

Mathematics (E) – Answer Key

Semester II

March 2025

Grade 9

Subject Code : N 2021

Section A (1 mark each)

SET : A

Q. No.	Answer			Q. No.	Answer	
1	D	180°		21	C	26
2	A	6		22	B	5
3	D	80 cm^2		23	A	11 m^2
4	C	$147\pi \text{ cm}^2$		24	A	77
5	A	$\frac{1}{11}$		25	B	12 cm
6	B	4 cm		26	D	$\frac{1}{8}$
7	D	$36\sqrt{3} \text{ cm}^2$		27	C	9 cm
8	C	$\frac{3}{20}$		28	A	$\frac{1}{4}ar(\triangle LMN)$
9	D	$\frac{43}{70}$		29	B	12 cm
10	B	4		30	C	36 cm^2
11	B	2		31	C	$\Pi(R^2 - r^2)h$
12	C	$X = \log_a n$		32	D	$\frac{3}{4}$
13	B	40°		33	C	$\frac{8}{13}$
14	B	40		34	D	$\frac{2}{3}$
15	C	10		35	C	50°
16	D	1		36	B	55°
17	A	24		37	A	6 cm
18	B	45°		38	A	-2
19	C	$\bar{3} \cdot 3010$		39	B	12
20	C	1		40	D	4cm

SET : B					SET : C					SET : D			
Q. No.	Ans	Q. No.	Ans		Q. No.	Ans	Q. No.	Ans		Q. No.	Ans	Q. No.	Ans
1	B	21	C		1	C	21	D		1	C	21	B
2	C	22	D		2	B	22	A		2	D	22	C
3	B	23	C		3	A	23	D		3	C	23	B
4	B	24	D		4	A	24	C		4	D	24	B
5	C	25	C		5	B	25	A		5	C	25	C
6	D	26	B		6	D	26	B		6	B	26	D
7	A	27	A		7	C	27	D		7	A	27	A
8	B	28	A		8	A	28	C		8	A	28	B
9	C	29	B		9	B	29	D		9	B	29	C
10	C	30	D		10	C	30	B		10	D	30	C
11	C	31	D		11	C	31	B		11	D	31	C
12	B	32	A		12	D	32	C		12	A	32	B
13	A	33	D		13	C	33	B		13	D	33	A
14	A	34	C		14	D	34	B		14	C	34	A
15	B	35	A		15	C	35	C		15	A	35	B
16	D	36	B		16	B	36	D		16	B	36	D
17	C	37	D		17	A	37	A		17	D	37	C
18	A	38	C		18	A	38	B		18	C	38	A
19	B	39	D		19	B	39	C		19	D	39	B
20	C	40	B		20	D	40	C		20	B	40	C

Section B (2 marks each)		
41	In $\triangle OAB$ and $\triangle OCD$ $\angle AOB = \angle COD$ given $OA = OC$ radii of the same circle $OB = OD$ $\triangle OAB \cong \triangle OCD$ SAS congruence rule $AB = CD$ c.p.c.t 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ =02
42	$Vol(\text{cone}) = \frac{1}{3}\pi r^2 h$ or $50\pi = \frac{1}{3}\pi r^2 6$ $r^2 = 25$ $r = 5$ Therefore diameter = 10 cm OR $C = 2\pi r$ $22 = 2 \times \frac{22}{7} \times r$ $r = \frac{7}{2}$ $CSA = 2\pi r^2$ $= 2 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$ $= 77m^2$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ =02 $\frac{1}{2}$ $\frac{1}{2}$ }1/2 $\frac{1}{2}$ =02
43	$L \times b = 750$ $30 \times b = 750$ $b = 25cm$ $Ar(\text{plastic sheet}) = 2(lb + bh + hl)$ $= 2(30 \times 25 + 25 \times 25 + 25 \times 30)$ $= 2(750 + 625 + 750)$ $= 4250 \text{ sq.cm}$	or}1/2 or}1/2 1/2 $\frac{1}{2}$ =02
44	$Ar(\text{ll}^{gram} PQRS) = b \times h$ $SR \times PM = PS \times RN$ $16.8 \times PM = 21 \times 8$ since $SR = PR$, $PS = QR$ $PM = \frac{168}{16.8}$ $PM = 10 \text{ cm}$ OR $ar(\text{ll}^{gram} PQRS) = ar(\text{ll}^{gram} MNRS)$ ll^{gms} on the same base and between the same $PS \times RT = 108$ $PS \times 9 = 108$ $PS = 12 \text{ cm}$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ =02 OR 1 Or}1/2 $\frac{1}{2}$ =02
45	$A = 14 \text{ cm}$, $b = 10 \text{ cm}$ Therefore $C = 40 - (14 + 10) = 16 \text{ cm}$ Semi perimeter (S) = $\frac{40}{2} = 20 \text{ cm}$ $ar(\triangle) = \sqrt{s(s-a)(s-b)(s-c)}$ $= \sqrt{20 \times (20-14) \times (20-10) \times (20-16)}$ $= \sqrt{20 \times 6 \times 10 \times 4}$ $= 40\sqrt{3} \text{ cm}^2$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ Or}1/2

	OR $a = _, b = 48\text{cm}, c = 50\text{cm}$ $a^2 + 48^2 = 50^2$ $a^2 = 196$ } $\frac{1}{2}$ $a = 14\text{cm}$ $S = \frac{14+48+50}{2} = 56\text{ cm}$ } $\frac{1}{2}$ $\text{ar}(\triangle) = \sqrt{56(56-14)(56-48)(56-50)}$ } $\frac{1}{2}$ $= \sqrt{56 \times 42 \times 8 \times 6}$ $= \sqrt{8 \times 7 \times 7 \times 6 \times 8 \times 6}$ $= 8 \times 7 \times 6 = 336\text{ cm}^2$ } $\frac{1}{2}$ $= 02$ Alternate method $a = 14\text{ cm}$ } 1 $\text{ar}(\triangle) = \frac{1}{2} \times b \times h$ $= \frac{1}{2} \times 48 \times 14$ } $\frac{1}{2}$ $= 336\text{ cm}^2$ } $\frac{1}{2}$ $= 02$	=02
46	(i) $\text{antilog } \bar{3}.6975 = 0.004983$ (ii) $\log 0.4495 = \bar{1}.6528$	1 1
47	(i) $\log 3.258 = 0.5130$ (ii) $\text{antilog } 2.2792 = 190.2$	1 1
	Section C (3 marks each)	
48	$\angle PRQ = 90^\circ$ } $\angle$ in a semicircle Therefore $\angle QPR = 25^\circ$ } Third $\angle$ of $\triangle PRQ$ $\angle PMQ = 90^\circ$ } $\angle$ in a semicircle Therefore $\angle QPM = 40^\circ$ } third $\angle$ of $\triangle PMQ$ $\angle PSR + \angle PQR = 180^\circ$ } opp angles of a cyclic quadrilateral} $\angle PSR = 180^\circ - 65^\circ = 115^\circ$ Therefore $\angle PRS = 25^\circ$ } third $\angle$ of $\triangle PRS$ OR $\angle ADB = 90^\circ$ $\angle BAD = \angle CDA = 30^\circ$ alternate int. angles, $CD \parallel AB$ Therefore $\angle ABC = 30^\circ$ since $\angle ABC = \angle CDA$; angles in the same segment $m(\text{arc } CD) = 180^\circ - (60^\circ + 60^\circ) = 60^\circ$ Therefore $\angle CAD = \frac{1}{2} \times 60 = 30^\circ$	$\frac{1}{2}$ } 01 $\frac{1}{2}$ $\frac{1}{2}$ } 01 $\frac{1}{2}$ $\frac{1}{2}$ } 01 $\frac{1}{2}$ =03 01 01 01 =03
49	$\text{Vol}(\text{tank}) = l^3$ $l^3 = 15.625\text{ m}^3$ $l = \left(\frac{15625}{1000}\right)^{1/3} = 25/10 = 2.5\text{ m}$ $\text{Vol}(\text{remaining water}) = \text{base area} \times \text{height}$ $= (2.5)^2 \times 1.5$ $= 6.25 \times 1.5$ $= 9.375\text{ m}^3$ Therefore volume (water used) = $15.625 - 9.375$ $= 6.25\text{ m}^3$ OR Circumference of the base of the cylinder = length of the card board $2\pi r = 44$ $2 \times \frac{22}{7} \times r = 44$ $r = 7\text{ cm}$ Therefore volume (resulting cylinder) = $\pi r^2 h$ $= \frac{22}{7} \times 7 \times 7 \times 7$ $= 1078\text{ cm}^3$ Therefore the volume of the cylinder is 1078 cm^3	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2}$

50	<table border="1"> <thead> <tr> <th>CI</th><th>Tally marks</th><th>frequency</th></tr> </thead> <tbody> <tr> <td>300-400</td><td>II</td><td>2</td></tr> <tr> <td>400-500</td><td>III</td><td>5</td></tr> <tr> <td>500-600</td><td>IIII</td><td>5</td></tr> <tr> <td>600-700</td><td>IIII III</td><td>8</td></tr> <tr> <td>700-800</td><td>IIII I</td><td>6</td></tr> <tr> <td>800-900</td><td>IIII</td><td>4</td></tr> </tbody> </table> 03	CI	Tally marks	frequency	300-400	II	2	400-500	III	5	500-600	IIII	5	600-700	IIII III	8	700-800	IIII I	6	800-900	IIII	4	
CI	Tally marks	frequency																					
300-400	II	2																					
400-500	III	5																					
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600-700	IIII III	8																					
700-800	IIII I	6																					
800-900	IIII	4																					
51	$\Sigma fi = 50$ Fixi 42 48 120 60 126 176 $\Sigma fixi = 572$ Mean = $\frac{\Sigma fixi}{\Sigma fi} = \frac{572}{50} = 11.44$ 1/2 mark for any three correct ans 1/2	1/2 <u>1</u> 03																					
52	In $\triangle MNP$ $MN^2 = 17^2 - 8^2$ $MN = \sqrt{225} = 15 \text{ m}$ Ar(marigold field) = $\frac{1}{2} \times 8 \times 15$ $= 60 \text{ m}^2$ Ar(rectangular field) = 8×15 $= 120 \text{ m}^2$ Total area of the field = $60 \text{ m}^2 + 120 \text{ m}^2$ $= 180 \text{ m}^2$	1/2 1/2 1/2 1/2 1/2 1/2																					
53	$a = 56 \text{ m}, b = 52 \text{ m}, c = 60 \text{ m}$ $S = \frac{1}{2} \times (56 + 52 + 60) = 84 \text{ m}$ Ar ($\triangle$ park) = $\sqrt{s(s-a)(s-b)(s-c)}$ $= \sqrt{84 \times (84-56)(84-52)(84-60)}$ $= \sqrt{84 \times 28 \times 32 \times 24}$ $= \sqrt{28^2 \times 16^2 \times 3^2}$ $= 28 \times 16 \times 3 = 1344 \text{ m}^2$ Now, $\frac{1}{2} \times PR \times QN = 1344$ $\frac{1}{2} \times 52 \times QN = 1344$ Therefore distance is $QN \approx 51.69 \text{ m}$	1/2 1/2 1/2 1/2 1/2 or 1/2 1/2 = 03																					

	Section D (4 marks each)	
54	Correctly marking /plotting/ drawing: Class interval on x-axis Frequencies on Y- axis Histogram Frequency polygon	}1 1_{1/2} 1 1/2 =04
55	Each side of the field = $80/4 = 20$ m $\triangle ABC : a = 20$ m, $b = 20$ m , $c = 24$ m $S = \frac{1}{2} \times (20+20+24) = 32$ m $Ar(\triangle ABC) = \sqrt{s(s-a)(s-b)(s-c)}$ $= \sqrt{32(32-20)(32-20)(32-24)}$ $= \sqrt{32 \times 12 \times 12 \times 8}$ $= \sqrt{12^2 \times 8^2 \times 2^2}$ $= 12 \times 8 \times 2 = 192$ m² $Ar(\text{rhombus shaped field}) = 2 \times 192$ m² $= 384$ m² Therefore the cost of weeding = ₹ 15x 384 $= ₹ 5760$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ }_{1/2} }1

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