SSLC MODEL EXAMINATION , FEBRUARY - 2024

MATHEMATICS – ANSWER KEY

ME 331

Qn no.	Key	Score	
	Each questions from 1 to 4 carries 2 scores.		
1	a) 10 b) 91	1 1	2
2	a) 70^0 b) 140^0	1 1	2
3	$\frac{32 + x}{2} = 34$ $x = 36$	1 1	2
4	Shaded portion is $\frac{4}{8}$ of the area of the larger square. Probability $= \frac{4}{8} = \frac{1}{2}$	1 1	2
	Each questions from 5 to 10 carries 3 scores.		
5	a) $3 - 2 = 1$ b) $x_{50} = 3 \times 50 - 2 = 148$ Sum $= \frac{50}{2}(1 + 148) = 3725$ **OR** Sum $= 3 \times \frac{50 \times 51}{2} - 2 \times 50 = 3725$	1 1 1 2	3
6	For drawing a circle of radius 3 cm For marking the angles 110^0 and 125^0 at the centre of the circle. For drawing the triangle .	1 1 1	3
7	a) $x(x + 12) = 864$ ==> $x^2 + 12x = 864$ b) $x^2 + 12x + 6^2 = 864 + 6^2$ $(x + 6)^2 = 30^2$ Length of the sides $= 24\,cm.$, $36\,cm$	1 1 1	3
8	a) $3\sqrt{3}\ cm$ b) $10 \times 3\sqrt{3} = 30\sqrt{3}\ sq.cm$	1 2	3

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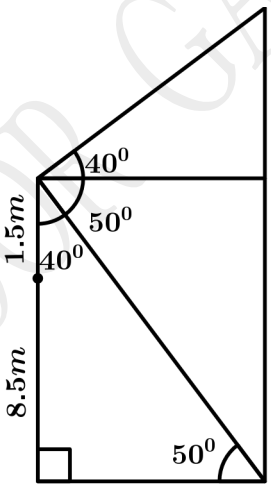
9	a) 10 b) $5\sqrt{3}$ c) $(5\ ,\ 5\sqrt{3})$	1 1 1	3
10	a) $\sqrt{4^2 + 3^2} = 5$ b) $0^2 + y^2 = 5^2$ $(0\ ,\ 5)\ ,\ (0\ ,\ -5)$	1 1 1	3
	Each questions from 11 to 21 carries 4 scores.		
11	a) $\frac{124 - 16}{21 - 3} = 6$ b) $16 - 2 \times 6 = 4$ c) $n - 1 = \frac{Term\ difference}{Common\ difference} = \frac{280 - 4}{6}$ $n = 46 + 1 = 47$	1 1 1 1	4
12	a) $10 \times 20 = 200$ b) $\frac{10}{200} = \frac{1}{20}$ c) $\frac{(5 \times 10) + (5 \times 10)}{200} = \frac{100}{200} = \frac{1}{2}$	1 1 2	4
13	a) If the smaller number is x , then the larger number = $x + 7$ b) $x(x + 7) + 10 = 304$ ==> $x^2 + 7x - 294 = 0$ $x = \frac{-7 \pm \sqrt{7^2 - 4 \times 1 \times (-294)}}{2 \times 1} = \frac{-7 \pm 35}{2}$ Numbers = 14 , 21 **OR** a) If the larger number is x ,then the smaller number = $x - 7$ b) $x(x - 7) + 10 = 304$ ==> $x^2 - 7x - 294 = 0$ $x = \frac{7 \pm \sqrt{7^2 - 4 \times 1 \times (-294)}}{2 \times 1} = \frac{7 \pm 35}{2}$ Numbers = 21 , 14	1 1 1 1	4
14	a) 6 m b) 3 m	2 2	4

15	a) $\sqrt{(5-(-1))^2+(10-2)^2}=10$ b) $(-1+6\ ,\ 2+8)=(5\ ,\ 10)\ ,\ (5+6\ ,\ 10+8)=(11\ ,\ 18)$ **OR** b) $\frac{10-2}{5-(-1)}=\frac{8}{6}=\frac{4}{3}\ ,\ \frac{18-10}{11-5}=\frac{8}{6}=\frac{4}{3}$ **OR** b) $d_1=\sqrt{(5-(-1))^2+(10-2)^2}=10$ $d_2=\sqrt{(11-5)^2+(18-10)^2}=10$ $d_3=\sqrt{(11-(-1))^2+(18-2)^2}=20$ $d_3=d_1+d_2$	2 2	4
16	For drawing a circle of radius 3cm For marking a point , 7.5 cm away from the centre of the circle For a drawing another circle with diameter 7.5 cm and drawing tangents from this point to the circle	1 1 1 1	4
17	a) $(AP+BP)+(BQ+CQ)+(CR+AR)=24$ $(AP+BQ)+(BQ+CR)+(CR+AP)=24$ $AP+BQ+CR=\frac{24}{2}=12\ cm$ b) If $QC=x$, then $CR=x$ and if $BQ=y$ then $BP=y$ So $AP=AR=7-y$ $x+y+y+7-y+7-y+x=24$ ==> $2x=24-17=10$ $CQ=\frac{10}{2}=5\ cm$ **OR** $QC=s-a=\frac{24}{2}-7=5\ cm$	1 1 1 1 1	4
18	a) $\frac{12}{20}\times 360=216^0$ b) Slant height $=20\ cm$ Curved surface area $=\pi\times 12\times 20=240\pi\ sq.cm$	2 1 1	4

19	a) $\frac{9-3}{5-2}=2$ b) $\frac{y-3}{x-2}=2$ or $2x-y-1=0$ c) $2\times1-5-1=-4$ $(1,5)$ is not a point on this line .	1 1 1 1	4
20	a) 3 b) $p(x)-p(2)=2x^2-7x+6$ $=(x-2)(ax+b)$ $=(x-2)(2x-3)$ Solutions $=2,\frac{3}{2}$	1 1 1 1	4
21	Volume of the hemisphere $=\frac{2}{3}\times\pi\times10^3$ *cubic.cm* Volume of the sphere $=\frac{4}{3}\times\pi\times1^3$ *cubic.cm* Number of spheres $=\frac{\frac{2}{3}\times\pi\times10^3}{\frac{4}{3}\times\pi\times1^3}=500$	1 1 2	4
	Each questions from 22 to 29 carries 5 scores.		
22	a) $4n+5-4=4n+1$ b) $2n^2+3n$ c) $2\times20^2+3\times20=860$	2 2 1	5
23	a) $\sqrt{(0-(-3))^2+(4-0)^2}=5$ b) $(\frac{-3+0}{2},\frac{0+4}{2})=(\frac{-3}{2},2)$ c) $\left(x+\frac{3}{2}\right)^2+(y-2)^2=\left(\frac{5}{2}\right)^2$	1 2 2	5
24	For drawing the triangle in the given measures For drawing the bisectors of the angles For drawing the incircle and measuring the radius	2 1 2	5

25	a) $17 - 3 = 14\ cm$ b) Volume of the hemisphere $= \frac{2}{3} \times \pi \times 3^3 = 18\ \pi\ cubic.cm.$ Volume of the cone $= \frac{1}{3} \times \pi \times 3^2 \times 14 = 42\ \pi\ cubic.cm.$ Volume of the toy $= 18\pi + 42\pi = 60\pi\ cubic.cm$	1 1 1 2	5
26	For drawing the frequency table. $d = \frac{1200 - 1100}{10} = 10$ a) $\frac{1100 + 1110}{2} = 1105\ Rs.$ b) Median = Daily wage of the 23^{rd} worker. $= 1105 + 4 \times 10 = 1145\ Rs.$	1 1 1 1 1	5
27	a)  b) $10 \times \tan 40^0 = 8.4\ m$ c) $10 + 8.4 \times \tan 40^0 = 17.056\ m$	1 2 2	5
28	a) AD = CD CD = BD $\therefore$ AD = BD b)A circle is drawn with D as centre and AD as radius , passes through B and C . $\therefore$ $\angle$ ACB = 90^0 (Angle in a semicircle is 90^0)	1 1 1 1 1	5

	OR **(We can find ∠ACB by using the angles of the isosceles triangles ADC and BDC)** $\angle DAC + \angle ACB + \angle DBC = 180^0$ $2\angle ACD + 2\angle BCD = 180^0$ $\angle ACB = \angle ACD + \angle BCD = \frac{180^0}{2} = 90^0$		
29	**a)** $1 + 2 + 3 + 4 + 5 + 6 + 5 + 4 + 3 + 2 + 1 = 36$ **b)** $15^2 = 225$ **c)** **20** **d)** $(3n - 1)^2 = 2500$ **OR** $3n - 1 = 50$ $n = 17$	**1** **1** **1** **1** **1**	**5**