



# UNIFIED COUNCIL

An ISO 9001:2008 Certified Organisation



## UNIFIED CYBER OLYMPIAD - UC 326

### Solutions for class : 7

#### Mental Ability

1. (B) Figure A represents  $\frac{1}{4}$  shaded part and  $\frac{3}{4}$  unshaded part.

So,  $\frac{3}{4} \times 20 = 15$  parts should be shaded in figure B.

2. (D) The total shaded part =  $\frac{1}{7} + \frac{2}{7} + \frac{2}{7} = \frac{5}{7}$

3. (B)  $\sqrt{4096} = 64$   
 $\sqrt{4096} + \sqrt{40.96} + \sqrt{0.004096}$   
 $= 64 + 6.4 + 0.064$   
 $= 70.464$

4. (B) Number of seats in 2013 = 400  
 Percentage increase in the number of seats = 10% per year  
 $\Rightarrow 10\% \text{ of } 400 = 40$   
 $\therefore$  Number of seats in 2014 =  $400 + 40 = 440$   
 10% of 440 = 44

Hence, the number of seats in 2015 =  $440 + 44 = 484$

5. (A) Initially, principle amount = ₹ 450  
 simple interest = ₹  $(495 - 450) = ₹ 45$   
 Time = 2 years

$$R = \frac{I \times 100}{PT} = \frac{45 \times 100}{450 \times 2} = 5\%$$

Principle amount = ₹ 820

S.I. = ₹  $(943 - 820) = ₹ 123$

R = 5%

$$T = \frac{I \times 100}{PR} = \frac{123 \times 100}{820 \times 5} = \frac{246}{82} = 3 \text{ years}$$

6. (A)  $X \times \frac{2}{3} = Y$

$$\Rightarrow \frac{X}{Y} = \frac{3}{2}$$

$$\text{Fraction } \frac{X}{Y} \text{ in percentage} = \frac{3}{2} \times 100 = 150\%$$

7. (B)  $P = a^2 + a + 1$ ,  $Q = a^2 - a - 1$   
 $P - Q = a^2 + a + 1 - a^2 + a + 1$   
 (Given,  $a = -1$ )  
 $P - Q = (-1)^2 - 1 + 1 - (-1)^2 - 1 + 1$   
 $= 1 - 1 + 1 - 1 - 1 + 1 = 0$

8. (B) Digit in units place = x  
 Digit in tens place = x + 2  
 Two digit number =  $10(x + 2) + x$   
 $= 10x + 20 + x$   
 $= 11x + 20$

9. (D)  $\triangle DEF \cong \triangle PQR$   
 $\angle DFE = \angle PRQ$   
 $\angle DFE = 180^\circ - (41.9^\circ + 90^\circ)$   
 $= 48.1^\circ$

$\therefore$  The measure of  $\angle QRP = 48.1^\circ$

10. (C) In  $\triangle ABC$ ,

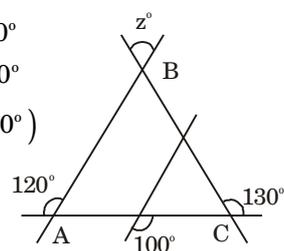
$$\angle BAC = 180^\circ - 120^\circ = 60^\circ$$

$$\angle ACB = 180^\circ - 130^\circ = 50^\circ$$

$$\angle ABC = 180^\circ - (60^\circ + 50^\circ)$$

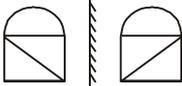
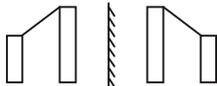
$$= 70^\circ$$

$$\angle ABC = z = 70^\circ$$



11. (B) According to the number line,  
values of  $x = -12$ ,  $y = -3$  and  $z = 6$   
 $x - y - z = -12 - (-3) - 6$   
 $= -12 + 3 - 6 = -15$
12. (C) The figure in option (c) has an order 4 rotational symmetry.
13. (D)  $\frac{4}{5} = 0.8$ ,  $81\% = \frac{81}{100} = 0.81$ ,  $0.801$   
The ascending order of these values is  $0.8$ ,  $0.801$ ,  $0.81$   
i.e.,  $\frac{4}{5}$ ,  $0.801$ ,  $81\%$
14. (B) Given three rational numbers are  $a$ ,  $b$ ,  $c$ .  
 $a > b$  and  $b < c$   
 $\Rightarrow b$  is the smallest among the three rational numbers.
15. (A) Of the given statements, (i) and (ii) are correct with respect to integers.

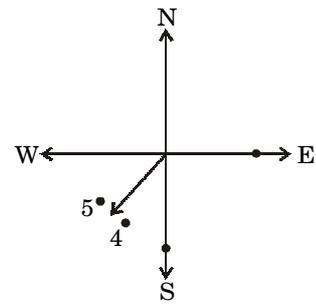
### Reasoning

16. (B) Each shape moves from the bottom to the middle and then to the top. It means moves to the bottom and the pattern is repeated.  
The shading moves from the bottom to the middle and then to the top. It then moves to the middle and to the bottom and the pattern is repeated.
17. (C) A)  B)   
C)  D) 

$\therefore$  The figure in option (C) appears the same in a mirror

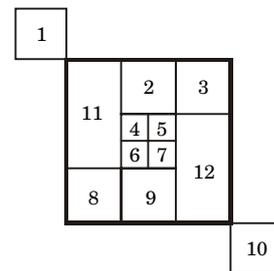
18. (C)  $8 \times 2 = 16$       Similarity     $7 \times 2 = 14$   
 $16 \times 3 = 48$                                      $14 \times 3 = 42$   
 $48 \times 4 = 192$                                     $42 \times 4 = 168$   
 $\therefore$  The missing number is 168.
19. (A) TREK  $\rightarrow$   $20 \times 2, 18 \times 2, 5 \times 2, 11 \times 2$   
 $= 40, 36, 10, 22$   
KONA  $\rightarrow$   $11 \times 2, 15 \times 2, 14 \times 2, 1 \times 2$   
 $= 22, 30, 28, 2$   
 $\therefore$  MARIN  $\rightarrow$   $13 \times 2, 1 \times 2, 18 \times 2, 9 \times 2, 14 \times 2$   
 $= 26, 2, 36, 18, 28$   
 $\therefore$  The code of MARIN is 26, 2, 36, 18, 28

20. (D)



Hence, the hour hand points at south-west at 4:30.

21. (C) Number of links = 47  
Number of links between the rusted links  
 $= 47 - 17 - 13 = 17$
22. (C)



Number of individual squares = 10

Combination squares =  $2 + 4 + 5 + 6 + 7 + 11$ ,  
 $4 + 5 + 6 + 7 + 9 + 12$ ,  
 $4 + 5 + 6 + 7$

One big square

Hence, total number of Squares =  $10 + 3 + 1 = 14$

23. (D)

Pets Friends	Dog	Cat	Rat	Fish	Parrot
A	X	X			
B	X	X		X	X
C		X	X	X	X
D		X	X	X	
E		3		X	

As each of the friends has a pet, 'E' has cat as pet.

24. (D) In each of the other figures, the inside shape has more sides than the outside shape.
25. (A) The design in option (A) is made from the given set of tiles.
26. (C) There are 32 triangles and 10 squares.

**English**

27. (C)

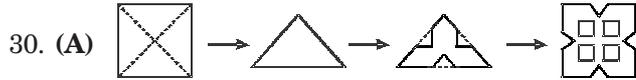
$$\begin{array}{r} 2 + 5 + 3 = 10 \\ 7 + 2 + 6 = 15 \\ 9 + 3 + 8 = 20 \\ ? + 13 + 10 = 25 \end{array} \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} + 5$$

∴ The missing number is  $25 - 23 = 2$ .

28. (C) The given grid has a triangle, square, and circle as outer shapes, each triangle has a square inside, each square has a circle and each circle has a triangle. The missing figure has a triangle with a empty square inside.

29. (A)

$$\begin{array}{ccccccccc} 516 & & 396 & & 296 & & 216 & & 156 & & 116 \\ & \curvearrowright & \\ & -120 & & -100 & & -80 & & -60 & & -40 & \end{array}$$



**Computers**

31. (C)    32. (B)    33. (C)    34. (B)  
35. (A)    36. (A)    37. (A)    38. (A)  
39. (B)    40. (C)    41. (A)    42. (B)  
43. (C)    44. (C)    45. (A)

46. (D)    47. (D)    48. (D)    49. (A)  
50. (A)