Kerala Board

Answer Key

2024

aglasem.com

ANSWER KEY

1/6

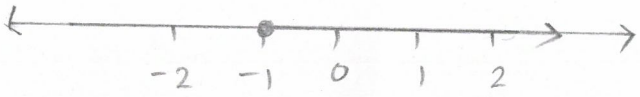
FIRST YEAR HIGHER SECONDARY EXAMINATION ..... MARCH 2024

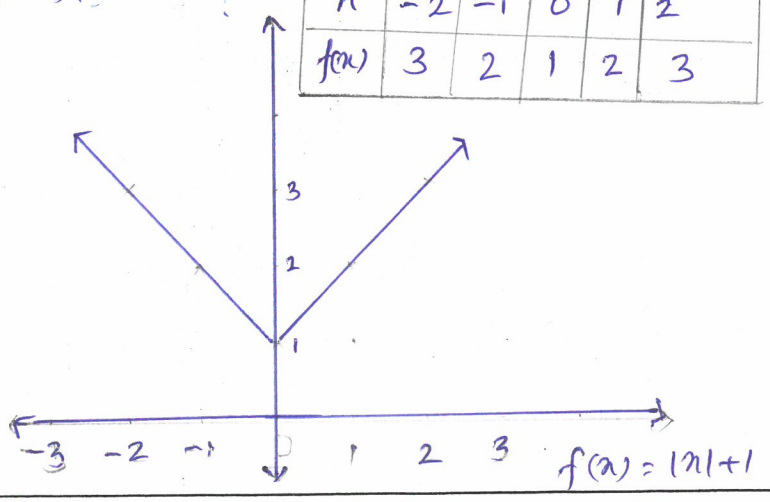
PART-~~II~~/III

SUBJECT: Mathematics (Commerce)

CODE NO: **FY 451** VERSION: B

60 SCORES 2 HOURS

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
1.	(i)	ϕ	1	
	(ii)	$A \cup B = \{2, 3, 4, 5, 6, 7, 8\}$ $A \cap B = \{2\}$	2	3
2.	(i)	No. 2 has two images	2	
	(ii)	$\{k\}$	1	3
3.		$4x - 2 \leq 9x + 3$ $-5 \leq 5x$ $x \geq -1$ 	1 ½ ½ 1	3
4		Total number of words = 4! 2! = 48	2 1	3
5		$-2h = -4$ $-2k = 4$ $h = 2$ $k = -2$ Centre = $(2, -2)$ $r = \sqrt{4+4-7}$ $= 1$ $r = 1$	1 1 1	3
6.	(i)	4	1	
	(ii)	$\lim_{x \to 1} \left(\frac{x^{100} - 1}{x - 1}\right) \Big/ \left(\frac{x^{50} - 1}{x - 1}\right) = \frac{100 x^{99}}{50 x^{49}} = 2$	1+1+½ ½	3

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
7.	(i)	$\sec^2 x$	1	
	(ii)	$\frac{d}{dx}(\sin x \cdot \cos x) = \sin x \cdot -\sin x + \cos x \cos x$	1	
		$= \cos^2 x - \sin^2 x$	1	
		$= \cos 2x$		3
8		$MD(a) = \sum_{i=1}^{n} \frac{\lvert x_i - a \rvert}{n}$	1	
		$a = 11, \ n = 8$		
		$MD_{(11)} = \frac{32}{8}$	1	
		$= 4$		
		x_i | $\lvert x_i - 11 \rvert$: 4 | 7; 7 | 4; 8 | 3; 9 | 2; 11 | 0; 13 | 2; 17 | 6; 19 | 8; 32	1	3
9.	(i)	$A' = \{3, 4, 6, 8, 10\}$		
		$B' = \{2, 4, 5, 6, 9, 10\}$	1	
	(ii)	$A - B = \{2, 5, 9\}$	1	
	(iii)	$(A \cap B)' = \{1, 7\}'$		
		$= \{2, 3, 4, 5, 6, 8, 9, 10\} = A' \cup B'$	2	4
10.	(i)	x | -2 | -1 | 0 | 1 | 2; $f(x)$ | 3 | 2 | 1 | 2 | 3		
			2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
	(ii)	Domain = $\mathbb{R}$, the set of real numbers Range = $[1, \infty)$	2	4
11.	(i)	1.	1	
	(ii) (a)	$\frac{1}{\sqrt{2}}$	1	
	(iii)	LHS $= \frac{\sin 8x - \sin 6x}{\cos 8x + \cos 6x} = \frac{2\cos\frac{8x+6x}{2}\sin\frac{8x-6x}{2}}{2\cos\frac{8x+6x}{2}\cdot\sin\frac{8x-6x}{2}}$ $= \frac{\sin x}{\cos x} = \tan x = RHS$	2	4
12.	(i)	$z = 2 - 2i$ $\bar{z} = 2 + 2i$	1 1	
	(ii)	$\frac{1}{z} = \frac{\bar{z}}{\lvert z\rvert^2} = \frac{2+2i}{8}$ $= \frac{1}{4} + \frac{1}{4}i$	2	4
13.	(i)	(b) 1.	1	
	(ii)	3 students can be selected from 5 students in $^5C_3$ ways $^5C_3 = \frac{5!}{3!\,2!} = \frac{4\cdot 5}{2} = 10$ No of committees can be formed with 1 boy and 2 girls $\} = {}^2C_1 \times {}^3C_2$ $= 2 \cdot 3 = 6$	1 2	4
14.	(i)	$n+1$	1	
	(ii)	n	1	
	(iii)	$\left(\frac{2}{x} + \frac{x}{2}\right)^4 = \left(\frac{2}{x}\right)^4 + 4\left(\frac{2}{x}\right)^3\left(\frac{x}{2}\right) + 6\left(\frac{2}{x}\right)^2\left(\frac{x}{2}\right)^2 + 4\left(\frac{2}{x}\right)\left(\frac{x}{2}\right)^3 + \left(\frac{x}{2}\right)^4$ $= \frac{16}{x^4} + \frac{16}{x^2} + 6 + x^2 + \frac{x^4}{16}$	1 1	4

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
15.		Foci $= (\pm\sqrt{5}, 0)$	1	
		vertices $= (\pm 3, 0)$	1	
		Length of latus rectum $= \frac{8}{3}$ unit.	1	
		Length of mayor axis $= 6$ units	1	4
16	(i)	(C) $(1, -1, 0)$	1	
	(ii)(a)	$PQ = \sqrt{(1+2)^2+(2-3)^2+(3-5)^2} = \sqrt{14}$	1	
		$QP = \sqrt{14}$		
		$PR = \sqrt{(7+2)^2+(0-3)^2+(-1-5)^2} = \sqrt{126} =$	1	
	(b)	For any answer, give 1 score	1	4
17.	(i)	$a_6 = \frac{21}{4}$	1	
	(ii)	$a_{10} = ar^9 = 1 \times (3)^9$	1	
	(iii)	$S_n = 6 + 66 + 666 + \ldots$ to n terms		
		$= \frac{6}{9}[9 + 99 + 999 + \ldots$ to n terms$]$	1	
		$= \frac{6}{9}[(10-1) + (100-1) + (1000-1) + \ldots$ to n terms$)$	1	
		$= \frac{6}{9}[(10 + 10^2 + 10^3 + \ldots + n \text{ terms}) - n]$	1	
		$= \frac{6}{9}\left[\frac{10(10^n-1)}{10-1} - n\right]$	1	
		$= \frac{6}{9}\left[\frac{10(10^n-1)}{9} - n\right]$		6

5/6

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
18.	(i)	(d) $y = 0$	1	
	(ii)	Let slope of $l_1 = m_1$ & that of $l_2 = m_2$		
		Then $m_1 = \frac{8-6}{4-(-2)} = \frac{2}{6} = \frac{1}{3}$	1	
		$m_2 = \frac{24-12}{x-8} = \frac{12}{x-8}$	½	
		$\therefore \quad m_1 \cdot m_2 = -1$		
		$\Rightarrow \frac{1}{3} \frac{12}{x-8} = -1$	1	
		$\Rightarrow \quad x = 4$	½	
	(iii)	$d = \frac{\lvert Ax_1 + By_1 + C \rvert}{\sqrt{A^2+B^2}}$	1	
		$= \frac{\lvert 3\times 3 - 4\times -3 - 26 \rvert}{\sqrt{3^2 + (-4)^2}}$	½	
		$= \frac{\lvert 9+12-26 \rvert}{\sqrt{25}} = 1$ unit.	½	6
19				

Class	f_i	x_i	$f_i x_i$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
0–10	3	5	15	484	1452
10–20	9	15	135	144	1296
20–30	18	25	450	4	72
30–40	15	35	525	64	960
40–50	5	45	225	324	1620
	50		1350		5400

Mean $\bar{x} = \frac{\Sigma f_i x_i}{N}$

$= \frac{1350}{50} = 27$ 2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
		Variance, $\sigma^2 = \frac{1}{N}\sum_{i=1}^{n} f_i (x_i - \bar{x})^2$		
		$= \frac{1}{50} \times 5400 = 108$	3	
		S.D $\sigma = \sqrt{108} = 10.39$	1	6
20.	(i)	(a) $P(E \text{ or } F) = P(E) + P(F) - P(E \cap F)$	1	
		$= \frac{2}{7} + \frac{3}{7} - \frac{1}{7} = \frac{4}{7}$	1	
		(b) $P(\text{not } E \text{ and not } F) = P(E' \cap F')$	1/2	
		$= P[(E \cup F)']$	1/2	
		$= 1 - P(E \cup F)$	1/2	
		$= 1 - \frac{4}{7} = \frac{3}{7}$	1/2	
	(ii)	$P(3 \text{ men}) = \frac{{}^3C_3}{{}^6C_3}$	2	
		$= \frac{1}{20}$		6

1. J. John Victor 9446171748
2. Hareesh.S 9447451517

QUESTION PAPERS

GET PREVIOUS YEAR QUESTION PAPERS FOR ALL CLASSES FOR CBSE, ISCSE, ISC AND ALL ALL STATE BOARDS HERE AT AGLASEM.COM

BOARD WISE

- Andhra Pradesh Board Question Papers
- Assam Board Question Papers
- Bihar Board Question Papers
- Chhattisgarh Board Question Papers
- Goa Board Question Papers
- Gujarat Board Question Papers
- Haryana Board Question Papers
- Himachal Pradesh Board Question Papers
- J&K State Board Question Papers
- Jharkhand Board Question Papers
- Karnataka Board Question Papers
- Kerala Board Question Papers
- Madhya Pradesh Board Question Papers
- Maharashtra State Board Question Papers
- Manipur Board Question Papers
- Meghalaya Board Question Papers
- Mizoram Board Question Papers
- Nagaland Board Question Papers
- Orissa Board Question Papers
- Punjab Board Question Papers
- Rajasthan Board Question Papers
- Tamil Nadu Board Question Papers
- Telangana State Board Question Papers
- Tripura Board Question Papers
- Uttarakhand Board Question Papers
- Uttar Pradesh (UP) Board Question Papers
- West Bengal (WB) Board Question Papers