केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे।
प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्ठी करे।

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
कुल प्राप्तांक श		

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे →

प्रमाणित किया जाता [illegible] पर अंकों की प्रविष्टी एवं अर्कों का योग सही है।
निर्धारित मुद्राः नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएं।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा	परीक्षक एवं निर्धारित मुद्रा
G.G. GOSWAMI EMR-DWS-626	N. Bhawsar EMR-D[illegible]231

7/7 Seven Four

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प्रश्न क्र. 1

Question no. - 1

Choose the Correct Option.

(i) 22 (b)

(ii) B.C. 640 - 546 (a)

(iii) 7.07 (approx.) (b)

(iv) parabolas (c)

(v) ~~$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$~~ (a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (c)

(vi) No real roots $\Rightarrow b^2 - 4ac < 0$ (d)

B S E

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प्रश्न क्र. 2

Question no. 2. **Fill in the Blanks.**

(i) Equilateral triangles

(ii) Length of arc = $\frac{\theta}{360} \times 2\pi r$

(iii) Irrational number

(iv) Degree

(v) "$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$" Quadratic formula given by Shridhara charya

(vi) number of terms (n) = 34

B S E

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प्रश्न क्र. 3

Question no = 03.

True or False

(i) False

(ii) True

(iii) False

(iv) True

(v) True

(vi) True

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प्रश्न क्र.04

Question no. 4.

Match the columns.

"A"	"B"
(i) Area of sector	$\frac{\theta}{360} \times \pi r^2$
(ii) Volume of Hemisphere	$\frac{2}{3}\pi r^3$
(iii) $\sin^2 25° + \cos^2 25°$	1
(iv) $\tan\theta$	$\frac{\sin\theta}{\cos\theta}$
(v) $\sec^2\theta - 1$	$\tan^2\theta$
(vi) $\tan 30°$	$\frac{1}{\sqrt{3}}$

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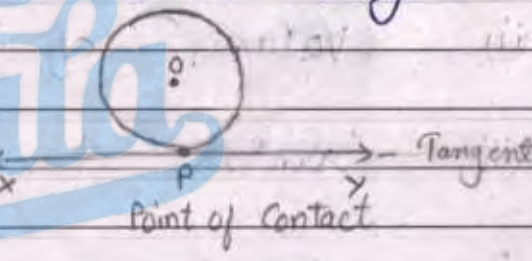
प्रश्न क्र. 5.

Question no.- 5

One word Answers.

Ans -(i) = Product of zeroes $(\alpha.\beta) = \frac{c}{a}$

Ans -(ii) = Point of Contact - Point of contact is the the point on the circle where tangent intersects the circle.



• P is point of contact

Ans - (iii) = Area of Segment of circle =
Area of Sector - Area of triangle formed

Ans= (iv) = $a_n = a + (n-1)\,d$

Ans =(v) = Basic Proportionality theorum :- " If a line drawn parallel to one side of triangle to intersect other two sides in distinct points, then lines are divided

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प्रश्न क्र.

in same ratio." This is also known as Thales theorum.

Ans=(vi) Secant line = The secant is the line that intersects the circle at two points.

• XY is a secant.

B S E

Two marks Question

Q6. Answer of Question no. 6. "OR"

Solution $\sin 60^\circ \cos 30^\circ + \sin 30 \cos 60$

We know, Values of - $\sin 60^\circ = \frac{\sqrt{3}}{2}$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$

$\cos 60^\circ = \frac{1}{2}$, $\sin 30^\circ = \frac{1}{2}$

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प्रश्न क्र.

So, $= \sin 60° \cos 30° + \cos 60° \sin 30°$

putting values,

$= \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{2}$

$= \frac{3}{4} + \frac{1}{4}$

$= \frac{4}{4}$

$= 1.$

Ans = $\sin 60° \cos 30° + \sin 30° \cos 60° = 1.$

b

S

E

Question 7.

Answer of Question no. 7. "OR"

Solution

Given :- Length of Tangent = 24 cm.
Circle with centre O, and OQ = 25 cm.

To find :- Radius of Circle.

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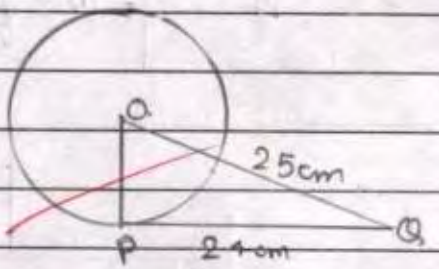
We know, By pythagorus theroum,



$$(OQ)^2 = (PQ)^2 + (OP)^2$$

$$\Rightarrow (25)^2 = (24)^2 + (OP)^2$$

$$\Rightarrow 625 - 576 = (OP)^2$$

$$\Rightarrow \sqrt{49} = OP$$

$$\Rightarrow 7 = OP.$$

Hence, OP is the radius of circle = 7 cm. **Ans = 7cm.**

B S F

Q8. "OR"

Answer of Question no. 8.

Solution

Given : Radius of circle = 21cm.
Angle at centre = 60°

P.T.O.

प्रश्न क्र.

To find :- Length of Arc.

Formula used = Length of Arc = $\frac{\theta}{360^\circ} \times 2\pi r$

Now,

Length of Arc = $\frac{^{1}60^\circ}{360^\circ_{6}} \times 2 \times \frac{22}{7} \times {}^{3}21$

$= \frac{1}{6} \times 22 \times 6$

$= 22$ cm

Hence, Length of Arc = 22cm. Ans.

Ans = 22cm

Answer of Question no. 9

Continue ...

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प्रश्न क्र. 09 "OR" Answer of Question no. 9.

Solution :-

We have, Total number of Outcomes = 52 $n(S)$

Probability $P(E) = \frac{\text{No. of Favourable Outcomes } n(E)}{\text{Total no of outcomes } n(S)}$.

(i) be an ace

number of event $n(E) = 4$

So, Probability $P(E) = \frac{n(E)}{n(S)}$

$= \frac{4}{52} \quad \frac{1}{13}$ Ans- $\boxed{P(E) = \frac{1}{13}.}$

(ii) not be an ace.

number of event $n(E) = 48$

So, Probability $P(E) = \frac{48}{52} \quad \frac{12}{13}$ Ans- $\boxed{P(E) = \frac{12}{13}.}$

P.T.O.

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प्रश्न क्र. 10

"OR" Answer of Question no. 10.

Solution. Given :- $P(E) = 0.95$.

To find :- Probability of "not E"

We know that,

$$P(E) + P(\bar{E}) = 1.$$

$$\Rightarrow 0.95 + P(\bar{E}) = 1.$$

$$\Rightarrow P(\bar{E}) = 1 - 0.95.$$

Ans :- $\Rightarrow P(\bar{E}) = 0.05$

Ans = Probability 'not E' = 0.05.

continue ...

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प्रश्न क्र. 11

Answer of Question no. 11.

Solution 6, 20

Solving by Prime factorization method,

2	6
3	3
	1

2	20
2	10
5	5
	1.

$6 = 2 \times 3$.

$20 = 2 \times 2 \times 5$.

HCF = 2.

ICM = $2 \times 2 \times 3 \times 5$.

= 60

HCF of numbers is = 2

P.T.O.

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Previous Pathshala

प्रश्न क्र. 12

Answer of Question no. 12.

Solution: Given :- Quadratic Polynomial = $3x^2 - x - 4$.

To find :- Zeroes

Solving by Factorization, →

$$3x^2 - x - 4$$
$$= 3x^2 - [4x - 3x] - 4$$
$$= 3x^2 - 4x + 3x - 4$$
$$= x(3x - 4) + 1(3x - 4)$$
$$= (3x - 4)(x + 1)$$

Zeroes are,

$3x - 4 = 0$ $\qquad$ $x + 1 = 0$

$\Rightarrow x = \frac{4}{3}$ $\qquad$ $x = -1$.

Zeroes are, $\frac{4}{3}$ and -1.

Continue . . .

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प्रश्न क्र. 13

"OR"

Answer of Question no. 13.

Solution Given :- Linear equations = $x+y=14$ and $x-y=4$.

i.e. $x+y=14 \rightarrow$ eq (1) and $x-y=4 \rightarrow$ eq (2).

Solving by Elimination method,

$$\begin{array}{rrrr} x & + & y & = & 14 \\ x & - & y & = & 4 \\ \hline & & 2y & = & 10 \end{array}$$

$$y = \frac{10}{2} = 5$$

using y in eq (1).

$$x+5 = 14$$

$$x = 14-5$$

$$x = 9$$

$x = 9$, $y = 5$.

P.T.O.

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प्रश्न क्र. 14

Answer of Question no. 14.

Solution.

Given :- AP = 4, 10, 16, 22, ...

To find :- Next two terms.

We know, $d = 6$.

So, next terms are 28, 34.

The next two terms of AP are 28 and 34.

Question 15

Answer of Question = 15.

Solution

Given :- E and F are points on PQ and PR
$\triangle PQR$, $PE = 4cm$, $QE = 4.5cm$.,
$PF = 8cm$, $RF = 9cm$.

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प्रश्न क्र.

To find : $EF \parallel QR$.

In $\triangle PQR$,

We know, by converse of Thales theorum,

"If a line divides two sides of triangle in same ratio then line is parallel to third side."

So, $\frac{PE}{QE} = \frac{PF}{RF}$

$\Rightarrow \frac{40}{45} = \frac{8}{9}$

$\therefore \Rightarrow \frac{8}{9} = \frac{8}{9}$

$\because \frac{PE}{QE} = \frac{PF}{RF}$ So, $EF \parallel QR$.

Hence Proved.

By converse of Thales theorum, $EF \parallel QR$.

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प्रश्न क्र. 16

Answer of Question no. 16.

Solution:- Given :- Point $A = (-5, 7)$, Point $B = (-1, 3)$

To find :- Distance = AB

Formula used :- Distance formula = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

We have, $x_1 = -5$, $y_1 = 7$, $x_2 = -1$, $y_2 = 3$.

putting values.

$$AB = \sqrt{[-1 - (-5)]^2 + [3 - 7]^2}$$

$$= \sqrt{(-1+5)^2 + (-4)^2}$$

$$= \sqrt{(4)^2 + (-4)^2}$$

$$= \sqrt{16 + 16}$$

$$= \sqrt{32}.$$

Ans. $= 4\sqrt{2}$ units

Distance AB = $4\sqrt{2}$ units

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प्रश्न क्र. 17

Answer of Question no. 17.

Solution

Given :- Point P = (2, -3) , Point Q = (10, y)
Distance PQ = 10 units

To find :- Values of y.

Formula used :- Distance formula = $\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

According to Question :

$\Rightarrow \sqrt{(10-2)^2 + (y-(-3))^2} = 10$

$\Rightarrow (8)^2 + (y+3)^2 = (10)^2$

$\Rightarrow 64 + y^2 + (3)^2 + 6y = 100$

$\Rightarrow y^2 + 6y + 64 + 9 = 100$

$\Rightarrow y^2 + 6y + 73 = 100$

P.T.O.

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प्रश्न क्र.

$\Rightarrow \quad y^2 + 6y + 73 - 100 = 0$

$\Rightarrow \quad y^2 + 6y - 27 = 0.$

Solving by factorization,

$$y^2 + [9y - 3y] - 27 = 0$$

$$\Rightarrow y^2 + 9y - 3y - 27 = 0$$

$$\Rightarrow y(y+9) - 3(y+9) = 0$$

$$= (y+9)(y-3) = 0.$$

Values of y,

$y = -9$ and $y = 3.$

Hence, Value of y are $-9, 3.$

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प्रश्न क्र. 18

3 Marks Question.

"OR"

Answer of Question no. 18.

Solution

Given :- Quadratic equation = $6x^2 - x - 2 = 0$.

To find :- Roots.

Solving by Factorization method,

$$6x^2 - x - 2 = 0$$

$\Rightarrow 6x^2 - [4x - 3x] - 2 = 0$ [Splitting the middle term]

$\Rightarrow 6x^2 - 4x + 3x - 2 = 0$

$\Rightarrow 2x(3x - 2) + 1(3x - 2) = 0$ (Taking common)

$\Rightarrow (3x - 2)(2x + 1) = 0$

Roots are,

$3x - 2 = 0$

$\Rightarrow x = \frac{2}{3}$

$2x + 1 = 0$

$\Rightarrow x = \frac{-1}{2}$

Roots are = $\frac{2}{3}$ and $\frac{-1}{2}$

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प्रश्न क्र. 19

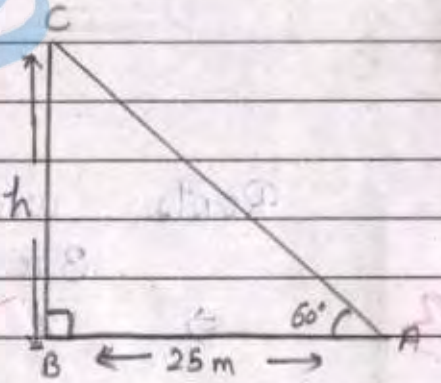
Answer of Question no. 19.

Solution :-

Given :- The angle of Elevation is $= 60°$
The distance of point from tower $= 25m$

To find :- Height of Tower.

Let, the height of Tower be 'h'.



In $\triangle ABC$,

$$\tan 60° = \frac{BC}{AB}.$$

$$\Rightarrow \sqrt{3} = \frac{h}{25}$$

$$\Rightarrow 25\sqrt{3} = h.$$

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प्रश्न क्र.

$\Rightarrow \quad 25 \times 1.732 = h.$

$\Rightarrow \quad 43.300 = h$

$\Rightarrow \quad 43.3\,m = h.$

Hence, height of Tower is - $25\sqrt{3} = 43.3$ m. (approx)

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Q20

Answer of Question no. 20.

Solution

Given : Numbers = 8, 9, 25.

To find : L.C.M. and H.C.F

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Solving by Prime factorization method,

2	8
2	4
2	2
	1

3	9
3	3
	1

5	25
5	5
	1.

$8 = 2 \times 2 \times 2$

$9 = 3 \times 3$

$25 = 5 \times 5$

H. C. F. = 1

L. C. M. $= 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5$

$= 8 \times 9 \times 25$

$= 1800.$

Hence, Ans = LCM = 1800

HCF = 1.

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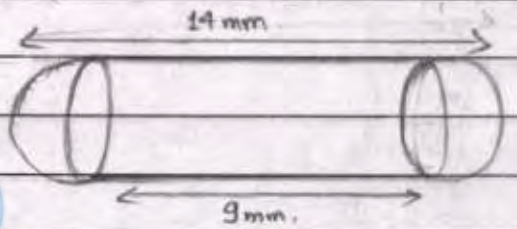
प्रश्न क्र. 21

4 Marks Question.

Answer of Question no. 21.

Solution

Given :- Length of entire capsule = 14 mm
Diameter of capsule (d) = 5 mm.
(r) Radius = $\frac{5}{2}$ mm.



To find :- Surface area.

Formula used :- Curved surface area of cylinder = $2\pi rh$.
Curved surface area of hemisphere = $2\pi r^2$

According to Question.

Height of Cylinder = $14 - \frac{5}{2} \times 2$.

$= 14 - 5$

$= 9$ mm.

Height of cylinder (h) = 9mm.

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Surface area of capsule = Curved Surface area of cylinder + 2x Curved Surface area of Hemisphere

i.e.

Surface area of capsule = $2\pi rh + 2 \times 2\pi r^2$

$= 2 \times \frac{22}{7} \times \frac{5}{2} \times 9 + 2 \times 2 \times \frac{22}{7} \times \frac{5}{2} \times \frac{5}{2}$

$= 2 \times \frac{22}{7} \times \frac{5}{2} \left(9 + 2 \times \frac{5}{2}\right)$

$= \frac{110}{7} \times (9+5)$

$= \frac{110}{7} \times 14^2$

$= 220 \text{ mm}^2$

Hence,

Surface area of capsule = 220 mm^2.

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Oddy

प्रश्न क्र. 22

"OR" Answer of Question no-22.

Solution We know,

$$\text{Mode} = l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] \times h$$

We have, Modal class = 60-80
lower limit (l) = 60
Class size (h) = 20
f_1 (frequency of modal class) = 61.
f_0 (frequency preceding modal class) = 52
f_2 (frequency succeeding modal class) = 38

Now,
putting in formula $= 60 + \left[\frac{61 - 52}{2\times 61 - 52 - 38}\right] \times 20$

$= 60 + \left[\frac{9}{122 - 90}\right] \times 20$

P.T.O.

प्रश्न क्र.

$$= 60 + \left[\frac{180}{32}\right].$$

$$= 60 + 5.625.$$

$$= 65.625 \text{ hours. (approx.)}$$

Hence, Modal lifetimes of components is 65.625 hours

Ans = 65.625 hours.

Q23. Answer of Question no. 23.

Solution

Given :- Sum of digits of two digit number = 9

To find :- Number.

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Let the number be $10x + y$.

According to question,

$$x + y = 9 \rightarrow \text{eq (1)}$$

and,

$$9 \times (10x + y) = 2 \times (10y + x)$$

$$\Rightarrow 90x + 9y = 20y + 2x$$

$$\Rightarrow 90x - 2x = 20y - 9y$$

$$\Rightarrow 88x = 11y$$

$$\Rightarrow \frac{88x}{11} = y$$

$$\Rightarrow 8x = y. \rightarrow \text{eq (2)}.$$

putting value of x y in eq (1).

$$x + 8x = 9$$

$$\Rightarrow 9x = 9$$

$$\Rightarrow x = \frac{9}{9}$$

$$\Rightarrow x = 1. \qquad \boxed{x = 1}$$

P.T.O.

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To find Value of y again, put value of x in eqn (i).

$\Rightarrow \quad 1+y=9$

$\Rightarrow \quad y=9-1$

$\Rightarrow \quad y=8.$

So, $x=1, \quad y=8.$

Number be $= 10\times 1+8$

$= 10+8$

$= 18.$

Hence Number be 18.

Ans = 18

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