



Unified International Cyber Olympiad

UNIFIED INTERNATIONAL CYBER OLYMPIAD

CLASS - 8

Question Paper Code : 3P114

KEY

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

SOLUTIONS

MENTAL ABILITY

01. (B) LCM of 3, 4, 6, 12 and 24 is 24

$$\therefore -\frac{5}{6} = -\frac{20}{24}, -\frac{3}{4} = -\frac{18}{24}, -\frac{2}{3} = -\frac{16}{24}, -\frac{7}{12} = -\frac{14}{24}$$

$$\therefore -\frac{14}{24} > -\frac{16}{24} > -\frac{18}{24} > -\frac{19}{24} > -\frac{20}{24}$$

$$\text{i.e., } -\frac{7}{12} > -\frac{2}{3} > -\frac{3}{4} > -\frac{19}{24} > -\frac{5}{6}$$

02. (B) $\sqrt[3]{k(k-2)+1} = \sqrt[3]{k^2-2k+1}$

$$= \sqrt[3]{(k-1)^2}$$

$$= \sqrt[3]{(126-1)^2}$$

$$= \sqrt[3]{125^2}$$

$$= \sqrt[3]{125 \times 125}$$

$$= \sqrt[3]{25 \times 25 \times 25}$$

$$= 25$$

03. (A) $SI = \frac{2000 \times 14 \times 1.5}{100} = \text{Rs. } 420$

$$\text{Amount} = \text{Rs. } 2000 + \text{Rs. } 420 = \text{Rs. } 2420$$

04. (A) Given

$$\text{Principal (P)} = \text{Rs. } 4000$$

$$\text{Rate (R)} = 10\% \text{ p.a}$$

$$\text{Time (T)} = 3 \text{ years}$$

Compound interest (CI) formula

$$A = P \times \left(1 + \frac{R}{100}\right)^T$$

Calculation :

$$A = 4000 \left(1 + \frac{10}{100}\right)^3$$

$$= 4000 \times (1.1)^3$$

$$A = 4000 \times 1.331 = \text{Rs. } 5324$$

Answer : Rs. 5324

05. (C) Let the price of each article be 'x' number of articles sold be y then original sales amount = xy

New sales amount

$$= x \frac{(80)}{100} \times \frac{180}{100} y = \frac{36xy}{25}$$

Increased sales =

$$= \frac{36xy}{25} - xy = \frac{11xy}{25}$$

Increased sales percentage

$$= \frac{\left(\frac{11xy}{25}\right)}{xy} \times 100 = 44\%$$

06. (B)
$$\frac{16 \times 2^n \times 2 - 4 \times 2^n}{16 \times 2^n \times 2^2 - 2 \times 2^n \times 2^2}$$

$$= \frac{2^n (16 \times 2 - 4)}{2^n (16 \times 4 - 2 \times 4)}$$

$$= \frac{32 - 4}{64 - 8} = \frac{28}{56} = \frac{1}{2}$$

07. (D)
$$\frac{4^x \times 4^4 - 4 \times 4^x}{4 \times 4^x \times 4^3} = \frac{4^x (4^4 - 4)}{4^x \times 256}$$

$$= \left(\frac{256 - 4}{256}\right) = \frac{252}{256} = \frac{63}{64}$$

$$\therefore \frac{4^{x+4} - 4 \times 4^x}{4 \times 4^{x+3}} + 4^{-3} = \frac{63}{64} + \frac{1}{64}$$

$$= \frac{63 + 1}{64} = \frac{64}{64} = 1$$

08. (C) Divide the total cost by the number of drumsticks (x + 1)

$$\frac{11x^2 + 14x + 3}{x + 1}$$

Perform polynomial division or factor the numerator

$$11x^2 + 14x + 3 = (11x + 3)(x + 1)$$

So, the cost per drumstick is

$$\frac{(11x + 3)(x + 1)}{x + 1} = 11x + 3$$

09. (C) Recognize the numerator as a difference of squares

$$\frac{(2.73)^2 - (1.27)^2}{2.73 + 1.27}$$

$$= \frac{(2.73 - 1.27)(2.73 + 1.27)}{4}$$

$$= \frac{1.46 \times 4}{4} = 1.46$$

10. (A) $(3m + 4n)^2 + 2(3m + 4n)(3m - 4n) + (3m - 4n)^2$

This is of the form

$$(a + b)^2 = a^2 + 2ab + b^2$$

Let's take

$$A = (3m + 4n)$$

$$B = (3m - 4n)$$

So, the expression becomes

$$A^2 + 2AB + B^2 = (A + B)^2$$

Now

$$A + B = (3m + 4n) + (3m - 4n) = 6m$$

$$\text{So, } (A + B)^2 = (6m)^2 = 36m^2$$

11. (A) $-2\sqrt{6}$ and $-4\sqrt{6}$ satisfy

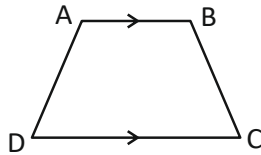
$$(-2\sqrt{6}) \times (-4\sqrt{6}) = 48 \text{ and}$$

$$-2\sqrt{6} - 4\sqrt{6} = -6\sqrt{6}$$

Factored form

$$(x - 2\sqrt{6})(x - 4\sqrt{6})$$

12. (B) Given $CD : AB = 7 : 4$



$$7x : 4x$$

$$\therefore CD = 7x \text{ and } AB = 4x$$

$$\text{Given area of } ABCD = \frac{1}{2} h (AB + CD)$$

$$440 \text{ cm}^2 = \frac{1}{2} \times 20 \text{ cm} (4x + 7x)$$

$$\frac{440}{10} = 11x$$

$$x = \frac{44}{11} = 4$$

$$\therefore CD = 7x = 7 \times 4 \text{ cm} = 28 \text{ cm}$$

13. (B) Volume of new cube = $3^3 + 4^3 + 5^3$

$$A^3 = (27 + 64 + 125) \text{ cm}$$

$$= 216 \text{ cm}^3$$

$$a^3 = 6^3$$

$$\therefore \text{side of new cube} = 6 \text{ cm}$$

$$\angle SA \text{ of the new cube} = 4\text{cm}^2 = 4 \times (6 \text{ cm})^2$$

$$= 4 \times 36 \text{ cm}^2$$

$$= 144 \text{ cm}^2$$

14. (B) Find the nearest perfect squares:

$$74^2 = 5476$$

$$75^2 = 5625$$

$$\text{Difference} : 5607 - 5476 = 131$$

$$15. (B) \text{ LHS} = \sqrt{\frac{20 \times 63 \times 176 \times 325}{175 \times 80 \times 117 \times 44}}$$

$$\sqrt{1} = 1$$

REASONING



16. (B)

$$17. (D) \text{ Numbers : } 3 \xrightarrow{+3} 6 \xrightarrow{+5} 11 \xrightarrow{+7} 18 \xrightarrow{+9} (27)$$

$$\text{Letters : } F \xrightarrow{+1} G \xrightarrow{+2} I \xrightarrow{+3} L \xrightarrow{+4} (P)$$

18. (B) On traditional mobile phones (pre-touchscreen), each numeric key was mapped to multiple letters. To type a specific letter, you had to press the same key multiple times :

- Key 7 contains the letters: P, Q, R, S

- Pressing 7 :

Once $\rightarrow$ P

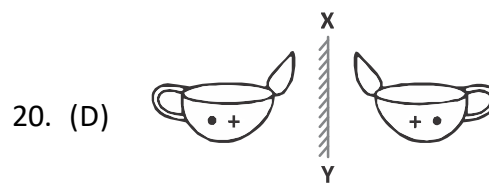
Twice $\rightarrow$ Q

Thrice $\rightarrow$ R

Four times $\rightarrow$ S

Since you are pressing 7 – 7 – 7 – 7 quickly, it is interpreted as four taps on key 7, which produces S.

19. (B) Football you is the correct answer because ally is hidden between football and you. An ally is another word for a friend or for someone who helps you. Countries often have allies

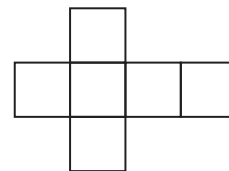


20. (D)

21. (A) Except in option (A), in all other groups there is a gap of one letter between first and third letter as in the alphabet.

22. (C) The cube will fold correctly
To successfully form a cube from a 2D net :

- The net must consist of exactly 6 squares (for 6 cube faces)
- One of these squares (usually the center) must connect to exactly 4 other squares along its edges
- The 6th square is typically attached to one of those outer squares

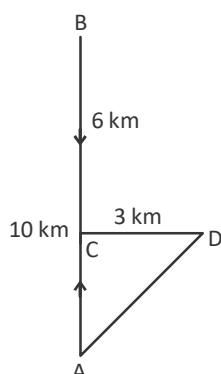


This pattern ensures :

- All faces are connected
- The structure can fold up into a closed 3D cube without overlaps or gaps

So, if one square touches four, and the rest touch at least one — this is a classic indicator of a valid cube net.

23. (D) Clearly, Kunal moves from A, 10 km northwards, upto B, then moves 6 km southwards upto C, turns towards East and walks 3 km upto D. Then



$$AC = AB - BC$$

$$= 10 - 6 = 4 \text{ km}$$

$$CD = 3 \text{ km}$$

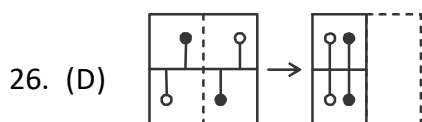
So, Kunal's distance from starting point A.

$$AD = \sqrt{AC^2 + CD^2} = \sqrt{4^2 + 3^2} = 5 \text{ km}$$

Also D is to the North-East of A

24. (B) In the first column $25 = (17 - 12)^2$ and second column $4 = (13 - 11)^2$, therefore $(19 - 16)^2$ is 9.

25. (Delete)



27. (B) $162 - 52 \div 26 + 15 \times 5$

$$162 - 2 + 75 = 235$$

28. (A) Set 1: Shapes are composed of straight lines only.

Set 2: Shapes are composed of straight lines and curved lines.

Figure 1: Shapes are composed of straight lines only.

29. (B) Rearranging the letters YGEAVO forms the word VOYAGE, which means a long journey.

30. (A) "Robanimal" combines Robot + Animal, clearly reflecting both parts.

COMPUTERS

31. (C)

The flowchart systematically eliminates internet and camera problems, pointing directly to mic and speaker feedback as the cause. While mic sensitivity (D) or noise suppression (A) can add noise, they don't typically cause a clear audio echo.

32. (C) Power supply is a hardware device used to supply power to PC and other components in a computer.

33. (B) This while loop keeps running as long as more files are left to infect, just like real malware.

The situation describes a recursive and continuous infection, where each infected file leads to more infections. This is a classic case of repetition until a condition is no longer true, which is best represented by a while loop.

while(files_left_to_infect) means:

"Keep infecting files as long as there are still files to infect."

This mirrors how malware spreads—it doesn't run for a fixed number of steps, but continues until no uninfected files are left.

34. (C) `<ol>` = ordered (numbered) list, while `<ul>` = unordered (bullets).

In HTML:

`<ol>` stands for Ordered List, which automatically numbers the list items (1, 2, 3...).

`<ul>` stands for Unordered List, which displays bullet points instead of numbers.

Since the student wants bullets instead of numbers, she should replace `<ol>` with `<ul>`.

The `<li>` tag remains unchanged, as it defines individual list items.

35. (C) Shortcut Virus – A malicious program that hides original files and creates .exe shortcuts that run the virus when clicked. Fits the situation perfectly.
36. (B) Interpolation – In animation, especially in Flash, interpolation is the process of generating intermediate frames between two keyframes to create smooth motion – exactly what motion tweening does.
37. (C) Short Text – Stores data as text, preserving all characters exactly as typed – perfect for phone numbers, IDs, and postal codes.
38. (D) In Excel, to move to a new line within the same cell, the shortcut is: Alt + Enter
39. (B) Slide Master – The correct tool for this job. It lets you edit a single master slide, and the changes automatically apply to all slides in the presentation.
40. (C) Bootkit – A specialized type of rootkit that infects the Master Boot Record (MBR) or boot sector. It loads before the operating system, making it very hard to detect and remove.
41. (B) Invalid Field Format – Correct. The Date/Time type only accepts recognizable date formats like 22/06/2024 or June 22, 2024. Writing "22JuneTwentyTwentyFour" isn't in a valid date format, so the database rejects it.
42. (C) Digital Pen – Correct. A digital pen captures handwriting or drawings on a surface, sends them to the computer, where handwriting recognition can process them, and displays the output on the screen.
43. (C) RAM – Correct. RAM (Random Access Memory) stores data temporarily while the computer is running. If a file is too big for available RAM, upgrading RAM will allow it to open.
44. (C) BIOS – The Basic Input/Output System runs immediately after power-on. It checks hardware, initializes devices, and prepares the system to load the boot loader/OS.
45. (D) PNG – Portable Network Graphics
PNG is a raster (pixel-based) format, not a vector format.
Quality degrades when zoomed in, because it stores images as a grid of pixels.
Best for high-quality web images with transparency, not for scalable drawings or maps.

ENGLISH

46. (B) "Reluctant" means unwilling or hesitant. "Hesitant" fits the meaning best. "Shy" and "stubborn" are not exact synonyms, and "open" is the opposite.
47. (B) A semicolon (;) appropriately separates two independent clauses that are closely related in meaning.
48. (C) The sentence is conditional in past perfect. The correct construction is : "would have + past participle."
49. (C) The correct spelling is environment. All other words are correctly spelled.
50. (B) "Absurd" means ridiculous or illogical. The closest synonym is "ridiculous."

===== The End =====