



UNIFIED CYBER OLYMPIAD (UPDATED)

CLASS - 10

Question Paper Code : UC351

KEY

1. B	2. C	3. C	4. C	5. B	6. A	7. A	8. D	9. A	10. C
11. D	12. B	13. A	14. C	15. A	16. C	17. D	18. A	19. D	20. A
21. B	22. A	23. B	24. D	25. B	26. A	27. D	28. A	29. A	30. D
31. A	32. B	33. B	34. B	35. B	36. D	37. D	38. A	39. D	40. B
41. C	42. D	43. C	44. C	45. C	46. C	47. B	48. B	49. D	50. C



MENTAL ABILITY

1. **(B)** In ∆ABD a = 133 cm



Area of $\triangle ABD = \sqrt{s(s - a)(s - b)(s - c)}$

 $= \sqrt{247(247 - 205)(247 - 156)(247 - 133)} \,\mathrm{cm}^2$

 $= \sqrt{247 \times 42 \times 91 \times 114}$

$$= \sqrt{19 \times 13 \times 7 \times 6 \times 13 \times 7 \times 19 \times 6} \text{ cm}^2$$

= $19 \times 13 \times 7 \times 6$ cm²

= 10,374 cm²

Similarly area \triangle BCD = 7,854 cm²

Area of quadrilateral ABCD = Area of \triangle ABD + Area of \triangle BCD = 18,228 cm²

2. **(C)** Given
$$x^2 + x - 12 = 0$$

 $x^2 + 4x - 3x - 12 = 0$

$$x(x+4) - 3(x+4) = 0$$

$$x = -4$$
 (or) $x = 3$

$$a = -4 \& b = 3$$
then $a^4b^3 + a^3b^4$

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$$= a^{3}b^{3} (a + b) = (-12)^{3} (-4 + 3) = 1728$$
3. (C) HCF of 84 & 36 is 12
∴ Minimum tiles = $\frac{84 \times 36 \text{ m}^{2}}{12 \times 12 \text{ m}^{2}} = 21$
4. (C) Given $x + y = 45 \rightarrow (1) \& (x - 5) (y - 5) = 150$
 $xy - 5x - 5y + 25 = 150$
 $xy - 5 (x + y) = 125$
 $xy - 5 (45) = 125$
 $xy - 5 (45) = 125$
 $xy - 350$
 $x + y = 45 \& xy = 350 \Rightarrow x = 35 \& y = 10$
∴ Age of son = 10 years
(OR) Verify from options
5. (B) If $a^{n+1} = 1 \Rightarrow a^{n+1} = a^{0}$
∴ $n + 1 = 0$
∴ $n = -1$
If $n = -1 \Rightarrow \frac{a^{1} + b^{1}}{a^{0} + b^{0}} = \frac{a + b}{2}$ is the AM of $a \& b$
6. (A) Let three consecutive terms of an AP be
 $a - d, a, a + d$
Given $a - d + a + a + d = 27$
 $3a = 27$
 $a = 9$
Given $(9 - d) (9) (9 + d) = 405$
 $(9 - d) (9 + d) = \frac{405}{9} = 45$
 $9^{2} - d^{2} = 45$
 $81 - 45 = d^{2}$
 $d = \pm 6$
If $a = 9 \& d = 6$ then $a - d = 3, a + d = 15$
If $a = 9 \& d = -6$ then three terms are 15, 9, 3
Biggest number = 15

•	(A)	Given $ax + by = a - b \rightarrow (1) \& bx - ay = a + b \rightarrow (2)$
		$eq(1) \times b \implies abx + b^2y = ab - b^2$
		$eq(2) \times a \implies abx - a^2y = a^2 + ab$
		<u>(-) (+) (-) (-)</u>
		$(a^2+b^2)y = (a^2+b^2)$
		<i>y</i> = – 1
		If $y = -1$ then $ax - b = a - b$
		ax = a
		<i>x</i> = 1 & <i>y</i> = – 1
	(D)	Given $\sqrt{2}x - 3\sqrt{5}y = 17 \rightarrow (1)$ &
		$\sqrt{5} x + \sqrt{2} y = 0$
		$(\sqrt{2}, -\sqrt{5})$ satisfies both equations
	(A)	$P(\bar{E}) = 1 - P(E) = 1 - \frac{2}{7} = \frac{5}{7}$
0.	(C)	$\alpha + \beta = 3\sqrt{2} + 2 \& \alpha\beta = 6\sqrt{2}$ i.e $3\sqrt{2} \times 2$
		The roots are $3\sqrt{2}$, 2
1.	(D)	Given L = 33 cm, B = 28 cm & H = 23 cm
		<i>l</i> = L – 2w = 30 cm b = B – 2w = 25 cm & h = H – 2w = 20 cm
		Volume of the box = LBH – lbh = $33 \times 28 \times 23$ cm ³ – $30 \times 25 \times 20$ cm ³
		= 21252 cm ³ – 15000 cm ³
		$= 6252 \text{ cm}^3$
2.	(B)	Let $x + x^2 = a$
		$\frac{9}{1} = 5 - a$
		(1 + a)
		$9 = 5 + 4a - a^2$
		$a^2 - 4a + 4 = 0$
		$(a-2)^2 = 0$
		a – 2 = 0
		$x^2 + x - 2 = 0$
		$x^2 + 2x - x - 2 = 0$
		x(x+2) - 1(x+2) = 0
		<i>x</i> = – 2 (or) 1

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13. (A) Given r = 5 cm & R = r + w = 5.25 cm
Volume of steal =
$$\frac{2}{3}\pi R^3 - \frac{2}{3}\pi r^3$$

= $\frac{2}{3}\pi [(5.25)^3 - 5^3] cm^3$
= $\frac{2}{3}\pi \left[\frac{(21)}{4}^3 - 125 \right] cm^3$
= $\frac{2}{3}\pi \left[\frac{9261 - 8000}{64} \right] cm^3$
= $\frac{2}{3}\pi \left[\frac{1261}{64} \right]$
= $\frac{2}{3} \times 3.14 \times \frac{1261}{64} cm^3$
= 41.245 cm^3
= 41.245 cm^3
= 41.25 cm^3
14. (C) Favourable out comes = {(2, 3) (2, 6) (4, 3) (4, 6) (6, 3) (6, 6) (3, 2) (6, 2) (3, 4) (6, 4) (3, 6)}
n(E) = 11
n(S) = 36
 \therefore P(E) = $\frac{n(E)}{n(S)} = \frac{11}{36}$
15. (A) 16 - 4x² = -4(x² - 4) = -4(x - 2)(x + 2) x² + x - 6 = (x + 3) (x - 2)
 \therefore LCM of (16 - 4x²) & (x² + x - 6) = -4(x - 2) (x + 2) (x + 2)(x + 3) = -4 (x² - 4) (x + 3)
REASONING
16. (C) 543, 453. In all others, digit at 1st position moves to 1st position and digit at 3rd position moves to 2nd position.

- 17. (D) 89 cubes are there in the given series.
- 18. (A) There are (6 3 2), (6 3 2) groups.
- 19. (D) Eaten today The hidden word 'tent'

20. (A)	Her uncle father \rightarrow grand father \rightarrow daughter \rightarrow son \rightarrow her aunt \rightarrow cousin brother.				
21. (B)	1 st digit = right side number 2 nd digit + left side number 1 st digit.				
	2 nd digit = right side number 1 st digit + left number 2 nd digit.				
	1 st digit 4 + 5 2 nd digit 3 + 6				
	= 99				
22. (A)	Opposite squares are a mirror image for each other.				
23. (B)	P % Q + R – S				
	'S' is south east with respect to Q.				
24. (D)	If A = 1, B = 2, C = 3 so on				
	'R' is 15 th letter to C				
	'W' is 3 rd letter to T				
	Similarly				
	'W' is 15 th letter to H				
	'R' is 3 rd letter to O				
	The answer is 'WR'.				
25. (B)	(3, 6, 7) (2, 5, 9) (1, 4, 8) is correct group.				
26. (A)	The arragement in the parking :				
	B + G + B + 2G + B + 3G + B + 4B + B + 5G + B + 6G + B + 7G + B + 5G = 40 students				
	So, number of girls in the second half of the row = 6 + 7 + 5 = 18				
27. (D)					
28 (A)	<u>9</u> – <u>–</u> 163 + 361 – 524				
20. (h)	524 + 425 = 949				
	949 + 949 = 1898				
	1898 + 8981 = 10879				
29. (A)	Start at 1 and work clockwise to each segment adding 3 6 9 12 15 18				
	1+3=4 $4+6=10$				
	10 + 9 = 19 $19 + 12 = 31$				
30. (D)					

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COMPUTERS

- 31. (A) Dark wide border
- 32. (B) Right click on the Sheet tab and select Delete Sheet
- 33. (B) Here, the writer copies considerable portions of text from a single source, without making any significant changes.
- 34. (B) Presentation Softwarer
- 35. (B) Custom slide show
- 36. (D) Barchart. Used to show comparisons between different items of date and which run horizontally on the page.
- 37. (D) Domain name system
- 38. (A) Hold down the shift key as you click each object that you want to select.
- 39. (D) You can import tables, queries, forms from one Access database into current database.

- 40. **(B)** Notepad
- 41. **(C)** To select value from another table.
- 42. (D) The do while loop checks the condition at the end of the loop. This means that statement inside the loop body will be executed at least once even if the condition is never true.
- 43. (C) Object browser
- 44. **(C)** A router is a device that forward data packets along networks.
- 45. **(C)** div

<u>ENGLISH</u>

- 46. **(C)** Chronometer
- 47. (B) Luxurious
- 48. (B) Bovine
- 49. (D) Money, meant for women, lying idle.
- 50. (C) To try to settle a disagreement or argument.