## UNIFIED COUNCIL

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## UCO

Unified
Cyber
Olympiad

## UNIFIED CYBER OLYMPIAD (UPDATED)

## CLASS - 10 Question Paper Code : UC351

## KEY

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

## SOLUTIONS

## MENTAL ABILITY

1. (B) $\ln \triangle \mathrm{ABD}$ a $=133 \mathrm{~cm}$ $\mathrm{b}=156 \mathrm{~cm}, \mathrm{c}=205 \mathrm{~cm}$


$$
\mathrm{s}=\frac{\mathrm{a}+\mathrm{b}+\mathrm{c}}{2}=\frac{494}{2} \mathrm{~cm}=247 \mathrm{~cm}
$$

$$
\text { Area of } \triangle A B D=\sqrt{s(s-a)(s-b)(s-c)}
$$

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

$=\sqrt{247 \times 42 \times 91 \times 114}$
$=\sqrt{19 \times 13 \times 7 \times 6 \times 13 \times 7 \times 19 \times 6} \mathrm{~cm}^{2}$
$=19 \times 13 \times 7 \times 6 \mathrm{~cm}^{2}$
$=10,374 \mathrm{~cm}^{2}$
Similarly area $\triangle B C D=7,854 \mathrm{~cm}^{2}$
Area of quadrilateral $A B C D=$ Area of
$\triangle A B D+$ Area of $\triangle B C D=18,228 \mathrm{~cm}^{2}$
2. (C) Given $x^{2}+x-12=0$

$$
\begin{aligned}
& x^{2}+4 x-3 x-12=0 \\
& x(x+4)-3(x+4)=0 \\
& x=-4 \text { (or) } x=3 \\
\therefore \quad & \mathrm{a}=-4 \& \mathrm{~b}=3 \text { then } \mathrm{a}^{4} \mathrm{~b}^{3}+\mathrm{a}^{3} \mathrm{~b}^{4}
\end{aligned}
$$

$=a^{3} b^{3}(a+b)$
$=(-12)^{3}(-4+3)=1728$
3. (C) HCF of $84 \& 36$ is 12
$\therefore$ MInimum tiles $=\frac{84 \times 36 \mathrm{~m}^{2}}{12 \times 12 \mathrm{~m}^{2}}=21$
4. (C) Given $x+y=45 \rightarrow(1) \&(x-5)(y-5)=$ 150
$x y-5 x-5 y+25=150$
$x y-5(x+y)=125$
$x y-5(45)=125$
$x y=125+225$
$x y=350$
$x+y=45 \& x y=350 \Rightarrow x=35 \& y=10$
$\therefore$ Age of son $=10$ years
(OR) Verify from options
5. (B) If $a^{n+1}=1 \Rightarrow a^{n+1}=a^{0}$
$\therefore \mathrm{n}+1=0$
$\therefore \mathrm{n}=-1$
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 $a-d+a+a+d=27$
$3 \mathrm{a}=27$
$a=9$
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 $=15$
7. (A) Given $\mathrm{a} x+\mathrm{b} y=\mathrm{a}-\mathrm{b} \rightarrow$ (1) \& $\mathrm{b} x-\mathrm{a} y=$ $a+b \rightarrow$ (2)
$e q(1) \times b \Rightarrow a b x+b^{2} y=a b-b^{2}$
$e q(2) \times a \Rightarrow a b x-a^{2} y=a^{2}+a b$

$$
\frac{(-)(+) \quad(-)(-)}{\left(\mathrm{a}^{2}+\mathrm{b}^{2}\right) y=\left(\mathrm{a}^{2}+\mathrm{b}^{2}\right)}
$$

$y=-1$
If $y=-1$ then $a x-b=a-b$
$\mathrm{a} x=\mathrm{a}$
$x=1 \& y=-1$
8. (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
9. (A) $P(\bar{E})=1-P$
$(E)=1-\frac{2}{7}=\frac{5}{7}$
10. (C) $\alpha+\beta=3 \sqrt{2}+2 \& \alpha \beta=6 \sqrt{2}$ i.e $3 \sqrt{2} \times 2$
$\therefore \quad$ The roots are $3 \sqrt{2}, 2$
11. (D) Given $L=33 \mathrm{~cm}, \mathrm{~B}=28 \mathrm{~cm} \& \mathrm{H}=23 \mathrm{~cm}$ $l=\mathrm{L}-2 \mathrm{w}=30 \mathrm{~cm} \mathrm{~b}=\mathrm{B}-2 \mathrm{w}=25 \mathrm{~cm} \& \mathrm{~h}$ $=\mathrm{H}-2 \mathrm{w}=20 \mathrm{~cm}$

Volume of the box $=\mathrm{LBH}-\mathrm{lbh}=33 \times 28 \times$ $23 \mathrm{~cm}^{3}-30 \times 25 \times 20 \mathrm{~cm}^{3}$
$=21252 \mathrm{~cm}^{3}-15000 \mathrm{~cm}^{3}$
$=6252 \mathrm{~cm}^{3}$
12. (B) Let $x+x^{2}=\mathrm{a}$

$$
\begin{aligned}
\therefore & \frac{9}{1+a}=5-a \\
& 9=(5-a)(1+a) \\
& 9=5+4 a-a^{2} \\
& a^{2}-4 a+4=0 \\
& (a-2)^{2}=0 \\
& a-2=0 \\
& x^{2}+x-2=0 \\
& x^{2}+2 x-x-2=0 \\
& x(x+2)-1(x+2)=0 \\
& x=-2 \text { (or) } 1
\end{aligned}
$$

13. (A) Given $r=5 \mathrm{~cm} \& R=r+w=5.25 \mathrm{~cm}$

Volume of steal $=\frac{2}{3} \pi R^{3}-\frac{2}{3} \pi r^{3}$
$=\frac{2}{3} \pi\left[(5.25)^{3}-5^{3}\right] \mathrm{cm}^{3}$
$=\frac{2}{3} \pi\left[\left(\frac{21}{4}\right)^{3}-125\right] \mathrm{cm}^{3}$
$=\frac{2}{3} \pi\left[\frac{9261-8000}{64}\right] \mathrm{cm}^{3}$
$=\frac{2}{3} \pi\left[\frac{1261}{64}\right]$
$=\frac{2}{3} \times 3.14 \times \frac{1261}{64} \mathrm{~cm}^{3}$
$=41.245 \mathrm{~cm}^{3}$
$=41.25 \mathrm{~cm}^{3}$
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) $(3,6)\}$
$n(E)=11$
$n(S)=36$
$\therefore \quad P(E)=\frac{n(E)}{n(S)}=\frac{11}{36}$
15. (A) $16-4 x^{2}=-4\left(x^{2}-4\right)=-4(x-2)(x+2)$
$x^{2}+x-6=(x+3)(x-2)$
$\therefore \quad$ LCM of $\left(16-4 x^{2}\right) \&\left(x^{2}+x-6\right)=-4(x-2)$ $(x+2)(x+3)$
$=-4\left(x^{2}-4\right)(x+3)$

## REASONING

16. (C) 543, 453. In all others, digit at $1^{\text {st }}$ position moves to $3^{\text {rd }}$ position, digit at $2^{\text {nd }}$ position moves to $1^{\text {st }}$ position and digit at $3^{\text {rd }}$ position moves to $2^{\text {nd }}$ position.
17. (D) 89 cubes are there in the given series.
18. (A) There are (6 32 ), ( 632 ) 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) $1^{\text {st }}$ digit $=$ right side number $2^{\text {nd }}$ digit + left side number $1^{\text {st }}$ digit.
$2^{\text {nd }}$ digit $=$ right side number $1^{\text {st }}$ digit + left number $2^{\text {nd }}$ digit.
$1^{\text {st }}$ digit $4+5 \quad 2^{\text {nd }}$ 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 $A=1, B=2, C=3 \ldots$ so on
' $R$ ' is $15^{\text {th }}$ letter to $C$
' $W$ ' is $3^{\text {rd }}$ letter to $T$
Similarly
'W' is $15^{\text {th }}$ letter to H
' $R$ ' is $3^{\text {rd }}$ letter to $O$
$\therefore \quad$ 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 :
$B+G+B+2 G+B+3 G+B+4 B+B+5 G$
$+B+6 G+B+7 G+B+5 G=40$ students
So, number of girls in the second half of the row $=6+7+5=18$
27. (D)

28. (A) $163+361=524$
$524+425=949$
$949+949=1898$
$1898+8981=10879$
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)


## 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 Software
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

## ENGLISH

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.
