SCERT FIRST TERM MODEL QUESTION PAPER 2025

ANSWER KEY
STD 10 MATHEMATICS

Section A

Q1. Sequence: $1, 7, 13, \ldots \rightarrow a_n = 6n - 5$.

Check 61, 81, 91, 121. Only 81 is not a term.

Answer: 81 (B)

Q2.

- A: If 5th term = 8, then 3rd + 7th = 16 (True).
- B: (x + k) + (x − k) = 2x (True).

  B explains A.

  Answer: (iii)

Q3.

(A) 4th term = 80, 7th = 60.

$a + 3d = 80, a + 6d = 60 \rightarrow d = -20/3, a = 100.$

10th term = 40, First term = 100.

(B) Seq: 8,15,22,... (d=7).

(i) Yes, difference 56 possible.

(ii) 302 = 43rd term.

Answer: 40, 100; Yes; 43

Q4.

$S_5 = 40, S_{13} = 260.$

From formulas → $a = 2, d = 3.$

3rd = 8, 7th = 20, first three terms: 2,5,8.

Answer: 8, 20, 2,5,8

Q5.

$S_8 = 240.$

(i) $t_4 + t_5 = 60.$

(ii) Given $t_3 = 15 \rightarrow a = -5, d = 10.$ So $t_6 = 45.$

(iii) Examples:

- 9,15,21,...
- 2,10,18,...
- −12,0,12,...

  Answer: 60, 45, and sequences above

Section B

Q6. $x_n = 7 - 5n.$ Difference = −5.

Answer: subtract 5 (B)

Q7. $x^2 - 6x + 9 = (x - 3)^2.$ Touches x-axis at 3.

Answer: 3 (A)

Q8. $a_n = 6n - 3 = 3(2n - 1).$

$(a_n)^2 = 9(2n - 1)^2 = 9 \times \text{odd}.$

Answer: Proved

Q9.

$x + y = 6, xy = 7$. Roots = $3 \pm \sqrt{2}$.

Answer: 3+√2, 3−√2

Q10.

Seq1: 5,11,17,... ; Seq2: 8,14,20,... (d=6).

(i) 4th terms = 23,26 → difference = 3.

(ii) Sum difference = 75.

Answer: 3; 75

Q11.

Sums: 5,16,33,... → terms: 5,11,17,... (d=6).

General: $6n - 1$.

Answer: 5,11 and a_n = 6n−1

Q12.

(A) Rectangle: sides 10, 24.

(B) Triangle: 8, 15, 17.

Answer: 10,24 or 8,15,17

Q13.

(A) Odd remainders on ÷6 → odd numbers, AP with d=2, sum = n^2.

(B) a=4, d=3.

(i) Sum10=175, (ii) Sum(2–11)=205, (iii) 500 impossible.

Answer: n^2; or 175,205,No

Q14.

Seq: 6,10,14,... a=6,d=4.

$S_n = 2n(n+2)$.

Solve 2n(n+2)=880 → n=20.

Answer: 2n(n+2); 20

Section C

Q15. Numbers with {3,8,9}, no repetition → 6 total.

<800 → 2 cases. Probability = 1/3.

Answer: 1/3 (A)

Q16. Both are 60°/360° sectors. So p=q.

Answer: (D) p=q

Q17.

(i) Inside circle = 1.

(ii) Inside segment = (sector−triangle)/circle area.

Answer: 1 and formula

Q18. Total 900 numbers (100–999).

Those ≡3 mod 4 = 225.

Probability = 225/900 = 1/4.

Answer: 1/4

Q19.

(A) Two dice:

(i) Both odd = 9/36=1/4.

(ii) Sum odd = 18/36=1/2.

(iii) Product odd = 1/4.

(B) Class selection:

(i) 12/49, (ii) 24/49, (iii) 37/49.

Answer: 1/4,1/2,1/4; or 12/49,24/49,37/49

Section D

Q20. Use cyclic quadrilateral test → depends on figure.

Answer: check position using inscribed angle theorem

Q21. A: Inscribed angle theorem (true).

B: Exterior angle theorem (true).

B explains A.

Answer: (iii)

Q22. Inscribed angle=18° → central=36°.

Arc length = (36/360)(2π×10) = 2π.

Answer: 2π cm

Q23.

(A) Pentagon inscribed in circle → marked angle can be found using central angles (72°).

(B) AB ⊥ CD → arcs APC+BQD form semicircle.

Answer: proof

Q24.

(A) Use alternate segment theorem.

(B) x+y=90°.

Answer: all triangle angles; or x+y=90

Q25. Cyclic quadrilateral → opposite angles sum=180. Use given values.

Answer: angles computed from given data

Q26. Construction: Circle radius 3 cm, draw triangle with angles 22½°, 32½°, remaining =125°.

Answer: triangle 22½°, 32½°, 125°