

**ACE OF PACE OBJECTIVE SECTION
(SOLUTION)**

1. (D)
 $(0.3)^2 + 0.1 = 0.09 + 0.1 = 0.19$

2. (B)
 $\frac{a^9 \times a^{15}}{a^3} = a^{9+15-3} = a^{21}$

3. (B)
 $q \times 2 - 3 = 11 \Rightarrow 2q = 14$
 $\Rightarrow q = 7$

4. (C)
 $3^2 + 7^2 - 5^2 = 9 + 49 - 25 = 33$

5. (C)
Total parts = 12
 \therefore Fraction of shaded part = $\frac{5}{12}$

6. (B)
 $x = 4$
 $y = 3x = 3 \times 4 = 12$
 $z = 2y = 2 \times 12 = 24$
 $\therefore y + z = 12 + 24 = 36$

7. (C)
 $a + 2a + 40 + 110 = 360$
 $3a = 210$
 $a = 70$

8. (A)
 $AB = AC$
 $\Rightarrow 8 = 5 - K \Rightarrow K = -3$

9. (A)
 $2(5-2) - 5^2$
 $= 2 \times 3 - 25 = -19$

10. (D)

11. (C)
 $2 + 3 + 2 + 2 + 3 + 6 + 4 = 22$

12. (C)

$$20 + 10x - 2 + 3x + 6 = 180$$

$$\Rightarrow 13x = 156 \Rightarrow x = 12$$

$$\therefore \angle CED = 3x + 6 = 36 + 6 = 42$$

13. (B)

$$\frac{5(6) - 3(4)}{6 + 3} = \frac{30 - 12}{9} = 2$$

14. (C)

$$x + y + z = 25$$

$$x + y = 19$$

Subtract: $z = 6$ Now $y + z = 18$

$$\Rightarrow y = 12$$

15. (A)

$$x = 2 \times \left(\frac{360}{5}\right)^\circ = 144^\circ$$

16. (A)

$$(5^2 + 1)(5^3 + 1)(5^{23} + 1)$$

Unit digit of $5^2 + 1 = 6$ Unit digit of $5^3 + 1 = 6$ Unit digit of $5^{23} + 1 = 6$ \therefore Unit digit in product $6 \times 6 \times 6 = 6$

17. (B)

$$\text{Smallest number of votes} = \frac{60}{4} + 1 = 16$$

18. (D)

$$4(2x + 1) = 120$$

$$\Rightarrow x = \frac{29}{2} = 14.5$$

19. (A)

Common difference = -8

$$\therefore a_8 = 96 + (8 - 1) \times (-8) \quad [\text{an of A.P.} = a + (n - 1)d]$$

$$= 96 - 56$$

$$= 40$$

20. (D)

$$abc = 16 = 2^4$$

For largest value of $a^b - b^c + c^a$: $a = 8, b = 1, c = 2$

$$\begin{aligned}\therefore \text{Largest value} &= 8^1 - 1^2 + 2^8 \\ &= 263\end{aligned}$$

21. (B)

$$\text{Mid point of } (5, 5) \text{ \& } (15, b) = \left(\frac{5+15}{2}, \frac{5+b}{2} \right)$$

$$\text{Mid point of } (a, 13) \text{ \& } (9, 2) = \left(\frac{a+9}{2}, \frac{13+2}{2} \right)$$

\therefore Mid-point is same.

$$\therefore \frac{5+15}{2} = \frac{a+9}{2} \Rightarrow a = 11$$

$$\& \frac{5+b}{2} = \frac{13+2}{2} \Rightarrow b = 10$$

$$\therefore a - b = 1$$

22. (C)

Let total area be x

$$\therefore \text{Forest area} = \frac{2}{5}x$$

$$\text{Remaining area} = x - \frac{2}{5}x = \frac{3}{5}x$$

$$\therefore \text{Sand dunes area} = \frac{1}{4} \times \frac{3}{5}x$$

$$\therefore \text{Farm land area} = x - \frac{2}{5}x - \frac{3}{20}x = 90$$

$$\Rightarrow \frac{(12-3)x}{20} = 90 \Rightarrow x = 200$$

23. (D)

$$N = 5a + 3b + 5c = 5(a + c) + 3b$$

$$N = 4a + 5b + 4c = 4a + c + 5b$$

$$\Rightarrow a - 2b + c = 0$$

For $131 < N < 150$

$$b = 11 \text{ \& } a + c = 22$$

24. (B)

Let $x, 24, y$ be single, double, triple layered area.

$$\therefore x + 24 + y = 140 \quad \dots(1)$$

$$x + 2 \times 24 + 3y = 200 \quad \dots(2)$$

$$(2) - (1) \Rightarrow 2y + 24 = 60$$

$$\Rightarrow 2y = 36 \Rightarrow y = 18$$

25. (B)

$$\text{Minimum number} = 4 + 7 + 10 = 21$$

$$\text{Maximum number} = 40 + 43 + 46 = 129$$

$$\therefore 129 = 21 + (n-1)3$$

$$\Rightarrow \frac{108}{3} = n - 1$$

$$\Rightarrow n = 37$$

26. (A)

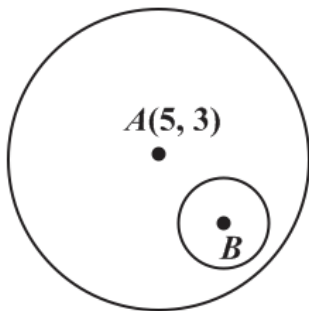
$$P(t, 5t+3), Q(3, -2)$$

$$\text{Mid-point: } x = \frac{t+3}{2}, y = \frac{5t+3-2}{2}$$

Eliminate t :

$$\therefore y = \frac{5(2x-3)+1}{2} = 5x - 7$$

27. (A)

Shortest distance where d = distance between centres

$$\therefore \text{Shortest distance} = 12 - 6 = \sqrt{(5-2)^2 + (3+1)^2} \\ = 1$$

28. (B)

$$pq = 100$$

$$p = 100, q = 1$$

Largest value of $p+q = 101$

29. (D)

7 days from now = Wednesday

14 days from now = Wednesday

 $7 \times 14 = 98$ days from now = Wednesday \therefore 100 days from now = Friday

30. (B)

$$\frac{1}{4} \times 15 \times \frac{1}{3} \times 10 = \frac{25}{2}$$

31. (D)

$$\frac{1}{x} = \frac{1}{1/4} = 4$$

32. (C)

$$\sqrt{y-5} = 5 \Rightarrow y-5 = 25 \Rightarrow y = 30$$

$$2^x = 8 \Rightarrow x = 3$$

$$\therefore x + y = 33$$

33. (D)

5 is diametrically opposite to 14

\therefore 1 is diametrically opposite to 10

$\therefore n = 18$

34. (A)

$$f(x) = ax^3 - 2x + c$$

$$\text{Put } x = 1 \Rightarrow a - 2 + c = -5 \quad \dots(1)$$

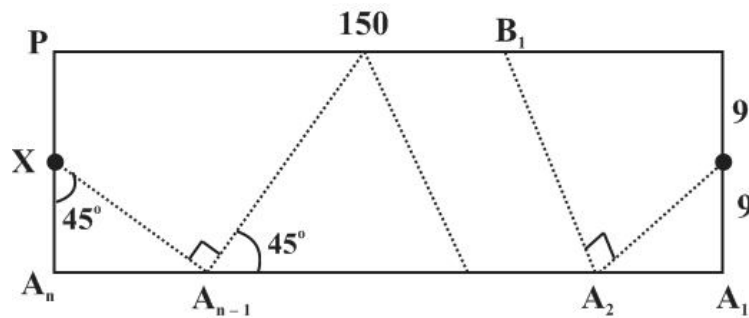
$$\text{Put } x = 4 \Rightarrow 54a - 8 + c = 52 \quad \dots(2)$$

Solving (1) & (2) $\Rightarrow a = 1, c = -4$

$$\therefore x^3 - 2x - 4 = 0$$

$$\Rightarrow x = 2$$

35. (A)



$$A_1A = 9$$

$$A_2A_3 = 18$$

$$\therefore A_nA_{n-1} = 150 - 126 - 9 = 15$$

$$\therefore PX = 18 - 15 = 3$$