FIRST TERM EVALUATION 2023 - 2024

A | **MATHEMATICS EM – ANSWER KEY** | **E 1003**

Qn no.	Key	Score	
	Each questions from 1 to 4 carries 2 scores. (Answer any 3)		
1	a) 3 , 6 , 9 , . . . or any correct answer b) 30 or any correct answer	1 1	2
2	$9^2 = 81$ Length of a side $= 9 - 2 = 7\ m$	1 1	2
3	a) 9 b) $\frac{3}{9} = \frac{1}{3}$	1 1	2
4	If O is taken as the centre of the circle , (Not given in the question) a) 60^0 b) $\frac{60^0}{2} = 30^0$	 1 1	2
	Each questions from 5 to 10 carries 3 scores. (Answer any 4)		
5	a) 19 b) $103 = 4 + 99 = 4 + 33 \times 3 = 4 + 33d$ 103 is a term of this sequence .	1 1 1	3
6	a) $x(x+8) = 384$ b) $x^2 + 8x + 4^2 = 384 + 4^2$ $(x+4)^2 = 400$ ==> $x+4 = \sqrt{400}$ ==> $x = 20 - 4 = 16$ Numbers = 16 , 24	1 1 1	3
7	a) $\frac{4}{10} = \frac{2}{5}$ b) $\frac{3}{10}$ c) $\frac{6}{11}$	1 1 1	3

8	Draw a circle of radius 4 cm . Take the angles 120^0 , 160^0 at the centre of the circle . Draw the triangle .	1 1 1	3
9	a) $\frac{30 \times 31}{2} = 465$ b) $2 \times 465 = 930$ c) $930 + 30 \times 3 = 1020$	1 1 1	3
10	a) 6 *cm* b) $PA \times PB$ or $16 \times 6 = 96$ c) $PC = \frac{96}{8} = 12$ *cm*	1 1 1	3
	Each questions from 11 to 21 carries 4 scores. (Answer any 8)		
11	a) $\frac{2}{3}$ b) $\frac{1}{3} = \frac{9}{27}$ Number of green beads = 9 c) $\frac{9}{32}$	1 1 1 1	4
12	a) $x_7 = \frac{21 + 37}{2} = 29$ b) 58 c) $13 \times 29 = 377$	2 1 1	4
13	a) 40^0 b) 100^0 c) 50^0 d) 130^0	1 1 1 1	4
14	a) $\frac{24}{2} = 12$ b) $12 - x$ c) $x(12 - x) = 35$	1 1 1	

	$12x - x^2 = 35$ ==> $x^2 - 12x = -35$ ==> $x^2 - 12x + 6^2 = -35 + 6^2$ $(x - 6)^2 = 1$ ==> $x - 6 = \sqrt{1}$ ==> $x = 1 + 6 = 7$ **Length = 7 cm , breadth = 5 cm .**	1	4
15	**a)** $\sqrt{PA \times PB} = \sqrt{15}\ cm$ **b) For drawing the semicircle / circle .** **For drawing the side of the equilateral triangle perpendicular to the diameter .** **For Completing the equilateral triangle .**	1 1 1 1	4
16	**a)** 2 , 7 , 12 , . . . **b)** 25 $(122 = 2 + 120 = 2 + 24 \times 5)$ **c)** $\frac{25}{2}(2 + 122) = 1550$	1 2 1	4
17	**a)** 12 *cm* **b)** $13 - x$ **c)** $(13 - x)x = 12 \times 3$ $PB = 9\ cm$ **Or** $PB = 4\ cm$	1 1 1 1	4
18	**a)** $x^2 + 4x = 221$ **b)** $x^2 + 4x + 2^2 = 221 + 2^2$ $(x + 2)^2 = 225$ $x + 2 = \sqrt{225}$ ==> $x = 15 - 2 = 13$ **c)** $13 \times 13 = 169\ sq.cm$	1 1 1 1	4
19	**a)** 240 **b)** $\frac{15}{2}(100 + 240) = 2550$	2 2	4
20	**a)** 105^0 **b)** 110^0	1 1	

	c) 75^0	1	4
	d) 105^0	1	
21	a) $x_8 = 39$	1	
	Sum $= 15 \times 39 = 585$	1	4
	b) $3 \times 15 = 45$	2	
	Each questions from 22 to 29 carries 5 scores. (Answer any 6)		
22	a) $60 \times 50 = 3000$	1	
	b) $\frac{30 \times 20 + 30 \times 30}{3000} = \frac{1500}{3000} = \frac{1}{2}$	1	
	c) $\frac{30 \times 30}{3000} = \frac{900}{3000} = \frac{3}{10}$	1	5
	d) $1 - \frac{900}{3000} = \frac{2100}{3000}$ or $1 - \frac{3}{10} = \frac{7}{10}$	2	
23	For drawing the rectangle .	1	
	Foe extending the length by breadth .	1	
	For drawing the semicircle / circle .	1	5
	For drawing the side of the square perpendicular to the diameter .	1	
	For Completing the square .	1	
24	a) $4n + 3$	1	
	b) 3	4	
	c) question is incorrect		5
25	a) $\sqrt{13^2 - 5^2} = 12\ cm$	1	
	b) $\sqrt{15^2 - 12^2} = 9\ cm$	1	
	c) $PA \times 9 = 12^2$	1	
	$PA = 16\ cm$	1	5
	$AB = 16 + 9 = 25\ cm$	1	

26	a) 8 b) 248 c) $n - 1 = \frac{248 - 8}{4} = 60$ $n = 61$ d) $\frac{61}{2}(8 + 248) = 7808$	1 1 1 1 1	5
27	a) 50^0 b) 65^0 c) 35^0 d) 30^0 e) 80^0	1 1 1 1 1	5
28	a) $x_1 = 5$ b) $x_1 + x_2 = 2 \times 2^2 + 3 \times 2 = 14$ $d = 4$ c) $4n + 1$ d) $2 \times 25^2 + 3 \times 25 = 1325$ or $25 \times x_{13} = 25 \times 53 = 1325$	1 1 1 1 1	5
29	{ The idea $2^0 = 1$ has not been formed and discussed yet }	-----	------