FIRST TERM EVALUATION 2022 - 2023

A

MATHEMATICS – ANSWER KEY

E 1003

Qn no.	Key	Score	
Each questions from 1 to 4 carries 2 scores.			
1	a) 100 b) 50	1 1	2
2	a) 80^0 b) 140^0	1 1	2
3	a) $\frac{3}{9} = \frac{1}{3}$ b) $\frac{3}{9} = \frac{1}{3}$	1 1	2
4	a) $x^2 + x = 2$ b) 1 or -2	1 1	2
Each questions from 5 to 10 carries 3 scores.			
5	a) 90^0 b) $360^0 - 200^0 = 160^0$ c) E is a point on the circle . $(\angle B + \angle E = 180^0)$	1 1 1	3
6	a) $\frac{1}{2}$ b) No . The difference between two consecutive terms are not the same . $(\frac{1}{3} - \frac{1}{2} = \frac{-1}{6})$	1 1 1	3
7	a) $\frac{40}{2} = 20\ sq.cm$ b) $\frac{20}{40} = \frac{1}{2}$ c) $\frac{10}{40} = \frac{1}{4}$	1 1 1	3

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8	a) $x^2 - 2xy + y^2 = (x - y)^2$ b) $x^2 - 12x = 13$ Number $= 13$ or -1	1 1 1	3
9	Draw a circle of radius 4 cm . Take the angles 60^0 , 150^0 at the centre of the circle . Draw the triangle .	1 1 1	3
10	a) $3\sqrt{3}$ b) $1 + 3\sqrt{3}$ c) $\sqrt{3}$	1 1 1	3
Each questions from 11 to 21 carries 4 scores.			
11	a) For drawing the rectangle . b) For drawing the semicircle / circle . For drawing the side of the square perpendicular to the diameter . For Completing the square .	1 1 1 1	4
12	a) $r^2 = 3^2 + 4^2$ $r = \sqrt{25} = 5\ cm$ b) $x^2 + (2x)^2 = 125$ $OC = 5\ cm$	1 1 1 1	4
13	a) -1 b) 1 c) 16 th term = 0 Sum of the first 31 terms $= 31 \times 0 = 0$	1 1 1 1	4
14	a) $\frac{8}{12} = \frac{2}{3}$ b) Probability of getting a red bead from the first bag $= \frac{4}{12} = \frac{1}{3}$ Probability of getting a red bead from the second bag $= \frac{5}{14}$	1 1 1	4

	Probability of getting a red bead from the second bag is more .		
	$\left(\frac{1}{3} = \frac{14}{42} \;,\; \frac{5}{14} = \frac{15}{42} \right)$	**1**	
15	a) $\angle B = 70^0$	**1**	**4**
	$\angle D = 110^0$	**1**	
	b) $\angle B + \angle D = 70^0 + 110 = 180^0$	**1**	
	Since the opposite angles are supplementary , ABCD is cyclic .	**1**	
16	a) $0.333\ldots$	**1**	**4**
	b) $n + 0.333\ldots$	**1**	
	c) **Sum of the first 21 terms** $= 21 \times x_{11}$	**1**	
	$= 21 \times (11 + 0.333\ldots)$		
	$= 21 \times \left(11 + \frac{1}{3}\right) = 238$	**1**	
17	a) $4 \times 3 = 12$	**1**	**4**
	b) $\frac{2}{12} = \frac{1}{6}$	**1**	
	c) $\frac{3 \times 2 + 1 \times 1}{12} = \frac{7}{12}$	**1**	
	d) $\frac{1}{6} + \frac{7}{12} = \frac{9}{12} = \frac{3}{4}$	**1**	
18	a) 400	**1**	**4**
	b) 420	**1**	
	c) $400 + 420 = 820$	**1**	
	d) $\frac{820}{40} = \frac{41}{2}$	**1**	
19	$\angle PQR = 30^0$	**1**	**4**
	$\angle A = 60^0$	**1**	
	$\angle R = 90^0$	**1**	
	$\angle B = 120^0$	**1**	

20	a) 2 b) 105 , 112 , 119 ,... c) 14	1 1 2	4
21	a) $\angle ABC = 100^0$ b) $\angle ADC = 80^0$ $\angle DAB = 85^0$ $\angle DCB = 95^0$	1 1 1 1	4
Each questions from 22 to 29 carries 5 scores.			
22	a) 4 b) Yes . The terms of this sequence are got by adding 1 to the multiples of 3 . $(3 \times 5 + 1)$ c) $(3n + 1)^2 = 9n^2 + 6n + 1$ $9n^2 + 6n + 1$ is also got by adding 1 to a multiple of 3 .	1 1 1 1 1	5
23	a) $\angle P = 30^0$ $\angle PBD = 80^0$ b) $\angle PDB = 75^0$ $\angle A = 75^0$ c) 2 cm $(PA \times PB = PC \times PD)$	1 1 1 1 1	5
24	a) 90 b) 22 , 23 , 25 , 27 , 32 , 33 , 35 , 37 , 52 , 53 , 55 , 57 , 72 , 73 , 75 , 77 Probability = $\frac{16}{90}$ c) 12 , 13 , 15 , 17 , 21 , 31 , 51 , 71 Probability = $\frac{8}{90}$	1 1 1 1 1	5

25	a) $2\ cm$	1	
	b) $PA \times PB = 6 \times 2 = 12$	1	
	$PC \times PD = 12$	1	5
	$PC = 4\ cm$, $PD = 3\ cm$	1	
	$CD = 7\ cm$	1	
26	a) 8	1	
	b) 14	1	
	c) $4 \times 25^2 + 2 \times 25 = 2550$	1	5
	d) No .	1	
	Each term of this sequence is even and the sum of even numbers never be an odd number .	1	
27	a) $\frac{360^0}{6} = 60^0$	1	
	b) 30^0	1	
	c) Triangle formed by joining the vertices B and C to the centre of the circle is an equilateral triangle .	2	5
	Radius of the circumcircle of the triangle ABC = 4 cm	1	
28	a) 22 24 26 28 30	1	
	b) Last number in the 9th line = $2 \times \frac{9 \times 10}{2} = 90$	1	
	First number in the 10th line = 92	1	
	c) Last number in the 10th line = $2 \times \frac{10 \times 11}{2}$		5
	$= 110$	1	
	Sum of all numbers in the first 10 lines		
	$= 2 + 4 + 6 + \dots + 110$		
	$= 2(1 + 2 + 3 + \dots + 55)$		
	$= 2 \times \frac{55 \times 56}{2} = 3080$	1	

29	1. 5 2. 7 3. 1 4. 5 , -5	1 1 1 2	5