

2021-2022

Public exam Answerkey for X std

Sub: maths

std: X

part II

Part-I

- 1) d) (3, -2)
- 2) b) 2
- 3) d) 7nd
- 4) b) 5
- 5) b) $16x^2$
- 6) b) 1
- 7) d) $5\sqrt{2}$ cm
- 8) b) 4 cm
- 9) c) 9
- 10) b) 1
- 11) b) 43.92 m
- 12) a) $4\pi \times 2$ sq. units
- 13) c) 4
- 14) b) 1

part-II

- 15) $A \times B = \{(4, 2), (4, 3), (4, 5), (1, 2), (2, 2), (2, 3), (2, 5), (2, 7), (3, 2), (3, 3), (3, 5), (3, 7)\}$
 $B \times A = \{(2, 1), (2, 2), (2, 3), (3, 1), (3, 2), (3, 3), (5, 1), (5, 2), (5, 3), (7, 1), (7, 2), (7, 3)\}$

16) i) Set builder form

$$\{(x, y) / y = x - 2, x \in P, y \in Q\}$$

ii) Roster form $R = \{(5, 3), (6, 4), (7, 5)\}$

$$17) \quad 2^a \times 3^b = 13824$$

$$2^9 \times 3^3 = 13824, \quad \boxed{a=9, b=3}$$

$$18) \quad a = 16, d = -5, n = \frac{l-a}{d} + 1$$

$$n = 15, 15^{\text{th}} \text{ term}$$

$$19) \quad 8p^2 + 13p + 5 = 0$$

$$(p+1)(8p+5) = 0$$

$$\Rightarrow p = -1, p = -5/8$$

Excluded values are -1, and $-5/8$

20) By ABT,

$$\frac{AB}{AC} = \frac{BD}{DC}$$

$$\frac{6}{AC} = \frac{4}{3} \Rightarrow AC = 4.5 \text{ cm}$$

$$21) \quad \text{slope of } PQ = \frac{-5}{7.5} = -\frac{2}{3}$$

$$\text{slope of } QR = \frac{6}{-9} = -\frac{2}{3}$$

The points are collinear

பக்க
சுருக்கம்
பக்கப்படி
பக்கப்படி
Total
Marks

22)

$$\text{slope of } p = \frac{6}{9} = \frac{2}{3}$$

$$\text{slope of } q = \frac{4}{6} = \frac{2}{3}$$

Yes, p parallel to q .

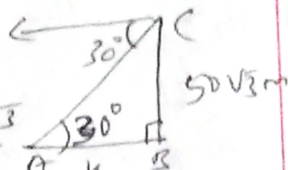
23)

$$y - 2 = -\frac{5}{4}(x+1)$$

$$4y - 8 = -5x - 5$$

$$5x + 4y - 3 = 0$$

24)



$$\tan 30^\circ = \frac{50\sqrt{3}}{x}$$

$x = 150 \text{ m}$ is the distance

25)

$$r_1 = 12 \text{ cm}, r_2 = 16 \text{ cm}$$

$$4\pi r_1^2 : 4\pi r_2^2 = x_1^2 : x_2^2$$

$$= (12 \times 12) : (16 \times 16)$$

$$= 9 : 16$$

26)

$$r_1 = r_2$$

$$\frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi r_2^2 h_2} = \frac{3600}{5040}$$

$$\frac{h_1}{h_2} = \frac{5}{7} \Rightarrow h_1 : h_2 = 5 : 7$$

27)

$$n(S) = 4, A = \{HT, TH\}, n(A) = 2$$

$$P(A) = \frac{1}{2}$$

28)

$$p^2 - q^2 = \frac{x^2}{(x+y)^2} - \frac{y^2}{(x+y)^2}$$

$$= \frac{x^2 - y^2}{(x+y)^2}$$

$$\frac{1}{p^2 - q^2} = \frac{(x+y)^2}{(x+y)(x-y)} = \frac{(x+y)}{(x-y)}$$

part-III

Page No.



Class
Student's
Marks

$$29) A = \{1, 2, 3, 4, 5, 6, 7\}, B = \{2, 3, 5, 7\},$$

$$C = \{2\}$$

$$B - C = \{3, 5, 7\}$$

$$A \times (B - C) = \{(1, 3), (1, 5), (1, 7), (2, 3), (2, 5), (2, 7), (3, 3), (3, 5), (3, 7), (4, 3), (4, 5), (4, 7), (5, 3), (5, 5), (5, 7), (6, 3), (6, 5), (6, 7), (7, 3), (7, 5), (7, 7)\} \quad \text{--- (i)}$$

$$A \times B = \{(1, 2), \dots, (7, 7)\}$$

$$A \times C = \{(1, 2), (2, 2), (3, 2), (4, 2), (5, 2), (6, 2), (7, 2)\}$$

$$A \times (B - C) = (A \times B) - (A \times C)$$

$$30) \quad n = a + (l-1)d, \quad y = a + (m-1)d, \\ z = a + (n-1)d$$

$$\begin{aligned} (i) \quad & x(m-n) + y(n-l) + z(l-m) \\ &= (a + (l-1)d)(m-n) + (a + (m-1)d)(n-l) \\ &\quad + (a + (n-1)d)(l-m) \\ &= 0 \end{aligned}$$

$$(ii) \quad (x-y)n + (y-z)l + (z-n)m$$

$$= [(a + (l-1)d) - (a + (m-1)d)]n + [(a + (m-1)d) - (a + (n-1)d)]l$$

$$+ [(a + (n-1)d) - (a + (l-1)d)]m$$

$$= 0$$

Use
formulae
6007/5/10
Pagewise
Total
Marks

34)
பெண்.
Qn. No.

Given that

$$\frac{a+5d}{a+7d} = \frac{7}{9}$$

$$[a = 2d]$$

$$\frac{t_9}{t_{13}} = \frac{a+8d}{a+12d} = \frac{5}{7}$$

$$t_9 : t_{13} = 5 : 7$$

32)

$6x^2$	$6x^2 - 5x + 3$
$36x^2$	$36x^4 - 60x^3 + 61x^2 - mx + n$
$12x^2 - 5x$	$-60x^3 + 61x^2$ $-60x^3 + 25x^2$ (+), (-)
$12x^2 - 60x + 3$	$36x^2 - mx + n$ $36x^2 - 30x + 9$ 0

$$m = 30, n = 9$$

33)

$$a = p^2, b = -(p+q)^2, c = (p+q)^2$$

$$x = \frac{(p+q)^2 \pm \sqrt{(p+q)^4 - 4p^2(p+q)^2}}{2p^2}$$

$$x = \frac{p+q}{2}, x = \frac{p+q}{p}$$

34)

$$\alpha + \beta = -\frac{9}{7}, \alpha\beta = \frac{2}{7}$$

$$\beta - \alpha = -\frac{13}{7} \Rightarrow \alpha - \beta = \frac{13}{7}$$

$$\sqrt{(\alpha + \beta)^2 - 4\alpha\beta} = \frac{13}{7}$$

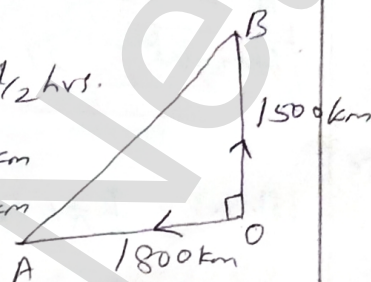
$$\left(-\frac{9}{7}\right)^2 - 4\left(\frac{2}{7}\right) = \frac{169}{49}$$

$$\frac{a^2}{49} - \frac{8}{7} - \frac{169}{49} = 0$$

$$[a = -15, 15]$$

35) state and prove Thales theorem

36)

After $1\frac{1}{2}$ hrs.A $\rightarrow$ 1800 kmB $\rightarrow$ 1500 km

$$\text{In } \triangle AOB, AB^2 = OA^2 + OB^2$$

$$= 1800^2 + 1500^2$$

$$= (300)^2 (6^2 + 5^2)$$

$$= 300^2 (\sqrt{61})^2$$

$$AB = 300 \sqrt{61} \text{ km}$$

37)

Mid point

$$AB = P\left(\frac{1}{2}, -\frac{3}{2}\right) A(-4, -2) B(5, -1)$$

$$BC = Q\left(\frac{1}{2}, 2\right)$$

$$CD = R\left(-\frac{1}{2}, \frac{1}{2}\right)$$

$$AD = S\left(-\frac{1}{2}, 2\right)$$

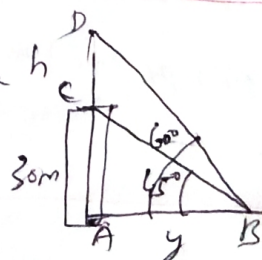
$$\text{Slope of } PA = SR = \frac{7}{10}$$

$$\text{Slope of } PS = AR = -\frac{7}{12}$$

PQRS is form a parallelogram

38)

CD = h m be the height of the tower



பக்கம்
பக்கப்பக்கம்
Pagewise
Total
Marks

சென்னை
பரீட்சை
கா.நா.

In $\triangle ABC$, $\tan 45^\circ = \frac{AC}{AB}$

$y = 30$

In $\triangle ABD$, $\tan 60^\circ = \frac{AD}{AB}$

$\sqrt{3} = \frac{30+h}{30}$

$h = 30(0.732)$

Height = 21.96 m

39)

$$\begin{aligned} \text{Volume} &= \frac{1}{3} \pi h (R^2 + Rr + r^2) \text{ cm} \\ &= \frac{1}{3} \left(\frac{22}{7} \right) \times 16 (20^2 + 20(8) + 8^2) \\ &= 10459.428 \text{ cm} \\ &= 10.459 \text{ l} \times 40 \\ &= ₹ 418.36 \end{aligned}$$

40)

Volume of the

model = $\pi r^2 h_1$

+ $2 \left(\frac{1}{3} \pi r^2 h_2 \right)$

= $\pi r^2 \left(h_1 + \frac{2h_2}{3} \right)$

= $\frac{22}{7} \times \left(\frac{3}{2} \right)^2 \left(8 + \frac{4}{3} \right)$

= 66 cm^3



41)

$P(A) = \frac{28}{50}$, $P(B) = \frac{30}{50}$, $P(A \cap B) = \frac{18}{50}$

(i) $P(A \cap \bar{B}) = \frac{1}{5}$

(ii) $P(\bar{A} \cap B) = \frac{6}{25}$

(iii) $P(A \cap \bar{B}) + P(\bar{A} \cap B) = \frac{1}{5} + \frac{6}{25}$
 $= \frac{11}{25}$

42) eqn.

$\frac{x}{a} + \frac{y}{b} = 1$

Page
No.



$a = b + 5$

$\frac{x}{b+5} + \frac{y}{b} = 1$ (2), $x = 22$, $y = 22$

$\frac{22}{b+5} - \frac{b}{b} = 1$

$22b - 6b - 30 = b^2 + 5b$

$b^2 - 11b + 30 = 0$

$b = 5$ (or) $b = 6$

(2) $\Rightarrow$ Sub. $b = 5$ in (2)

$\frac{x}{10} + \frac{y}{5} = 1 \Rightarrow 5x + 10y - 50 = 0$

$x + 2y - 10 = 0$

put $b = 6$ in (2)

(2) $\Rightarrow \frac{x}{n} + \frac{y}{6} = 1$

$6x + 11y - 66 = 0$

பக்க
வாரியான
மொத்தம்
Marks

பக்க
வாரியான
மொத்தம்
Pagewise
Total
Marks