



**UNIFIED CYBER OLYMPIAD**

**CLASS - 9**

**Question Paper Code : 3P104**

**KEY**

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

**SOLUTIONS**

**MENTAL ABILITY**

01. (B) Given  $\sqrt{x} = \sqrt[3]{9}$

$$x^{\frac{1}{2}} = 9^{\frac{1}{3}}$$

Rising power '4' on both sides

$$\left(x^{\frac{1}{2}}\right)^4 = \left(9^{\frac{1}{3}}\right)^4$$

$$x^{\frac{1}{2} \times 4} = 9^{4 \times \frac{1}{3}}$$

$$x^2 = (9^3 \times 9)^{\frac{1}{3}}$$

$$x^2 = (9^3)^{\frac{1}{3}} \times 9^{\frac{1}{3}}$$

$$x^2 = 9\sqrt[3]{9}$$

02. (D)  $(x^2 - 3x + 2)(x - 4) - 90 = x^3 - 4x^2 - 3x^2 + 12x + 2x - 8 - 90$   
 $= x^3 - 7x^2 + 14x - 98$   
 $= x^2(x - 7) + 14(x - 7)$   
 $= (x - 7)(x^2 + 14)$

$\therefore (x - 7)$  is a factor of  $(x - 1)(x - 2)(x - 4) - 90$

03. (D)  $\sqrt{2} = 1.4142 \dots$  which is neither terminates nor repeats

$\therefore \sqrt{2}$  is an irrational number.

Similarly  $\sqrt{17}$  is also an irrational number.

$\pi = 3.1415926535 \dots$  which is neither terminates nor repeated.

04. (B)  $123456789101112 = 123456789101106 + 6$   
 $123456789101106$  is divisible by 9.  
 $\therefore$  The remainder = 6
05. (D) If  $p(x) = x^{2024} + 20204$  is divided by  $(x + 1)$ , then the remainder is  $p(-1)$   
 $[\because$  According to remainder theorem]  
 $\therefore p(-1) = (-1)^{2024} + 2024$   
 $= 1 + 2024$   
 $= 2025$
06. (B)  $2024^2 - 2023^2 = (2024 + 2023)$   
 $(2024 - 2023)$   
 $= 6047 \times 1$   
 $= 6047$
07. (C) It is in indirect proportion.  
 $\therefore x_1 y_1 = x_2 y_2$   
 $\therefore 360 \times 56 = (360 + 60) \times y_2$   
 $\frac{360^6 \times 56^8}{420^6 \times 61} = y_2$   
 $y_2 = 48$  days
08. (A)  $3125^{0.17} \times 25^{0.075} = (5^5)^{0.17} \times (5^2)^{0.075}$   
 $= 5^{0.85} \times 5^{0.15}$   
 $= 5^{0.85 + 0.15}$   
 $= 5^1$
09. (B) Let the no. of ₹ 1 coins  $x$  and no. of ₹ coins be  $y$   
 Given  $x + y = 50$   
 Amount of ₹ 1 coins = ₹  $1 \times x = ₹ x$   
 Amount of ₹ 2 coins = ₹  $2 \times y = ₹ 2y$   
 Given total amount = ₹ 82  
 $\therefore ₹ x + ₹ 2y = 82 \quad \longrightarrow \textcircled{2}$   

$$\begin{array}{r} x + 2y = 82 \\ x + y = 50 \\ \hline (-) \quad (-) \quad (-) \\ \hline y = 32 \end{array}$$
  
 $\therefore$  No. ₹ 2 coins =  $y = 32$
10. (B)  $\frac{-3}{4} = -0.75$  &  $\frac{-4}{5} = -0.8$   
 $\frac{-73}{103} = 0.708$

- $\frac{-79}{99} = -0.7979 \dots\dots\dots$  lies between  $-0.75$  and  $-0.8$
11. (A) Given  $\frac{2}{3} \pi r^3 = 19,404 \text{ cm}^3$   
 $\frac{2}{3} \times \frac{22}{7} \times r^3 = 19,404 \text{ cm}^3$   
 $r^3 = \frac{19,404 \times 9702 \times 4851^{441}}{21 \times 22 \times 111} \text{ cm}^3 \times \frac{3}{1} \times \frac{7}{22 \times 111}$   
 $r^3 = 21^2 \times 21 \text{ cm}^3$   
 $r^3 = (21 \text{ cm})^3$   
 $r = 21 \text{ cm}$   
 TSA of a hemisphere =  $3\pi r^2$   
 $= 3 \times \frac{22}{7} \times 21^3 \times 21 \text{ cm}^2$   
 $= 4158 \text{ cm}^2$
12. (C) Given  $\pi r^2 = 346.5 \text{ cm}^2$   
 $\frac{22}{7} \times r^2 = 346.5 \text{ cm}^2$   
 $r^2 = \frac{346.5 \times 31.5^{15.75}}{22 \times 21} \text{ cm}^2$   
 $r = \sqrt{110.25 \text{ cm}^2}$   
 $r = 10.5 \text{ cm}$   
 TSA of a cylinder =  $2\pi r(h + r)$   
 $= 2 \times \frac{22}{7} \times 10.5^{1.5} \text{ cm} (20 \text{ cm} + 10.5 \text{ cm})$   
 $= 66 \text{ cm} \times 30.5 \text{ cm}$   
 $= 2013 \text{ cm}^2$
13. (B) Given  $p(x) = (6x^3 - 7x^2 - 41x - 13)$  is divided by  $(3x + 4)$  the remainder =  $p\left(\frac{-4}{3}\right)$   
 $\therefore p\left(\frac{-4}{3}\right) = 6\left(\frac{-4}{3}\right)^3 - 7\left(\frac{-4}{3}\right)^2 - 41\left(\frac{-4}{3}\right) - 13$   
 $= 6^2 \left(\frac{-64}{27 \times 9}\right) - 7 \times \frac{16}{9} + \frac{164}{3} - 13$

$$= \frac{-128 - 112 + 492 - 117}{9}$$

$$= \frac{135}{9}$$

$$p\left(\frac{-4}{3}\right) = 15$$

14. (D) 
$$\frac{a}{x+a} + \frac{2x}{x-a} - \frac{a(3x-a)}{x^2-a^2}$$

$$= \frac{a(x-a) + 2x(x+a) - 3ax + a^2}{(x^2-a^2)}$$

$$= \frac{ax - a^2 + 2x^2 + 2ax - 3ax + a^2}{x^2-a^2}$$

$$= \frac{2x^2 + 3ax - 3ax}{x^2-a^2}$$

$$= \frac{2x^2}{x^2-a^2}$$

15. (A) 
$$37 \overline{) 26,06,872} \begin{array}{r} 70456 \\ 259 \\ \hline 16 \\ 0 \\ \hline 168 \\ 148 \\ \hline 207 \\ 185 \\ \hline 222 \\ 222 \\ \hline 0 \end{array}$$

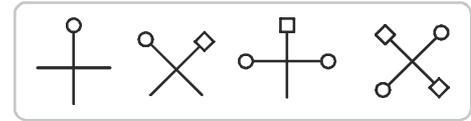
37 is a factor of 26,06,872

### REASONING

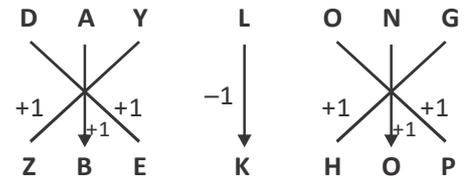
16. (D)



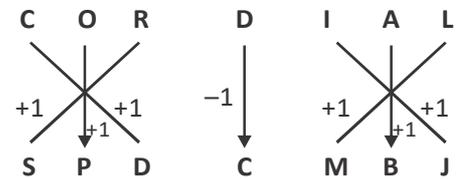
17. (A)



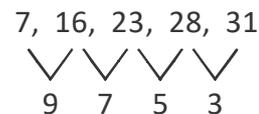
18. (A) As,



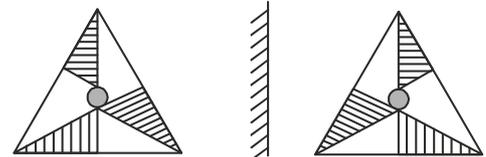
Similarly,



19. (B) GPWBE

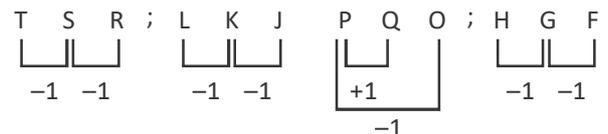


20. (A)



21. (B) M is the granddaughter of R because M is the daughter of K and K is the daughter of R.

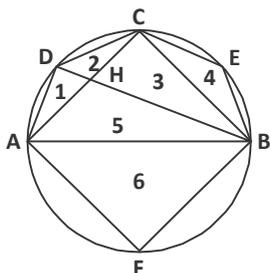
22. (C) The sequence of alphabet in each group is in reverse order (-1). Only option (C) has sequence in distributed order, i.e.,



23. (C) 4 is opposite to 3.

24. (B) Ayesha starts north and finally moves south-east, making a total turn of  $135^\circ$  ( $90^\circ$  left to west,  $90^\circ$  left to south, and then  $45^\circ$  right).

25. (A) The triangle 6 shown in figure and another is ADB, ACB, BDC, ADC, so that total number of triangle is 10



26. (D) Watch in

27. (C) W A L **K** I **N** G  
A G I **K** L **N** W

Hence, position of **two** alphabets remains unchanged.

28. (D)

29. (C)

30. (C) 6→P ; 5→O ; 3→C ; 4→K ; 1→E ; 2→T

### COMPUTERS

31. (C) DOCSIS (Data Over Cable Service Interface Specification) is the protocol used by cable modems to communicate with the cable Internet service provider (ISP) over cable television lines. It defines the standards for transmitting data over cable TV networks.
32. (A) Movie Clip: In Adobe Flash, a Movie Clip symbol is a type of symbol that contains its own independent timeline with multiple frames. These frames can include animations, graphics, and interactive elements. Movie Clips are designed to be reusable and can be placed multiple times within a Flash document.

33. (C) Software refers to the instructions or programs that tell a computer what to do, including operating systems, applications, and utilities
34. (A) The Z3 was a German electromechanical computer designed by Konrad Zuse in 1938 and completed in 1941.
35. (B) In the target popup menu, the option "Blank" is chosen to open a linked document in a new browser window while keeping the current window available. This is commonly used in HTML for hyper links.
36. (D) Here are four popular coding languages that are suitable for AI-related applications and technologies: Python, Java, C++ and Julia.
37. (A) The people in the given picture use virtual reality technology.
38. (C) Randomness is not a characteristic of a good algorithm. A good algorithm should be clear, efficient, and correct. Randomness can introduce unpredictability and make the algorithm less reliable.
39. (D) The .org domain represents non-profit organization.
40. (C) An Access Point is a device responsible for providing wireless access to the internet within a local area. It creates a wireless network (Wi-Fi) that allows devices such as smartphones, laptops, and tablets to connect to the internet wirelessly.
41. (A) Supercomputers are specialized machines designed for handling large-scale computations and simulations, making them ideal for tasks requiring high processing power, such as weather forecasting, scientific research and cryptography.
42. (D) Directly within the <style> tags CSS rules are defined directly within the <style> tags. You can write CSS selectors, properties, and values directly inside the <style> element to apply styles to HTML elements.

**ENGLISH**

43. (B) In 1973, Xerox PARC developed the Alto personal computer. It had a bitmapped screen, and was the first computer to demonstrate the desktop metaphor and graphical user interface (GUI).
44. (C) Among the options LibreOffice Writer is an open source software.
45. (B) Designing and developing websites.
46. (C)
47. (D)
48. (B)
49. (D)
50. (B)

=====*The End*=====