UNIFIED COUNCIL

An ISO 9001:2015 Certified Organisation

UCO
Unified
Cyber
Olympiad

UNIFIED CYBER OLYMPIAD *(UPDATED)*

CLASS - 9
Question Paper Code : UC351

KEY

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

SOLUTIONS

MENTAL ABILITY

1. **(B)** $\sqrt{43 - 12\sqrt{7}} - \dfrac{2}{\sqrt{16 - 6\sqrt{7}}}$

$= \sqrt{43 - 2\sqrt{252}} - \dfrac{2}{\sqrt{16 - 2\sqrt{63}}}$

$= \sqrt{36 + 7 - 2\sqrt{36} \times \sqrt{7}} - \dfrac{2}{\sqrt{9 + 7 - 2\sqrt{9} \times \sqrt{7}}}$

$= \sqrt{(6)^2 + (\sqrt{7})^2 - 2\sqrt{36} \times \sqrt{7}} - \dfrac{2}{\sqrt{(3)^2 + (\sqrt{7})^2 - 2\sqrt{9} \times \sqrt{7}}}$

$= \sqrt{(6 - \sqrt{7})^2} - \dfrac{2}{\sqrt{(3 - \sqrt{7})^2}}$

$= (6 - \sqrt{7}) - \dfrac{2}{(3 - \sqrt{7})} \times \dfrac{(3 + \sqrt{7})}{(3 + \sqrt{7})}$

$= (6 - \sqrt{7}) - (3 + \sqrt{7})$

$= 6 - \sqrt{7} - 3 - \sqrt{7}$

$= 3 - 2\sqrt{7}$

2. **(A)** $\sqrt{15}\, x^2 + 2xy - \sqrt{15}\, y^2$

$= \sqrt{15}\, x^2 + 5xy - 3xy - \sqrt{15}\, y^2$

$= \sqrt{5}x\,(\sqrt{3}\,x + \sqrt{5}\,y) - \sqrt{3}\,y\,(\sqrt{3}\,x + \sqrt{5}\,y)$

$= (\sqrt{3}\,x + \sqrt{5}\,y)\,(\sqrt{5}\,x - \sqrt{3}\,y)$

3. **(C)** If $f(x) = 1 + x + x^2 + x^3 + \ldots\ldots + x^{2019}$ is divided by

$(x - 1)$ then the remainder is f(1)

$\therefore$ f(1) = $1 + \underbrace{1 + 1 + 1 + \ldots\ldots + 1}_{2019}$ = 2020

4. **(D)** Given $x + y$ = 38 & xy = 325

$(x - y)^2 = (x + y)^2 - 4xy = 38^2 - 4 \times 325$

= 1,444 − 1300

$x - y = \sqrt{144}$

$x - y$ = 12 & $x + y$ = 38

$\therefore$ x = 25 & y = 13

$\therefore$ 3x = 75

5. **(D)** Given $\dfrac{3^3 \times (3^4)^2}{(3^3)^3}$ = 3^x

$\Rightarrow 3^{3+8-9} = 3^x$

$3^2 = 3^x$

x = 2

6. **(C)** 64 leaves remainder 1 when divided by 9 and leaves remainder 4 when divided by 10

$\therefore$ 64 is the required number

If 64 is divided by 11 then remainder is 9

7. **(A)** Let the two numbers be x & y

Given $x + y$ = 16 & $\dfrac{1}{x} + \dfrac{1}{y} = \dfrac{1}{3}$

$\dfrac{x + y}{xy} = \dfrac{1}{3}$

$\dfrac{16}{xy} = \dfrac{1}{3}$

xy = 48

$x + y$ = 16 & xy = 48 $\Rightarrow$ x = 12 & y = 4

$x - y$ = 12 − 4 = 8

8. **(C)** It is in direct proportion

$\therefore$ $\dfrac{x_1}{y_1} = \dfrac{x_2}{y_2}$ where x_1 = 7m, y_1 = 11.2 m & y_2 = 28.8 m

$\dfrac{7\text{ m}}{11.2\text{ m}} = \dfrac{x_2}{28.8\text{ m}}$

$\dfrac{7 \times 28.8\text{ m}^2}{11.2\text{ m}} = x_2$

$\dfrac{7 \times 288\text{ m}}{112} = x_2$

$\therefore$ x_2 = 18 m

9. **(A)** Given l = 137 cm & n = 88 cm

r = $\sqrt{l^2 - h^2}$ = $\sqrt{137^2 - 88^2}$

= $\sqrt{18769 - 7744}$ = $\sqrt{11025}$

$\therefore$ r = 105 cm

TSA of toy = $\pi\,rl + 2\,\pi\,r^2 = \dfrac{22}{7} \times 105 \times$

137 cm^2 + 2 $\times \dfrac{22}{7} \times 105 \times 105$ cm^2

= 45,210 cm^2 + 69,300 cm^2

= 114510 cm^2 = 11.451 m^2

10. **(B)** Given $\dfrac{x^m}{x^n} = x^{\frac{m}{n}}$

$\Rightarrow$ $x^{m-n} = x^{\frac{m}{n}}$

m − n = $\dfrac{m}{n}$

$mn - n^2$ = m

$mn - m = n^2$

m (n − 1) = n^2

m = $\dfrac{n^2}{n-1}$

11. **(D)** Given $(x^2 - 3x + 2)$ is a factor of $(x^4 - px^2 + q)$ from options p = 5 & q = 4 satisfies the given conditions

(OR) $[(x^2 + 2) - 3x]\,[(x^2 + 2) + 3x] = x^4 - 5x^2 + 4$

12. **(C)** Remaining volume = $15 \times 20 \times (20 - 8)$ cm^3 = 3,600 cm^3

13. **(B)** Given $3\angle C = 2\angle A + 2\angle C$

$\angle C = 2\angle A$

$\angle B = 3\angle C = 3(2\angle A) = 6 \angle A$

But $\angle A + \angle B + \angle C = 180°$

$\angle A + 6\angle A + 2\angle A = 180°$

$\angle A = 20°$

14. **(A)** $\left(x^{\frac{1}{3}} - y^{\frac{1}{3}} \right) \left(x^{\frac{2}{3}} + x^{\frac{1}{3}} y^{\frac{1}{3}} + y^{\frac{2}{3}} \right)$

$= \left(x^{\frac{1}{3}} \right)^3 - \left(y^{\frac{1}{3}} \right)^3$

$= (x - y)$

15. **(B)** $\dfrac{7^3}{3^2 \times 5^3}$ = $0.304\overline{8}$ is non terminating but repeating

(OR) If a rational number in its lowest form denominator is having any prime number other than 2 & 5 then this rational is non terminating but repeating
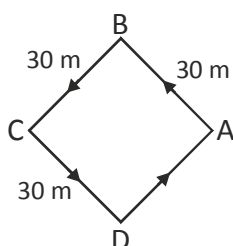
REASONING

16. **(C)** $2 + 10 = 12 \times 2 + 1 = 25$

$5 + 6 = 11 \times 2 + 1 = 23$

$3 + 6 = 9 \times 2 + 1 = 19$

17. **(B)** Furniture is made of wood. But in this context, 'wood' is called as 'straw'. So Furniture is made of straw.

18. **(A)** Capsize is formed from cap + size words

cap + size = capsize

19. **(A)** <u>abba</u> <u>baab</u> <u>abba</u> <u>baab</u>

20. **(A)** The movements of the girl are as shown in figure.
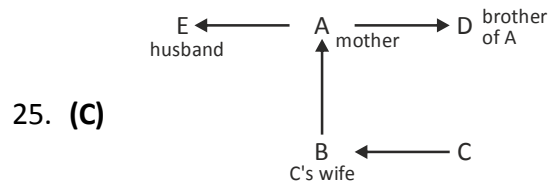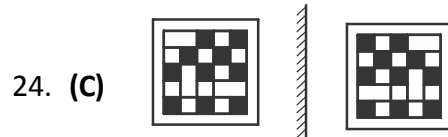

(A to B, B to C, C to D, D to A)

Clearly, she is finally moving in the direction DA i.e., North-East.

21. **(D)** 90° turn to clockwise direction.

22. **(D)** First, the first six letters and then the last six letters are written in a reverse order to obtain the code.

23. **(A)** 1-Couse, 2-Court, 3-Courgette, 4-Count, 5-Colour.

4th word is 'Count'.

24. **(C)**

25. **(C)**

'D' is B's mother brother.

∴ 'D' is the uncle of B.

26. **(B)**

27. **(A,B)** Girl is the daughter of the man.

The man may be father or uncle to the girl.

28. **(D)** Top athletes – The hidden word is 'pAth'

29. **(A)** The minute hand point to the North-East direction.

30. **(B)** The letter 'T' faces the base of the cube.

COMPUTERS

31. **(D)** OCR and MICR are character recognition technique.

32. **(A)** Operating system

33. **(D)** LINUX is operating system not an application software.

34. **(B)** A new internet technology being developed.

35. **(D)** right click the mouse button and select New $\rightarrow$ Shortcut

36. **(B)** dim

37. **(C)** In the world of graphics and architecture, a rendering is the term used for a two dimensional drawing that an artist creates to illustrate what a structure will look like once it has been built.

38. **(B)** The menu bar consists of 10 menus:

File, Edit, Image, Layer, Type, Select, Filter, View, Window and Help.

'Mask' is not a menu bar.

39. **(A)** Ctrl + Shift + N

40. **(B)** Visual basic is a tool that allows to develop graphical user interface.

41. **(A)** Hel is the output

42. **(A)** Using e-medias

43. **(C)** A wide area network (WAN) is used to interconnect computers across larger geographical areas like two cities or states or even across different countries or continents.

44. **(D)** Security services

45. **(D)** B2A, B2C, C2B, C2C are the four main types of e-commerce.

ENGLISH

46. **(B)** Fastidious

47. **(D)** Tweed

48. **(C)** Studded

49. **(D)** Why is his brother beaten by him ?

50. **(C)** To make you feel afraid or full of disgust.

The End