



केवल मूल्यांकनकर्ता के उपयोग हेतु!
माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे। प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टि करे।			प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)	16		
1			17		
2			18		
3			19		
4			20		
5			21		
6			22		
7			23		
8			24		
9			25		
10			26		
11			27		
12			28		
13					
14					
15					
					कुल प्राप्तांक शब्द

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

प्रमाणित किया जाता है कि उपरोक्त पृष्ठों पर अंकों की प्रविष्टि एवं अंकों का योग सही है।
निर्धारित मुद्रा: नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएं।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

G.G. GOSWAMI
EMR-DWS-626

74
75
Seven Four

परीक्षक

एवं निर्धारित मुद्रा

N Bhawsar
EMR-D. 231



प्रश्न क्र. 1

Question no. - 1

Choose the correct Option.

(i) 22 (b)

(ii) B.C. 640 - 646 (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





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



प्रश्न क्र. 3

Question no = 03.

True or False

(i) False ✓

(ii) True ✓

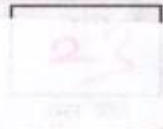
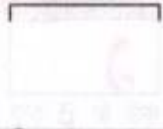
(iii) False ✓

(iv) True ✓

(v) True ✓

(vi) True ✓

B
S
E



Question no. 4.

Match the columns.

"A"

"B"

B
S
E

(i) Area of sector

$\frac{\theta}{360} \times \pi r^2$

(ii) Volume of Hemisphere

$\frac{2}{3} \pi r^3$

(iii) $\sin^2 25^\circ + \cos^2 25^\circ$

1

(iv) $\tan \theta$

$\frac{\sin \theta}{\cos \theta}$

(v) $\sec^2 \theta - 1$

$\tan^2 \theta$

(vi) $\tan 30^\circ$

$\frac{1}{\sqrt{3}}$



प्रश्न क्र. 5

Question no.- 5

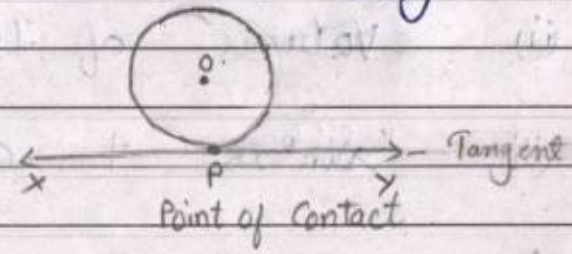
One word Answers.

B
S
E

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

Ans - (ii) = Point of Contact - Point of contact is 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 theorem :- "If a line drawn parallel to one side of triangle to intersect other two sides in distinct points, then lines are divided

7

$$\boxed{27} + \boxed{2} = \boxed{29}$$

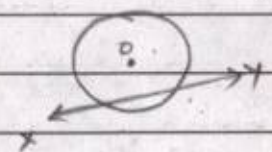


प्रश्न क्र.

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

Ans=(vi) secant line = X 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 $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$

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

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

P.T.O

8



प्रश्न क्र.

So, $\sin 60^\circ \cos 30^\circ + \cos 60^\circ \sin 30^\circ$

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 = $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ = 1.$

B
S
E

Question 7.

Answer of Question no. 7. "OR"

Solution

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

To find :- Radius of Circle.

9



1 + 2 = 3

प्रश्न क्र.

We know, By pythagoras theorem,

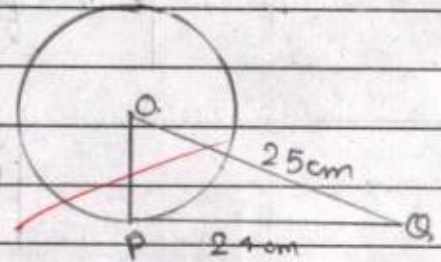
$$(OQ)^2 = (PQ)^2 + (OP)^2$$

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

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

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

$$\Rightarrow 7 = OP.$$



B
S
F

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

Qs. "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.

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

Now,

$$\text{Length of Arc} = \frac{60}{360} \times 2 \times \frac{22}{7} \times 21^3$$

$$= \frac{1}{6} \times 22 \times 8$$

$$= \underline{\underline{22 \text{ cm}}}$$

Hence, Length of Arc = 22 cm. Ans.

$$\underline{\underline{\text{Ans} = 22 \text{ cm}}}$$

Answer of Question no. 9

Continue ...

$5 + 2 = 37$



प्रश्न क्र. 09.

"OR"

Answer of Question no. 9.

Solution :-

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

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

(i) die an ace

number of event $n(E) = 4$

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

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

(ii) not die an ace.

number of event $n(E) = 48$

So, Probability $P(E) = \frac{48}{52} = \frac{12}{13}$

Ans - $P(E) = \frac{12}{13}$



प्रश्न क्र. 10

"OR"

Answer of Question no. 10.

Solution.

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

To find :- Probability of "not E"

We know that,

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

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

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

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

Ans = Probability 'not E' = 0.05.

B
S
E

continue ...



$$39 + 2 = 41$$

प्रश्न क्र. 11

Answer of Question no. 11.

Solution

6, 20

solving by Prime Factorization method,

2	6	2	20
3	3	2	10
	1	5	5
			1.

B
S
E

$$6 = 2 \times 3$$

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

$$\text{HCF} = 2$$

$$\text{LCM} = 2 \times 2 \times 3 \times 5$$

$$= 60$$

$$\text{HCF of numbers is } = 2$$

P.T.O.



Answer of Question no. 12.

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

To find: Zeros

Solving by Factorization, \rightarrow

$$\begin{aligned} & 3x^2 - x - 4 \\ &= 3x^2 - [4x - 3x] - 4 \\ &= 3x^2 - 4x + 3x - 4 \\ &= x(3x - 4) + 1(3x - 4) \\ &= (3x - 4)(x + 1) \end{aligned}$$

Zeros are,

$$\begin{aligned} 3x - 4 &= 0 & x + 1 &= 0 \\ \Rightarrow x &= \frac{4}{3} & x &= -1 \end{aligned}$$

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

Continue ...

13 + 2 = 15



प्रश्न क्र. 13

"OR"

Answer of Question no. 13.

Solution

Given :- Linear equations = $x + y = 14$ and $x - y = 4$.
i.e. $x + y = 14 \rightarrow \text{eq (1)}$ and $x - y = 4 \rightarrow \text{eq (2)}$.

Solving by Elimination method,

$$x + y = 14$$

$$-x - y = -4$$

$$2y = 10$$

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

using y in eq (1).

$$x + 5 = 14$$

$$x = 14 - 5$$

$$\underline{x = 9}$$

$$\underline{x = 9, y = 5.}$$

B
S
E



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.

B
S
E

Question 15

Answer of Question = 15.

Solution

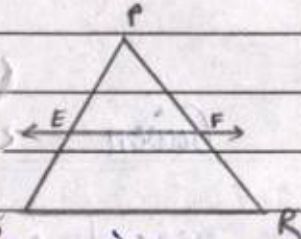
Given :- E and F are points on PQ and PR
 ΔPQR , $PE = 4\text{cm}$, $QE = 4.5\text{cm}$,
 $PF = 8\text{cm}$, $RF = 9\text{cm}$.

To find: $EF \parallel QR$.

In $\triangle PQR$,

We know, by Converse of Thales theorem,

"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 theorem, $EF \parallel QR$.



प्रश्न क्र.

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,

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

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

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

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

$$= \sqrt{32}$$

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

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

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.

B
S
E

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

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

$$\Rightarrow (8)^2 + (y+3)^2 = 100 \quad (10)^2$$

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

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

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

P.T.O.

प्रश्न क्र.

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

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

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,

$$y = -9 \text{ and } y = 3$$

Hence, Value of y are -9, 3.

B
S
E

21

$$\boxed{53} + \boxed{3} = \boxed{56}$$



प्रश्न क्र. 18

3 Marks Question.

"OR"

Answer of Question no. 18.

Solution

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

To find :- Roots.

B
S
E

Solving by Factorization method,

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

$$\Rightarrow 6x^2 - [4x - 3x] - 2 = 0 \quad \text{[Spilling the middle term]}$$

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

$$\Rightarrow 2x(3x - 2) + 1(3x - 2) = 0 \quad \text{(Taking common)}$$

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

Roots are,

$$3x - 2 = 0 \quad \Rightarrow \quad x = \frac{2}{3}$$

$$2x + 1 = 0 \quad \Rightarrow \quad x = -\frac{1}{2}$$

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

Answer of Question no. 19.

Solution: Given : The angle of elevation is $= 60^\circ$
The distance of point from tower $= 25\text{m}$

B To find :- Height of Tower.
S
E

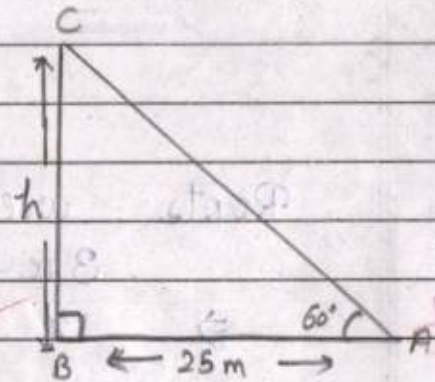
Let, the height of Tower be 'h'.

In ΔABC ,

$$\tan 60^\circ = \frac{BC}{AB}$$

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

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





प्रश्न क्र.

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

$$\Rightarrow 43.300 = h$$

$$\Rightarrow 43.3 \text{ m} = h$$

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

B
S
E

Q.20

Answer of Question no.20.

Solution

Given: Numbers = 8, 9, 25.

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

P.T.O.



प्रश्न क्र.

Solving by Prime factorization method,

2	8	3	9	5	25
2	4	3	3	5	5
2	2		1		1
	1				

B
S
E

8 = 2 x 2 x 2

9 = 3 x 3

25 = 5 x 5

H.C.F. = 1

L.C.M. = 2 x 2 x 2 x 3 x 3 x 5 x 5
 = 8 x 9 x 25
 = 1800.

Hence, Ans = LCM = 1800
 HCF = 1.

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प्रश्न क्र. 21.

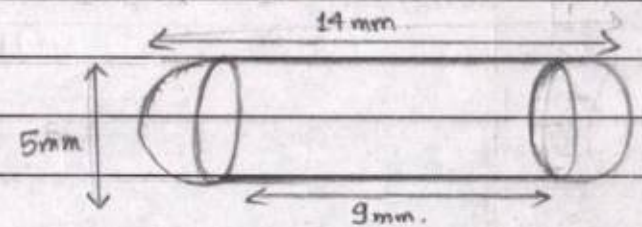
4 Marks Question.Answer of Question no. 21.

Solution

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

B
S
E

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.

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

$$= 14 - 5$$

$$= 9 \text{ mm.}$$

Height of cylinder (h) = 9 mm.

P.T.O.



प्रश्न क्र.

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

i.e.

$$\begin{aligned} \text{Surface area of capsule} &= 2\pi rh + 2 \times 2\pi r^2 \\ &= \frac{2 \times 22}{7} \times \frac{5}{2} \times 9 + 2 \times 2 \times \frac{22}{7} \times \frac{5}{2} \times \frac{5}{2} \end{aligned}$$

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

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

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

$$= 220 \text{ mm}^2$$

Hence,

$$\text{Surface area of capsule} = 220 \text{ mm}^2$$

B
S
E

Toppers

$$60 + \frac{61 - 52}{2 \times 61 - 52 - 38} \times 20 = 66$$



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.

$$\underline{\underline{\text{Ans} = 65.625 \text{ hours.}}}$$

Q23.

Answer of Question no. 23.

Solution

Given :- sum of digits of two digit numbers = 9

To find :- Number.

$$\boxed{70} - \boxed{\quad} = \boxed{70}$$



प्रश्न क्र.

Let the number be $10x + y$.

According to question,

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

and,

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

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

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

$$\Rightarrow 88x = 11y$$

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

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

Putting value of x & y in eq (1).

$$x + 8x = 9$$

$$\Rightarrow 9x = 9$$

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

$$\Rightarrow x = 1$$

$$\boxed{x=1}$$

P.T.O.



प्रश्न क्र.

To find value of y again,
put value of x in eqn.

$$\Rightarrow 1 + y = 9$$

$$\Rightarrow y = 9 - 1$$

$$\Rightarrow y = 8$$

So, $x = 1$, $y = 8$

$$\begin{aligned} \text{Number be} &= 10 \times 1 + 8 \\ &= 10 + 8 \\ &= 18 \end{aligned}$$

Hence Number be 18.

Ans = 18

B
S
E