ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM, BANGALORE – 560 003

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಏಪ್ರಿಲ್ — 2012

S. S. L. C. EXAMINATION, APRIL, 2012

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 09. 04. 2012]

Date : 09. 04. 2012]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-E**

CODE NO. : 81-E

ವಿಷಯ : **ಗಣಿತ**

Subject : MATHEMATICS

[ಪರಮಾವಧಿ ಅಂಕಗಳು : **100**

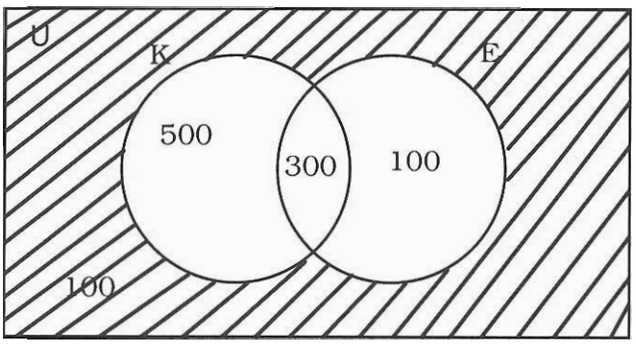
[Max. Marks : 100

(English Version)

Qn. Nos.	Letter of the answer	Value Points	Marks Allotted
I. 1.	C	$(A \cup B) \cap C = (A \cap C) \cup (B \cap C)$	1
2.	C	$4n + 1$	1
3.	B	$\frac{{}^{n}P_{r}}{{}^{n}C_{r}} = \lfloor r$	1
4.	A	C.V. $= \frac{\sigma}{\bar{X}} \times 100$	1
5.	B	3×1	1
6.	C	$(a + 3)$	1
7.	D	$H \times L = A \times B$	1
8.	B	0	1
9.	A	$a^3 + b^3 + c^3$	1
10.	D	$-(ab + bc + ca)$	1

[Turn over

Qn. Nos.	Letter of the answer	Value Points	Marks Allotted
11.	D	$K^2 = K$	1
12.	B	$A = \frac{1}{2} x (x + 4)$	1
13.	C	$ab \sqrt[n]{\frac{a}{b}}$	1
14.	D	$\frac{-b}{a}$	1
15.	A	$120°$	1
16.	A	8, 15, 17	1
17.	B	2 cm	1
18.	C	$V = \pi r^2 h$	1
19.	D	250 sq.cm	1
20.	A	$\frac{AC^2}{DF^2}$	1
II.			
21.		$T_n = a + (n - 1) d$	1
22.		G	1
23.		$B^{\prime} A^{\prime}$	1
24.		$\sum_{a,b,c} a^2$	1
25.		$b^2 - 4ac$	1
26.		$x^2 - (m + n) x + mn = 0$	1
27.		1	1
28.		$\frac{AE}{AB}$	1
29.		$A = 4\pi r^2$ where r = radius	1
30.		$N + R = A + 2$	1

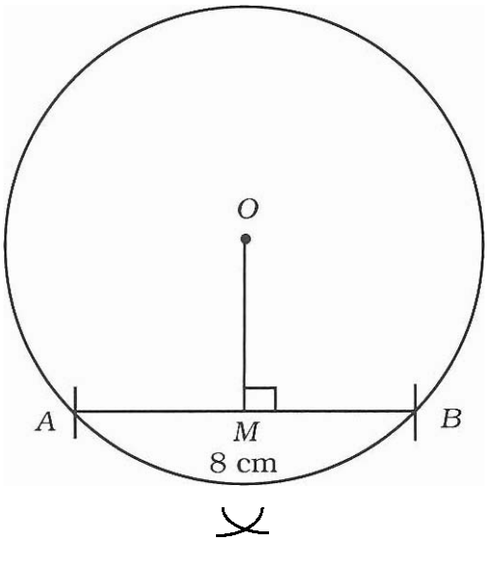
Qn. Nos.	Value Points		Marks Allotted	
31.	$A = \{ 2, 3, 5, 7 \}$			
	$B = \{ 3, 6, 9 \}$		$\frac{1}{2}$	
	$A \cap B = \{ 3 \}$			
	$(A \cap B)' = \{ 1, 2, 4, 5, 6, 7, 9 \}$	(i)	$\frac{1}{2}$	
	$A' = U - A = \{ 1, 4, 6, 9 \}$			
	$B' = U - B = \{ 1, 2, 4, 5, 7 \}$		$\frac{1}{2}$	
	$A' \cup B' = \{ 1, 2, 4, 5, 6, 7, 9 \}$	(ii)		
	From (i) and (ii)			
	$(A \cap B)' = A' \cup B'$		$\frac{1}{2}$	2
32.				
	Rectangle and circles		$\frac{1}{2}$	
	Numbers inside the circle		$\frac{1}{2}$	
	Number outside the circle		$\frac{1}{2}$	
	Shading the region		$\frac{1}{2}$	2
33.	Let the numbers be a, b, c			
	H.M. $= \frac{2ac}{a+c}$			
	$b = \frac{2ac}{a+c}$		$\frac{1}{2}$	

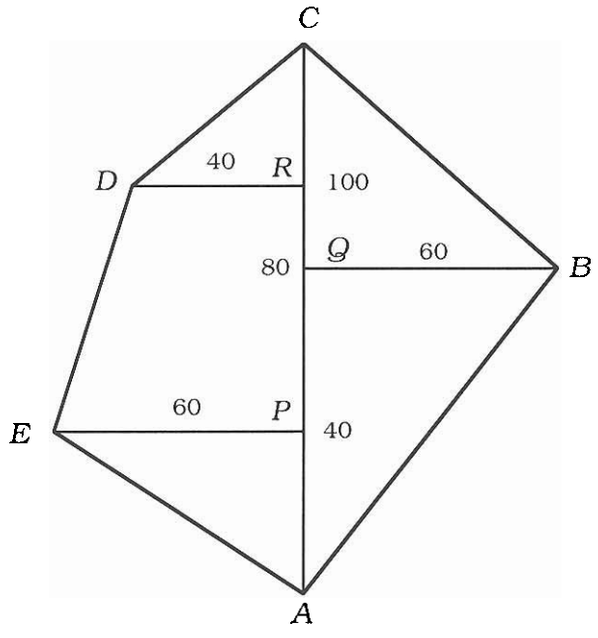
Qn. Nos.	Value Points	Marks Allotted
	Given $b = HM = 20$ and $a = 2c$	
	$\therefore \quad 20 = \frac{2 \cdot 2c \cdot c}{2c + c}$	
	$20 = \frac{4c^2}{3c}$	
	$c = \frac{\overset{5}{\cancel{20}} \times 3}{4}$	
	$\therefore \quad c = 15$	1
	From $a = 2c$	
	$= 2\,(15)$	
	$= 30$	$\frac{1}{2}$
	$\therefore$ The required numbers are 30, 20, 15.	
	Alternative Method :	
	Let the numbers which are in H.P. be a, b, c	
	Given $b = \frac{2ac}{a + c} = 20$	
	$\therefore \quad b = 20$	$\frac{1}{2}$
	Since $a = 2c$	
	$20 = \frac{a^2}{\frac{3a}{2}}$	
	$20 = \frac{2a}{3}$	1
	$\therefore \quad a = 30$	
	$c = \frac{a}{2} = \frac{30}{2} = 15$	$\frac{1}{2}$
34.	a = first term = 3	
	d = common difference = 7 – 3 = 4	
	n = number of terms = 20	$\frac{1}{2}$

Qn. Nos.	Value Points	Marks Allotted	
	$S_n = S_{20}$ = Sum of 20 terms		
	$S_n = \frac{n}{2}\,[\,2a + (n-1)\,d\,]$		
	$S_{20} = \frac{20}{2}\,[\,2(3) + (20-1)\,4\,]$	$\frac{1}{2}$	
	$= 10\,[\,6 + 76\,]$		
	$= 10\,[\,82\,]$	$\frac{1}{2}$	
	$= 820$	$\frac{1}{2}$	2
	Sum of twenty terms of the given series = 1020.		
35.	$\begin{bmatrix} 3x^2 & 1 \\ 3 & 2 \end{bmatrix} + \begin{bmatrix} 6x & 5 \\ 2 & 7 \end{bmatrix} = \begin{bmatrix} 0 & 6 \\ 5 & 9 \end{bmatrix}$		
	$\begin{bmatrix} 3x^2 + 6x & 5 + 1 \\ 3 + 2 & 2 + 7 \end{bmatrix} = \begin{bmatrix} 0 & 6 \\ 5 & 9 \end{bmatrix}$		
	$\begin{bmatrix} 3x^2 + 6x & 6 \\ 5 & 9 \end{bmatrix} = \begin{bmatrix} 0 & 6 \\ 5 & 9 \end{bmatrix}$	$\frac{1}{2}$	
	Since equality is given		
	$3x^2 + 6x = 0$	$\frac{1}{2}$	
	$3x(x+2) = 0$		
	$3x = 0 \quad \vert \quad x + 2 = 0$	$\frac{1}{2}$	
	$x = 0 \quad \vert \quad x = -2$	$\frac{1}{2}$	2
36.	$(n+1)\,P_3 = 120$		
	$(n+1)\,n\,(n-1) = 120$ $(n+1)\,n\,(n-1) = 6 \times 5 \times 4$ 2 | 120 2 | 60 5 | 30 6	$\frac{1}{2}$ 1	
	$\therefore \quad n + 1 = 6$		
	$n = 6 - 1$		2
	$n = 5$	$\frac{1}{2}$	

Qn. Nos.	Value Points	Marks Allotted	
	Alternate method :		
	$(n+1)P_3 = 120$		
	$(n+1)P_3 = 6 \times 5 \times 4$	$\frac{1}{2}$	
	$(n+1)P_3 = 6P_3$	$\frac{1}{2}$	
	$\therefore \quad n+1 = 6$	$\frac{1}{2}$	
	$n = 6 - 1$		
	$n = 5$	$\frac{1}{2}$	2
37.	Remaining area of the given field $= (a+b)^2 - c^2$	$\frac{1}{2}$	
	$= (a+b+c)(a+b-c)$	$\frac{1}{2}$	
	$= 2s(2s-c-c)$		
	$= 2s(2s-2c)$	$\frac{1}{2}$	
	$= 4s(s-c)$ sq.units.	$\frac{1}{2}$	2
38.	$\sqrt[3]{3} \times \sqrt[4]{2}$		
	L.C.M. of 3 and 4 is 12	$\frac{1}{2}$	
	$\sqrt[3]{3} \times \sqrt[4]{2} = \sqrt[3\times4]{3^4} \times \sqrt[4\times3]{2^3}$	$\frac{1}{2}$	
	$= \sqrt[12]{81} \times \sqrt[12]{8}$	$\frac{1}{2}$	
	$= \sqrt[12]{648}$	$\frac{1}{2}$	2
	Alternate Method :		
	L.C.M. of 3 and 4 is 12	$\frac{1}{2}$	
	$\sqrt[3]{3} = 3^{\frac{1}{3}\times\frac{12}{12}} = 3^{\frac{4}{12}} = (3^4)^{\frac{1}{12}} = \sqrt[12]{3^4}$		
	$\sqrt[4]{2} = 2^{\frac{1}{4}\times\frac{12}{12}} = 2^{\frac{3}{12}} = (2^3)^{\frac{1}{12}} = \sqrt[12]{2^3}$	$\frac{1}{2}$	
	$\therefore \quad \sqrt[3]{3} \times \sqrt[4]{2} = \sqrt[12]{3^4} \times \sqrt[12]{2^3}$		
	$= \sqrt[12]{81} \times \sqrt[12]{8}$	$\frac{1}{2}$	
	$= \sqrt[12]{648}$	$\frac{1}{2}$	2

Qn. Nos.	Value Points	Marks Allotted	
39.	$\frac{5}{\sqrt{3}+\sqrt{2}}$		
	$= \frac{5}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$	$\frac{1}{2}$	
	$= \frac{5\sqrt{3}-5\sqrt{2}}{(\sqrt{3})^2-(\sqrt{2})^2}$	$\frac{1}{2}$	
	$= \frac{5\sqrt{3}-5\sqrt{2}}{3-2}$	$\frac{1}{2}$	
	$= \frac{5\sqrt{3}-5\sqrt{2}}{1}$		
	$= 5\sqrt{3}-5\sqrt{2}$.	$\frac{1}{2}$	2
40.	$x^2 - 5x + 3 = 0$		
	$ax^2 + bx + c = 0$		
	$a = 1$		
	$b = -5$		
	$c = 3$	$\frac{1}{2}$	
	$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$	$\frac{1}{2}$	
	$x = \frac{-(-5) \pm \sqrt{(-5)^2-4(1)(3)}}{2(1)}$	$\frac{1}{2}$	
	$= \frac{5 \pm \sqrt{25-12}}{2}$		
	$= \frac{5 \pm \sqrt{13}}{2}$.	$\frac{1}{2}$	2
41.	$m + n = \frac{-b}{a} = \frac{-(-4)}{2} = \frac{4}{2} =$	$\frac{1}{2}$	
	$mn = \frac{c}{a} = \frac{1}{2}$	$\frac{1}{2}$	
	Now $(m+n)^2 + 4mn = (2)^2 + 4\left(\frac{1}{2}\right)$	$\frac{1}{2}$	
	$= 4 + 2$		
	$= 6$	$\frac{1}{2}$	2

Qn. Nos.	Value Points	Marks Allotted	
42.			
	$\otimes_{10}$ | 2 | 4 | 6 | 8		
	2 | 4 | 8 | 2 | 6	$\frac{1}{2}$	
	4 | 8 | 6 | 4 | 2	$\frac{1}{2}$	
	6 | 2 | 4 | 6 | 8	$\frac{1}{2}$	
	8 | 6 | 2 | 8 | 4	$\frac{1}{2}$	2
43.			
	By measuring $OM = 3$ cm		
	Circle	$\frac{1}{2}$	
	Chord AB	$\frac{1}{2}$	
	Perpendicular ($\perp$) OM	$\frac{1}{2}$	
	$OM = 3$ cm	$\frac{1}{2}$	2
44.	a) Direct common tangents PQ and RS	$\frac{1}{2}$	
	b) Transverse common tangent $\overline{XY}$ or $\overline{XMY}$	$\frac{1}{2}$	
	c) A pair of equal tangents PQ and RS	$\frac{1}{2}$	
	d) Secant $\overline{CD}$	$\frac{1}{2}$	2

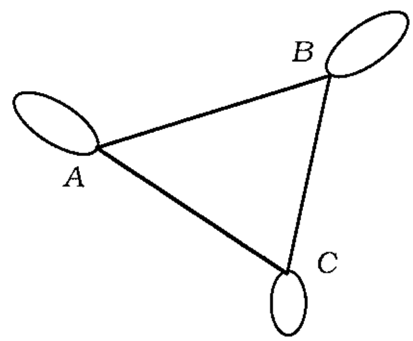
Qn. Nos.	Value Points	Marks Allotted	
45.	Volume of hemisphere = $\frac{2}{3}\pi r^3$, volume of sphere = $\frac{4}{3}\pi r^3$	$\frac{1}{2}$	
	Quantity of the water that retains = $\frac{2}{3}\pi r^3 - \frac{4}{3}\pi\left(\frac{r}{2}\right)^3$	$\frac{1}{2}$	
	$= \frac{2}{3}\pi r^3 - \frac{4}{3}\pi\frac{r^3}{8_2}$		
	$= \frac{1}{3}\pi r^3\left(2 - \frac{1}{2}\right)$	$\frac{1}{2}$	
	$= \frac{1}{3}\pi r^3\left(\frac{3}{2}\right)$		
	$= \frac{\pi r^3}{2}$ cubic units.	$\frac{1}{2}$	2
46.	Scale 20 m = 1 cm		
	∴ 40 m = 2 cm		
	80 m = 4 cm		
	60 m = 3 cm		
	100 m = 5 cm		
	140 m = 7 cm	$\frac{1}{2}$	
		$1\frac{1}{2}$	2

Qn. Nos.	Value Points	Marks Allotted	

47.

	A	B	C
A	2	1	1
B	1	2	1
C	1	1	2

$\frac{1}{2}$



$1\frac{1}{2}$ 2

(Directly drawing network — 2 marks)

48. F = Faces = 8

V = Vertices = 6

E = Edges = 12 $\frac{1}{2}$

$F + V = 8 + 6 = 14$

$E + 2 = 12 + 2 = 14$ 1

$\therefore \quad F + V = E + 2.$ $\frac{1}{2}$ 2

49. Sharath is injured, hence the remaining

batsmen are 9, bowlers are 5,

Case (i) :

If 7 batsmen are selected out of 9, then 4 bowlers to be selected out of 5.

This can be done in ${}^9C_7 \times {}^5C_4$ to make team of 11 players. $\frac{1}{2}$

Qn. Nos.	Value Points	Marks Allotted	
	$\therefore \quad {}^9C_7 \times {}^5C_4 = {}^9C_2 \times {}^5C_1$		
	$= \frac{9 \times 8}{2} \times 5$		
	$= 36 \times 5$		
	= 180 ways.	1	
	Case (ii) :		
	If 6 batsmen are selected out of 9, then 5 bowlers are to be selected out of 5.	1	
	$\therefore \quad {}^9C_6 \times {}^5C_5 = {}^9C_3 \times 1$		
	$= \frac{9 \times 8 \times 7}{3 \times 2 \times 1}$		
	= 84 ways.		
	$\therefore$ Total ways of selecting a team of 11 players according to the given condition is 180 + 84		
	= 264 ways.	$\frac{1}{2}$	3
	Alternate Method :		

Possibilities	*5 Bowlers*	*9 Batsmen*	*Total Selection*	
(1)	4	7	${}^5C_4 \times {}^9C_7$	
(2)	5	6	${}^5C_5 \times {}^9C_6$	$1\frac{1}{2}$

(1)	${}^5C_4 \times {}^9C_7 = {}^5C_1 \times {}^9C_2 = 180$	$\frac{1}{2}$
(2)	${}^5C_5 \times {}^9C_6 = 1 \times {}^9C_3 = 84$	$\frac{1}{2}$
$\therefore$	Total number of selections = 180 + 84 = 264 ways.	$\frac{1}{2}$ 3

Qn. Nos.	Value Points	Marks Allotted

50.

C.I.	f	x	fx	$x - \bar{x} = d$	d^2	fd^2
10 – 14	2	12	24	– 10	100	200
15 – 19	3	17	51	– 5	25	75
20 – 24	5	22	110	0	0	00
25 – 29	3	27	81	5	25	75
30 – 34	2	32	64	10	100	200

$N = 15$ $\quad \Sigma fx = 330$ $\quad \Sigma fd^2 = 550$

Mean $\overline{X} = \dfrac{\Sigma fx}{N} = \dfrac{330}{15} = 22$

Standard Deviation (σ) $= \sqrt{\dfrac{\Sigma fd^2}{N}} = \sqrt{\dfrac{550}{15}}$

$= \sqrt{36{\cdot}66}$

$= 6{\cdot}05.$

Mean — 1

Up to S.D. formula — 1

Substitution — $\frac{1}{2}$

Answer — $\frac{1}{2}$ 3

51.

x	$x^3 - 3x^2 - 10x + 24$	$x^3 - 2x^2 - 9x + 18$	1	
	$x^3 + x^2 - 6x$	$x^3 - 3x^2 - 10x + 24$		
	(–) (–) (+)	(–) (+) (+) (–)		
	$-4x^2 - 4x + 24$	$x^2 + x - 6$		
	$-4\left[x^2 + x - 6\right]$	$x^2 + x - 6$	$-\frac{1}{4}$	$1\frac{1}{2}$
		(–) (–) (+)		
		0		

Qn. Nos.	Value Points	Marks Allotted	
	$\therefore$ HCF $= x^2 + x - 6$		
	LCM $= \frac{A \times B}{H}$	$\frac{1}{2}$	
	LCM $= \frac{(x^3 - 3x^2 - 10x + 24)(x^3 - 2x^2 - 9x + 18)}{(x^2 + x - 6)}$		
	$x - 4$ $x^2 + x - 6 \overline{)} x^3 - 3x^2 - 10x + 24$ $x^3 + x^2 - 6x$ (–) (–) (+) $- 4x^2 - 4x + 24$ $- 4x^2 - 4x + 24$ (+) (+) (–) 0		
	.. LCM $= (x - 4)[x^3 - 2x^2 - 9x + 18]$	$\frac{1}{2}$	
	OR		
	LCM $= (x^3 - 3x^2 - 10x + 24)(x - 3)$	$\frac{1}{2}$	3
52.	Area of equilateral triangle $= \frac{\sqrt{3}\,x^2}{4}$	$\frac{1}{2}$	
	$16\sqrt{3} = \frac{\sqrt{3}\,x^2}{4}$		
	$64\sqrt{3} = \sqrt{3}\,x^2$	$\frac{1}{2}$	
	$x^2 = \frac{64\,\cancel{\sqrt{3}}}{\cancel{\sqrt{3}}}$	$\frac{1}{2}$	
	$x = \sqrt{64}$		
	$x = 8$	$\frac{1}{2}$	
	Now perimeter $= 3x$	$\frac{1}{2}$	
	$= 3(8)$		
	$= 24$ cm.	$\frac{1}{2}$	3

Qn. Nos.	Value Points	Marks Allotted

53.

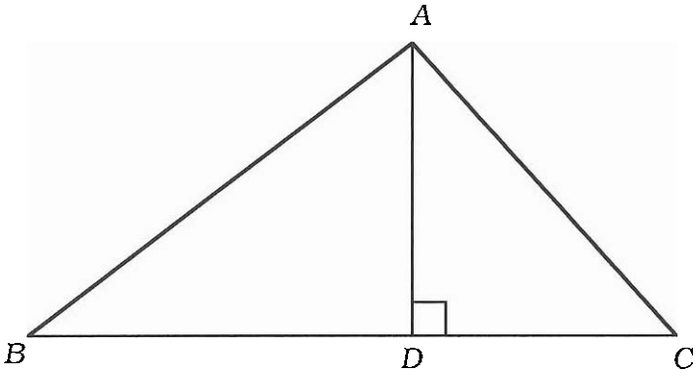


fig : $\frac{1}{2}$

$$\frac{BD}{CD} = \frac{3}{1}$$

$$BD = 3CD \qquad \text{(i)}$$

$$\therefore \quad BC = BD + CD$$

$$= 3CD + CD$$

$$= 4CD$$

$$\frac{BC}{4} = CD \qquad \text{(ii)}$$ $\frac{1}{2}$

$$AB^2 = \cancel{AD^2} + BD^2$$

$$AC^2 = \cancel{AD^2} + CD^2$$ $\frac{1}{2}$

$$(-)$$

$$AB^2 - AC^2 = BD^2 - CD^2$$

$$= (3CD)^2 - CD^2 \qquad [\text{ from (i) }]$$

$$= 9CD^2 - CD^2$$

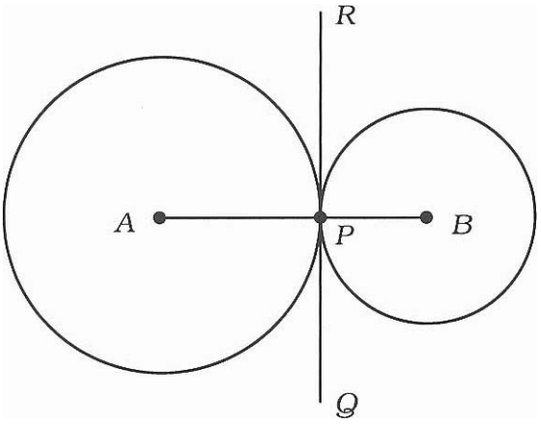
$$= 8CD^2$$

$$= 8\left(\frac{BC}{4}\right)^2 \qquad [\text{ from (ii) }]$$ 1

$$= 8\,\frac{BC^2}{16}$$

$$AB^2 - AC^2 = \frac{BC^2}{2}$$

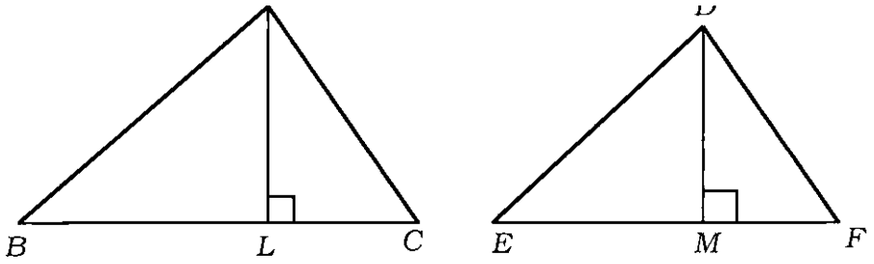
$$\therefore \quad 2\left(AB^2 - AC^2\right) = BC^2.$$ $\frac{1}{2}$ 3

Qn. Nos.	Value Points	Marks Allotted	
54.	 fig.	$\frac{1}{2}$	
	Data : Two circles with centres A and B touch each other at the point P externally.	$\frac{1}{2}$	
	To Prove : A, B and P are collinear.	$\frac{1}{2}$	
	Construction : **Draw the common** tangent RPQ at P .		
	Join AP and BP.	$\frac{1}{2}$	
	Proof : $\angle APQ = 90°$		
	$\angle BPQ = 90°$		
	{ Radius through the point of contact is perpendicular to the tangent }	$\frac{1}{2}$	
	$\therefore$ $\angle APQ + \angle BPQ = 180°$		
	$\angle APB = 180°$ (linear pair)		
	$\therefore$ APB is a straight line		
	$\therefore$ A, B and P are collinear.	$\frac{1}{2}$	3
55.	Given $ar + ar^3 = 30$		
	$ar\left(1 + r^2\right) = 30$ (i)	$\frac{1}{2}$	
	And $ar^5 - ar = 90$		
	$ar\left(r^4 - 1\right) = 90$		
	$ar\left(r^2 + 1\right)\left(r^2 - 1\right) = 90$ (ii)	$\frac{1}{2}$	
	By substituting (ii) in (i)		

Qn. Nos.	Value Points	Marks Allotted	
	We get $30\left(r^2-1\right)=90$		
	$r^2-1=\frac{90}{30}$		
	$r^2-1=3$		
	$r^2=4.$	$\frac{1}{2}$	
	$r=\pm\sqrt{4}$		
	$r=\pm 2$	$\frac{1}{2}$	
	But $r>1$ $\therefore$ Take $r=2$		
	From (i) $ar\left(1+r^2\right)=30$		
	$a(2)\left(1+2^2\right)=30$		
	$a(2)(5)=30$		
	$10a=30$		
	$a=\frac{30}{10}$		
	$a=3.$	$\frac{1}{2}$	
	Now $T_n=ar^{n-1}$		
	$T_8=3(2)^{8-1}$	$\frac{1}{2}$	
	$=3(2)^7$		
	$=3(128)$	$\frac{1}{2}$	
	$=384$		
	$\therefore$ 8th term of the G.P. is 384.	$\frac{1}{2}$	4

Qn. Nos.	Value Points	Marks Allotted

56.



$\frac{1}{2}$

Data : Let ΔABC, ΔDEF be similar, in which BC and EF are corresponding sides. $\frac{1}{2}$

To Prove : $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{BC^2}{EF^2}$ $\frac{1}{2}$

Construction : Draw $AL \perp BC$ and $DM \perp EF$ $\frac{1}{2}$

Proof : $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{\frac{1}{2} BC \cdot AL}{\frac{1}{2} EF \cdot DM} = \frac{BC}{EF} \cdot \frac{AL}{DM}$ — (i)

In ΔALB and ΔDME

$\angle ABL = \angle DEM$ (data)

$\angle ALB = \angle DME = 90°$ (construction)

$\angle BAL = \angle EDM$

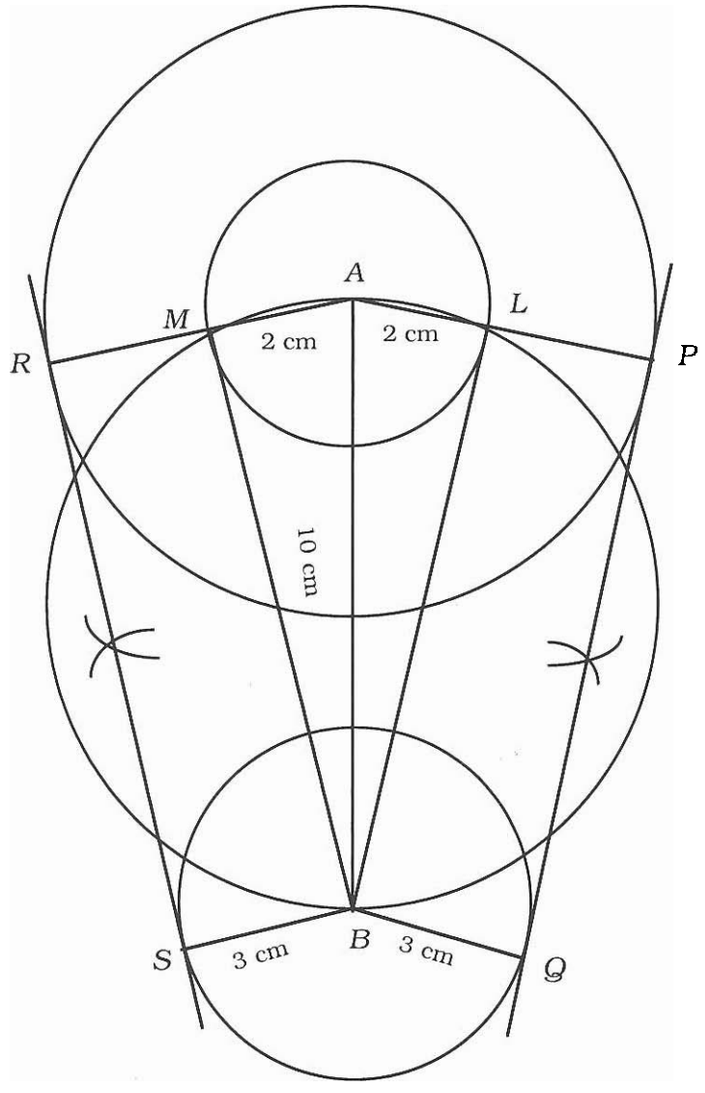
$\therefore$ $\Delta ALB \sim \Delta DME$ ($\because$ Δ^{ls} are equiangular) 1

$\frac{AL}{DM} = \frac{AB}{DE} = \frac{BC}{EF}$ (corresponding sides of similar Δ^{ls} and data)

i.e. $\frac{AL}{DM} = \frac{BC}{EF}$ — (ii) $\frac{1}{2}$

$\therefore$ $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{BC}{EF} \cdot \frac{BC}{EF}$ substituting (ii) in (i)

$\therefore$ $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{BC^2}{EF^2}$. $\frac{1}{2}$ 4

Qn. Nos.	Value Points	Marks Allotted	
57.			
	By measuring length of the tangent = 9·8 cm		
	Given circles and line of centres	1	
	Constructed circles	1	
	The line through intersection of circles (through L & M)	$\frac{1}{2}$	
	Lines BS, BQ	$\frac{1}{2}$	
	Tangents	$\frac{1}{2} + \frac{1}{2}$	4

Qn. Nos.	Value Points	Marks Allotted	
58.	$y = x^2$		

x	0	1	− 1	2	− 2	3	− 3
y	0	1	1	4	4	9	9

1

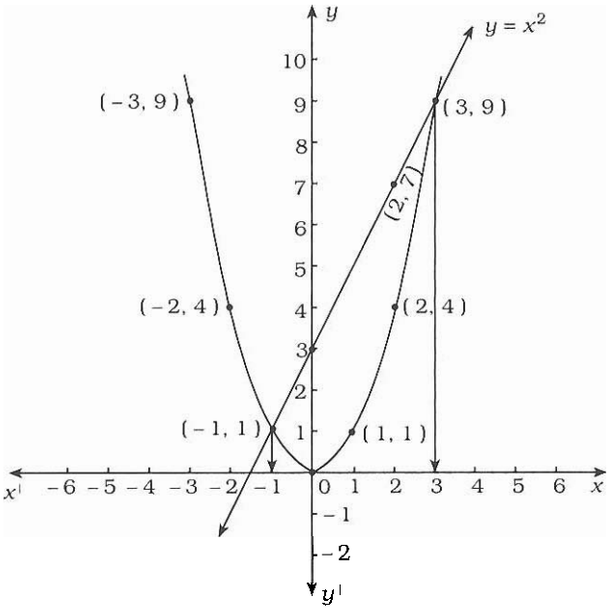
$y = 2x + 3$

x	0	3	− 1	2
y	3	9	1	7

1

Scale : x-axis : 1 cm = 1 unit

y-axis : 1 cm = 1 unit



Parabola 1/2

Straight line 1

Perpendicular 1

Solution 1/2 4