_1^2 + \pi r_2^2$ d) πrl

39) The volume of water filled in a tank which is in the shape of a cuboid having length 5m breadth 2m and height 3m is

a) 60 cu.cm b) 120 cu.cm

c) 30cu.cm d) 62 cu. Cm

40) If the ratio of volumes of 2 spheres is 64 : 27 **then the ratio of their curved surface areas is**

a) 9:16 b) 16:9

c) 3:4 d) 4:3

KEY ANSWERS

Question no	Answer	Question no	Answer
1	b) 24	21	d) 0
2	d) -1	22	d) $\sqrt{(x2-x1)^2+(y2-y1)^2}$
3	d) a+(n-1)d	23	c) 5 & -5
4	c) 40	24	a) 8
5	d) 55	25	c) x+2y-16=0
6	b) 6,8,10	26	c) $ax^2+bx+c=0$
7	b) 16:81	27	a) Real and Equal
8	a) 9m	28	b) $\frac{5}{13}$
9	b) 15	29	a) $\frac{1}{2}$
10	c) $\sqrt{3a}$	30	c) 2
11	b) Equilateral triangle	31	c) 1
12	b) x=8 & y=2	32	b) sec^2A-1
13	c) Unique	33	b) 82
14	c) 2x-3y-8=0	34	b) 10-20
15	b) 12cm	35	b) 62
16	a) 50^0	36	b) 440 sq.cm
17	a) 5cm	37	b) 9 cu.cm
18	a) 6:4	38	a) $\frac{1}{3}\pi h\left(r_1^2+r_2^2+r_1r_2\right)$
19	c) 10	39	c) 30 cu.cm
20	c) (0,4)	40	b)16:9
