ANNEXURE -A

DAV PUBLIC SCHOOLS, ODISHA

PA-III Examination-2023-24 , SUBJECT: MATHEMATICS, CLASS :IX

BLUE PRINT OF QUESTION PAPER

Sl No.	Chapters / units	Marks Allotted in Syllabus	VSA (10 No.s)	CASE STUDY(01)	SA-I (02 Nos.)	SA-I I (04 Nos.)	LA (02 Nos.)	TOTAL (19NOS.)
1	Linear Equations in two variables	**10**	1+1+1		2*		5	**10(5)**
2	Circles	**15**	1+1+1+1(A/R)			3+3	5*	**15(7)**
3	Surface areas and volumes	**15**	1+1+1	4	2	3+3*		**15(7)**
MARKS		**40**	**10(10)**	**04(1)**	**04(2)**	**12(4)**	**10(2)**	**40(19)**

Note:- Number inside the bracket indicate the number of questions and the number outside the bracket indicates the total marks.

*Mark denotes the Internal choice questions

TYPOLOGY:

Remembering & Understanding: 22 marks (54%)

Applying : 10 marks (24%)

Analyzing, Evaluating and Creating: 08 marks (22%)

ANNEXURE- B

TYPOLOGY	R	U	A	AN	E /C	TOTAL
LA		05(01)	05(01)			10(02)
SA-II	03(01)	03(01)	03(01)	03(01)		12(04)
SA-1	02(01)	02(01)				04(02)
MCQ	05(05)	02(02)		01(01)	02(02)	10(10)
CBQ			04(01)			04(01)
TOTAL	10(07)	12(05)	12(03)	04(02)	02(02)	40(19)

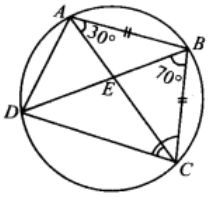
QUESTIONWISE ANALYSIS

Q. No.	Unit	Forms of Question - (MCQ,SAI,SAII,CB,LA)	Marks Allotted	(R), (U), (A), (H), (E)
1	Linear Equations in Two Variables	MCQ	1	R
2	Linear Equations in Two Variables	MCQ	1	R
3	Linear Equations in Two Variables	MCQ	1	R
4	Circles	MCQ	1	R
5	Circles	MCQ	1	R
6	Circles	MCQ	1	U
7	Surface Areas and Volumes	MCQ	1	U
8	Surface Areas and Volumes	MCQ	1	AN
9	Surface Areas and Volumes	MCQ	1	E
10	Circles	MCQ	1	E
11	Linear Equations in Two Variables	SAI	2	U
12	Surface Areas and Volumes	SAI	2	R
13	Circles	SAII	3	U
14	Circles	SAII	3	AN
15	Surface Areas and Volumes	SAII	3	R
16	Surface Areas and Volumes	SAII	3	A
17	Linear Equations in Two Variables	LA	5	U
18	Circles	LA	5	A
19	Surface Areas and Volumes	CB	4	A

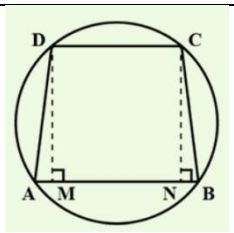
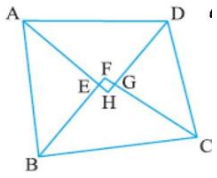
DAV INSTITUTIONS,ODISHA-ZONE
PA-III EXAMINATION (2023-24)
SUB-MATHEMATICS
CLASS-IX MARKING SCHEME

ANNEXURE-C

Q. No	VALUE POINTS	MARKS PER STEP	TOTAL	BOOK PAGE REFERENCE
	SECTION-A			
1	(a) 4	1	1	NCERT PG NO-56
2	(a) y= 5+3x	1	1	NCERT PG NO-57
3	(c)x+y=0	1	1	NCERT PG NO-59
4	(a) 150°	1	1	NCERT PG NO-123
5	(a) 2cm	1	1	NCERT PG NO-122
6	(d) 75º	1	1	NCERT PG NO-125
7	(d) $\frac{32}{3}\pi r^3$	1	1	NCERT PG NO-148
8	(b) halved	1	1	NCERT PG NO-146
9	(b) 2:1	1	1	NCERT PG NO-147
10	(b) both Assertion and reason are correct but reason is not correct explanation for Assertion	1	1	NCERT PG NO-124
	SECTION-B			
11	Given :3x – 2y +12 = 0 ATQ :y = $\frac{3}{4}$ x Putting the value 3x – 2 ($\frac{3}{4}$ x) +12 =0 3x = -24 x= -8, y= $\frac{3}{4}$ x (-8)= -6 Hence the required solution is (-8,-6)	½ ½ ½ ½		NCERT PG NO-57

OR	Given: 2x+y=7, y=7-2x For x = - 1, we get−2+y=7 ⇒y=9 ∴ (-1, 9) is a solution. For x = 0, we get ⇒0+y=7 ⇒y=7 ∴ (0, 7) is a solution. For x = 1, we get ⇒2+y=7 ⇒y=5 ∴ (1, 5) is a solution. For x = 2, we get ⇒4+y=7 ⇒y=3 ∴ (2, 3) is a solution. Hence, we have four solution (−1,9),(0,7),(1,5)and(2,3)	½ ½ ½ ½		NCERT PG NO-57
12	Height=8cm Radius=6cm Volume= $\frac{1}{3}\pi r^2 h = 96\pi$ cm^3	½ 1 ½		NCERT PG NO-147
	SECTION-C			
13	 Solution Since angles in the same segment of a circle are equal. ∴∠BAC = ∠BDC ⇒∠BDC = 30° ∠DBC = 70° [Given] In ΔBCD, we have ∠BCD + ∠DBC + ∠CDB = 180° [Sum of angles of a triangle is 180°] ⇒∠BCD + 70° + 30° = 180° ⇒∠BCD = 180° -100° = 80° Now, in ΔABC, AB = BC [Given] ∴∠BCA = ∠BAC [Angles opposite to equal sides of a triangle are equal] ⇒∠BCA = 30° [∵∠B AC = 30°] Now, ∠BCA + ∠BCD = ∠BCD ⇒ 30° + ∠ECD = 80° ⇒∠BCD = 80° – 30° = 50°	1 1 1	3	NCERT PG NO-127
14	Given: AOB diameter, CD=OC=OD To prove:∠BCA=60^0 Construction: BC is joined. Proof: ODC is an equilateral triangle since all sides are equal So, $\angle COD = 60^0$ $\angle CBD = \frac{1}{2}\angle COD = \frac{1}{2}(60) = 30^0$(inscribed angle) $\angle ACB = 90$(angle in a semi-circle) $\angle BCE = 180 - 90 = 90^0$ $\angle CEB = 180 - (90 + 30) = 60^0$ ∠AEB = 60^0	½ 1 ½ 1	3	NCERT PG NO-126
15	Solution			NCERT PG

	Height (h) of the conical tent = 8 m Radius (r) of base of the tent= 6 m So, slant height (l) of the tent =10 m CSA of conical tent = πrl $=(3.14\times6\times10)m^2=188.4\ m^2$ Let the length of canvas required be x m. 20 cm=0.2 m will be wasted, So length of the canvas used = (x – 0.2 m). Breadth of canvas= 3 m Area of sheet = CSA of the tent $(x-0.2)\times3=188.4$ x – 0.2 m = 62.8 x=63meter ∴ The length of the required canvas sheet will be 63 m	1 1 1	3	NO-141
OR	Inner radius of tank r_1 = 1 m Thickness of the iron sheet = 1 cm = 0.01 m So, outer radius = 1.01 m Volume of iron used = $\frac{2}{3}\times\frac{22}{7}(1.01^3-1^3)$ = 0.06343 cm^3 Thus volume of iron used is 0.06343 cm^3	1 2	3	NCERT PG NO-145
16	Surface area of sphere= $4\pi r^2 = 4\pi\times5\times5 = 100\pi cm^2$ curved surface area of cone= $\pi rl cm^2 = 4\pi l cm^2$ $\therefore 100\pi = 5(4\pi l)$ $\Rightarrow l = 5cm$ Now $l^2 = h^2 + r^2$ $\Rightarrow 5^2 = h^2 + 4^2$ $\Rightarrow h^2 = 9$ $\Rightarrow h = 3$ Volume of cone= $\frac{1}{3}\pi r^2 h$ $=\frac{1}{3}\times\frac{22}{7}\times4\times4\times3$ $=\frac{35.2}{7}$ $= 50.29cm^3$.	½ ½ ½ ½ 1	3	NCERT PG NO-145
	SECTION-D			
17.	Given relation is y=9/5(x−273)+32 ....(i) (i) Given, x =313 K, then from Eq(i); we get, y=9/5(313−273)+32 =9/5×40+32 =72+32=104° F (ii) from Eq (i); putting the values 158 = 9/5(x−273) +32 ⇒158 x 5 = 9(x−273) +32 ×5 ⇒158×5=9(x −273)+160 ⇒790 = 9(x −273)+160 ⇒790 −160 = 9(x−273) ⇒9(x−273) = 630	1.5 1.5	5	NCERT PG NO-57

	⇒x−273 = 630/9 =70 ⇒x−273=70 ∵x = 70+273 =343 K (iii) Let F=K = x x = 9/5(x-273) + 32 4x = 2925 x = 606.25	2		
18	Given: ABCD is a trapezium where non-parallel sides AD and BC are equal.  To prove: ABCD is cyclic trapezium. Construction: DM and CN are perpendicular drawn on AB from D and C, respectively. Proof:In △DAM and △CBN, AD=BC [Given] ∠AMD=∠BNC [Right angles] DM=CN [Distance between the parallel lines] Therefore, △DAM≅△CBN (by RHS congruence) Now, ∠A=∠B [by CPCT] Also, ∠B+∠C=180° [Sum of the co-interior angles] ⇒∠A+∠C=180° Thus, ABCD is a cyclic quadrilateral as the sum of the pair of opposite angles is 180°. (Any alternative way of correct proof can also be accepted)	1 1 3	5	NCERT PG NO-128
OR	Given, AH,BF,CF,DH are angle bisectors of Quadrilateral ABCD To prove, EF GH cyclic quadrilateral Proof: ABCD is a quadrilateral. AH, BF, CF and DH, angle bisectors form quadrilateral EFGH.  ∠FEH=∠AEB=180°-(1/2) (∠A+∠B) (Reason) ∠ FGH=∠CBD=180°-(1/2) (∠C+∠D) (Reason) So, ∠FEH+∠FGH=180° As, the sum of opp. angles of quadrilateral EFGH is 180°, so it is cyclic.	2 3	5	NCERT PG NO-127
	SECTION-E			
19	i) Volume of hemisphere =(2/3)(22/7)(3.5)(3.5)(3.5) = 269.5/3 = 89.83 m^3 ii) CSA of hemisphere = $2\pi r^2$ =2(22/7)(4.2)(4.2) = 110.88 m^2 iii) Surface area of each dome= $2\pi r^2$ Surface area of 4 domes = $4(2\pi r^2)$	1 1	4	NCERT PG NO-145

	$= 4 \times 2 \times \frac{22}{7} \times 2^2$ = 704/7 = 100.57 sq.m Area of cloth required = 100.57 sq.m OR SA of sphere = 154 sq.cm ⇨ $4\pi r^2$=154 ⇨ $r = \frac{7}{2} cm$ Volume = $\frac{4}{3}\pi r^3$= (4/3)(22/7)(7/2)(7/2)(7/2) =539/3 = 179.67 cubic cm.	2 2		