केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे।
प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी करें।

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 शब्दों में		क अंकों में

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे →

प्रमाणित किया जाता है कि अन्दर के पृष्ठों के अनुरूप मुख्य पृष्ठ पर अंकों की प्रविष्टी एवं अर्को 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

MUKESH CHOURASIA
74405

D.K GUPTA
V.No 741309
G.H.S.V M.MANDLA

परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

संगीता चन्द्रे (मा. शि.)
परीक्षक क्रमांक 74529
शा.उ.मा. विद्यालय मंगलगंज

योग

प्रश्न क्र.

Question No. 01

Ans (i) $b^2 - 4ac < 0$

Ans (ii) 22

Ans (iii) ~~7.07 (approx)~~

Ans (iii) ~~B.C. 640 - 546~~

Ans (iv) parabolas

Ans (vi) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Ans (iii) B.C. 640 - 546

Ans (iv) 7.07 (approx)

प्रश्न क्र.

Question No. 02

Ans (i):- 34

Ans (ii) equilateral

Ans (iii) $\frac{\theta}{360} \times 2\pi r$

Ans (iv) irrational

Ans (v) degree of polynomial

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

प्रश्न क्र.

Question No. 03

Ans(i) False

Ans(ii) True

Ans(iii) True

Ans(iv) True

Ans(v) False

Ans(vi) True

B
S
F

प्रश्न क्र.

Question No. 04

Ans(i) $\tan 30^\circ = \frac{1}{\sqrt{3}}$

Ans(ii) Area of sector $= \frac{\theta}{360} \pi r^2$

Ans(iii) Volume of hemisphere $= \frac{2}{3} \pi r^3$

Ans(iv) 1

Ans(v) $\frac{\sin \theta}{\cos \theta}$

Ans(vi) $\tan^2 \theta$

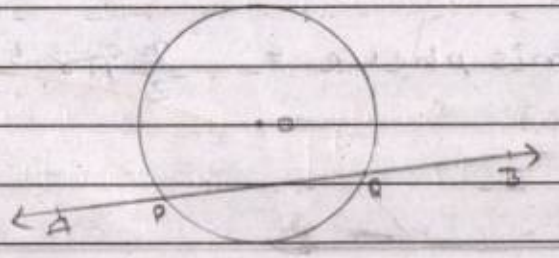
B
S
E

प्रश्न क्र.

Question No. 05

Ans (i)

Secant line : A line intersecting a circle in two distinct points is called a secant line.



here,

AB is a secant line.

Ans (ii)

Given polynomial,

$$p(x) = ax^2 + bx + c$$

$$\text{product of zeroes} = \frac{\text{constant term}}{x^2 \text{ coefficient}} = \frac{c}{a}$$

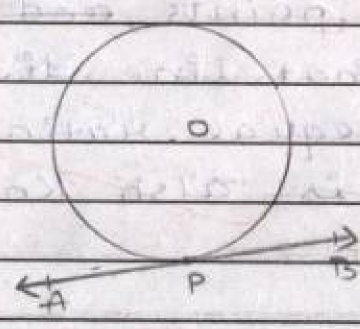
प्रश्न क्र.

B S E.

Ans (iii)

Point of contact :-

The tangent line which passes through a circle touches a point on the circle. That point is called the 'point of contact'



here,

AB is tangent, and,

P is the point of contact.

Ans (iv) area of segment = $\frac{\theta}{360}\pi r^2 - r^2 \sin\frac{\theta}{2}\cos\frac{\theta}{2}$

Ans (v)

The formula of finding n^{th} term is :

$$a_n = a + (n-1)d$$

प्रश्न क्र.

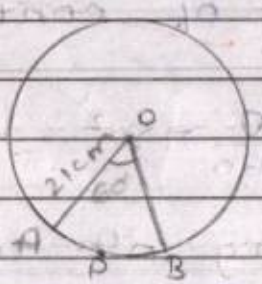
Ans (vi) "Basic Proportionality Theorem":

When a line is drawn parallel to one side of a triangle to intersect the other two sides in two distinct points, then divides them in equal ratio, that line divides the other two sides in equal ratio.

This theorem is also known as "Thales Theorem"

Question No. 06
'Or'

Given:-



C (O, r) a circle

$OA = OB = r = 21\ cm$

$\angle OAB = 60°$

प्रश्न क्र.

To find:- length of arc.

Solution:- We know that,

$$\text{length of arc} = \frac{\theta}{360^\circ} \times 2\pi r$$

$$\text{length of arc} = \frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times (21)$$

$$= \frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 21^{3}$$

$$= 1 \times 22$$

$$= 22 \text{ cm}$$

∴ length of arc of given circle is 22 cm

Ans.

प्रश्न क्र.

Question No. 07

Solution:-

In a dice,

Total no. of outcomes.

$$n(S) = 6$$

(i) numbers greater than 4 $\{5, 6\}$

$$n(A_1) = 2$$

probability of getting number greater than 4

$$P(E) = \frac{n(A)}{n(S)}$$

$$P(E_1) = \frac{2}{6}$$

(ii) numbers less than 4 $\{1, 2, 3\}$

$$n(A_2) = 3$$

probability of getting a number less than 4

$$P(E_2) = \frac{n(A)}{n(S)}$$

$$P(E_2) = \frac{3}{6}$$

प्रश्न क्र.

(ii) probability of getting a number greater than 4 is $\frac{2}{6}$.

(iii) probability of getting a number less than 4 is $\frac{3}{6}$. Ans.

Question No. 08
'Or'

B
S
E

Given:-

$P(E) = 0.95$

To find:-

$P(\bar{E}) = ?$

Solution:- We know that,

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

ST-16 A4

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

$$P(\bar{E}) = 0.05$$

∴ the probability of "not E" $[P(\bar{E})]$ is 0.05

Ans.

प्रश्न क्र.

Question No. 09 'Or'

Solution :-

2	140
2	70
5	35
7	7
	1

Prime factors of 140 are :-

$140 \Rightarrow 2 \times 2 \times 5 \times 7$

Ans.

Question No. 10

Solution :-

Given polynomial,

$\Rightarrow 3x^2 - x - 4$

$\Rightarrow [(3x^2 - 4x) + (3x - 4)]$

$\Rightarrow [x(3x-4) + 1(3x-4)]$

प्रश्न क्र.

$\Rightarrow (3x-4)(x+1)$

for zeroes,

$3x-4=0$

$3x=0+4$

$3x=4$

$\boxed{x=\frac{4}{3}}$

$x+1=0$

$x=0-1$

$\boxed{x=-1}$

∴ required zeroes are :-

$x=\frac{4}{3}$ or $x=-1$ Ans.

Question No. 11
'Or'

Solution :-

Given eqns,

$x+y=14$ — (1)

$x-y=4$ — (2)

प्रश्न क्र.

eqⁿ ① and ② solving by elimination method:-

$$\begin{bmatrix} x+y = 14 \\ x-y = 4 \end{bmatrix}$$

(by adding)

$$2x = 18$$

$$x = \frac{18}{2} 9$$

$$\boxed{x = 9}$$

(x = 9) putting in eqⁿ ①

$$x+y = 14$$

$$9+y = 14$$

$$y = 14-9$$

$$\boxed{y = 5}$$

∴ required equations' solutions are :-

$x = 9$,

$y = 5$ Ans-

प्रश्न क्र.

Question No. 12 'Or'

To find:- Sum of the sequence.

Solution:- Given sequence,

$$34 + 32 + 30 + \dots + 10$$

here,

$$\boxed{a = 34}$$

$$d = 32 - 34$$

$$\boxed{d = -2}$$

$$\boxed{a_n = 10}$$

We know that,

$$\boxed{a_n = a + (n-1)d}$$

$$10 = 34 + (n-1)(-2)$$

$$10 - 34 = (n-1)(-2)$$

$$-24 = (n-1)(-2)$$

$$\frac{+2^{1}4^{2}}{+x} = (n-1)$$

प्रश्न क्र.

$$12 = n - 1$$

$$12 + 1 = n.$$

$$13 = n.$$

$$\boxed{n = 13}$$

Again,

We know that,

$$\boxed{S_n = \frac{n}{2}[a + a_n]}$$

$$S_{13} = \frac{13}{2}[34 + 10]$$

$$S_{13} = \frac{13}{2} \times 44^{22}$$

$$S_{13} = 13 \times 22$$

$$\boxed{S_{13} = 286}$$

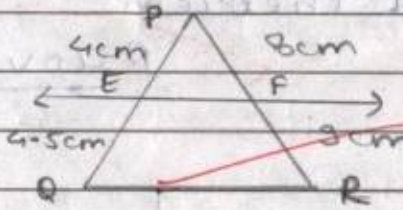
∴ the required sum is **286** Ans.

B
S
E

प्रश्न क्र.

Question No. 13

Solution :-



given :- $PE = 4cm$

$QE = 4.5cm$

$PF = 8cm$

$FR = 9cm$

Prove :-

To find :- $EF \parallel QR$

Proof :- In $\triangle PQR$,

$$\frac{PE}{QE} = \frac{PF}{FR} \quad \text{(by figure)}$$

$$\frac{4}{4.5} = \frac{8}{9}$$

$$\frac{4 \times 10}{45} = \frac{8}{9}$$

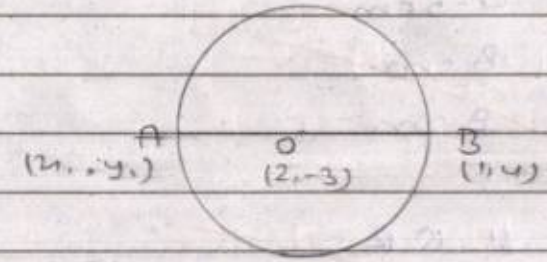
$$\frac{8}{9} = \frac{8}{9}$$

प्रश्न क्र.

EF || OR [by converse thales theorem.]

Proved

Question No. 15
'Or'



given:- C (O, r) a circle.
O (2, -3) is mid point of D = AB
B (1, 4)

To find:- A (x1, y1) let,

Solution:-

In ∝ AB,
O is mid point

प्रश्न क्र.

by mid-value formula,

$x = \frac{x_1 + x_2}{2}$

$2 = \frac{x_1 + 1}{2}$

$2 \times 2 = x_1 + 1$

$4 = x_1 + 1$

$4 - 1 = x_1$

$3 = x_1$

$x_1 = 3$

$y = \frac{y_1 + y_2}{2}$

$-3 = \frac{y_1 + 4}{2}$

$-3 \times 2 = y_1 + 4$

$-6 = y_1 + 4$

$-6 - 4 = y_1$

$-10 = y_1$

$y_1 = -10$

∴ required coordinates of A are:-

A (3, -10)

Ans.

Question No. 14

Solution:-

A (-5, 7) ⟷ B (-1, 3)

Given points,

(-5, 7) and (-1, 3)

प्रश्न क्र.

Let,

$A(-5, 7)$ $B(-1, 3)$
x_1, y_1 x_2, y_2

We know that,

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$AB = \sqrt{(-1 - (-5))^2 + (3 - 7)^2}$$
$$AB = \sqrt{(-1 + 5)^2 + (3 - 7)^2}$$
$$AB = \sqrt{(4)^2 + (4)^2}$$
$$AB = \sqrt{16 + 16}$$
$$\boxed{AB = \sqrt{32} \text{ units}}$$

∴ distance of given points is $\sqrt{32}$ units

Ans.

Question No. 16
'Or'

Solution:-

$$\Rightarrow \sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$$
$$\Rightarrow \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{2}$$

प्रश्न क्र.

$$\Rightarrow \frac{(\sqrt{3})^2}{2\times 2} + \frac{1\times 1}{2\times 2}$$

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

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

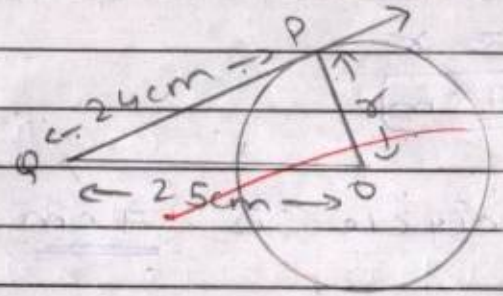
$$\Rightarrow \frac{4}{4}$$

$$\Rightarrow 1$$

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

Ans.

Question No. 17
'04'



प्रश्न क्र.

given:- C(O, r) a circle.
QP is a tangent = 24 cm
OQ = 25 cm.

to find:- OP = r.

Solution:- In △OPQ,
∠P = 90° (point of contact)
(by P(n T)

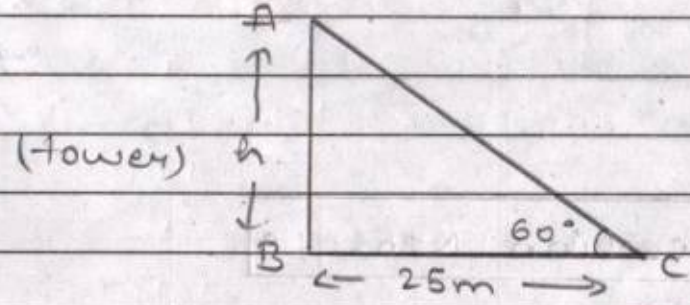
$(OQ)^2 = (OP)^2 + (PQ)^2$.
$(25)^2 = (r)^2 + (24)^2$.
$625 = (r)^2 + 576$
$625 - 576 = (r)^2$.
$49 = (r)^2$.
$\sqrt{49} = \sqrt{r^2}$
$\sqrt{7 \times 7} = \sqrt{r^2}$
$7 = r$
$\boxed{r = 7 \text{ cm}}$

∴ radius of circle is 7 cm Ans.

प्रश्न क्र.

Question No. 18

Solution:-



BC = 25 m (given)

∠ACB = 60° (given)

AB = h (let, (height of tower)

In △ABC,

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

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

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

$$25 \times 1.732 = h$$

$$43.300 = h$$

$$43.3 = h$$

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

प्रश्न क्र.

∴ required height of tower is $25\sqrt{3}$ m or 43.3 m

Ans.

Question No. 19

B Solution:-

S $\Rightarrow x^2 - 2x = (-2)(3-x)$ (given)

E $\Rightarrow x^2 - 2x = -6 + 2x$

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

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

The heighest power in the given equation is 2

∴ It is a quadratic equation.

Ans.

प्रश्न क्र.

Question No. 20.

Solution:-

Prime factors of 8, 9 and 25 are:-

2 | 8
2 | 4
2 | 2
1

3 | 9
3 | 3
1

5 | 25
5 | 5
1

$8 = 2 \times 2 \times 2 \times 1$

$9 = 3 \times 3 \times 1$

$25 = 5 \times 5 \times 1$

$LCM = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5$

$= 8 \times 9 \times 25$

$= 72 \times 25$

$= 1800$

$HCF = 1 \times 1 \times 1$

$= 1$

$\therefore$ LCM = 1800

HCF = 1

Ans.

प्रश्न क्र.

Question No. 21 'Or'

Solution:- To find mode of given data:-

Lifetime (in hours)	fi
0-20	10
20-40	35
40-60	52 (f_0)
60-80	61 (f_1)
80-100	38 (f_2)
100-120	29

highest frequency (f_1) = 61
before frequency (f_0) = 52
after frequency (f_2) = 38
lower limit (L_1) = 60
upper limit (L_2) = 80

$i = L_2 - L_1$

$i = 80 - 60$

$i = 20$

प्रश्न क्र.

We know that,

$$\text{Class mark} = \frac{\text{upper limit} + \text{lower limit}}{2}$$

$$i = \frac{l_2 + l_1}{2}$$

$$i = \frac{80 + 60}{2}$$

$$i = \frac{140}{2} + 70$$

$$\boxed{i = 70}$$

We know that,

$$\boxed{Mo = l_1 + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i}$$

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

$$Mo = 60 + \frac{9}{122 - 90} \times 20$$

$$Mo = 60 + \frac{9}{32} \times \frac{20}{5} + 0$$

$$Mo = 60 + \frac{9}{8}$$

प्रश्न क्र.

$$Mo = 60 + \frac{315}{16}$$

$$Mo = \frac{960 + 315}{16}$$

$$Mo = \frac{1275}{16}$$

$$Mo = 60 + \frac{45}{8}$$

$$Mo = 60 + 5.625$$

$$Mo = 65.625$$

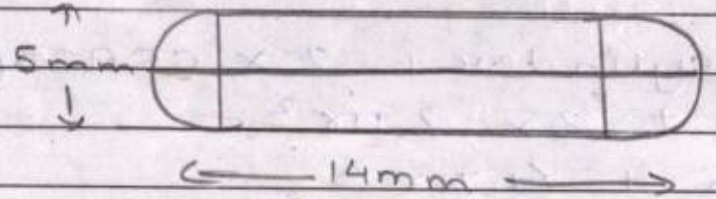
∴ Mode of given data is 65.625

Ans.

प्रश्न क्र.

Question No. 22

Solution :-



In a hemisphere,

$$d = 5mm$$

$$2r = 5mm$$

$$\boxed{r = \frac{5}{2} mm}$$

In a cylinder,

(h) = Total height - 2(r) of hemisphere (by figure)

$$(h) = 14 - \frac{5}{2} \times 2$$

$$(h) = \frac{28 - 5}{2}$$

$$(h) = \frac{23}{2}$$

$$[(h) = 11.5 mm]$$

$$[(r) = \frac{5}{2} mm]$$

$$(h) = 14 - \frac{5}{2} \times 2$$

$$(h) = 14 - 5$$

$$\boxed{h = 9mm}$$

प्रश्न क्र.

Total surface area of capsule

$\Rightarrow$ C.S.A. of cylinder + 2 x CSA of hemisphere

$\Rightarrow 2\pi rh + 2 \times 2\pi r^2$

$\Rightarrow 2\pi rh + 4\pi r^2$

$\Rightarrow 2\pi \times \frac{5}{2} \times 9 + 4\pi \times \left(\frac{5}{2}\right)^2$

$\Rightarrow 2\pi \times 2.5 \times 9 + 4\pi \times \frac{25}{4}$

$\Rightarrow 5.0\pi \times 9 + 25\pi$

$\Rightarrow 57.50\pi + 25\pi$

$\Rightarrow 82.5\pi$

$\Rightarrow 82.5 \times \frac{22}{7}$

$\Rightarrow 2\pi \times \frac{5}{2} \times 9 + 4\pi \times \left(\frac{5}{2}\right)^2$

$\Rightarrow 45\pi + 4\pi \times \frac{25}{4}$

$\Rightarrow 45\pi + 25\pi$

$\Rightarrow 70\pi$

$\Rightarrow \frac{70}{10} \times \frac{22}{7}$

BSE

प्रश्न क्र.

$\Rightarrow \quad 10 \times 22$

$\Rightarrow \quad 220 \text{ mm}^2$

∴ Required Surface area of capsule is 220 mm^2.

Ans.

Question No. 23

BSE

Solution:- Given eq^{n}s,

$$3x + 4y = 10 \quad -(1)$$

$$2x - 2y = 2 \quad -(2)$$

(1) and (2) solving by elimination method:-

$$\begin{bmatrix} 3x + 4y = 10 \\ 2x - 2y = 2 \end{bmatrix} \begin{matrix} \times 2 \\ \times 4 \end{matrix}$$

$$6x + 8y = 20$$

$$8x - 8y = 8$$

$$14x = 28 \quad \text{(by adding)}$$

$$x = \frac{28}{14} = 2.$$

$$\boxed{x = 2}$$

प्रश्न क्र.

$(x = 2)$ putting in (2)

$$2x - 2y = 2$$
$$2 \times 2 - 2y = 2$$
$$4 - 2y = 2$$
$$-2y = 2 - 4$$
$$-2y = -2$$
$$y = \frac{-2}{-2}$$
$$\boxed{y = 1}$$

∴ required values are

$x = 2$

$y = 1$

Ans