CLASS X – MATHEMATICS

MODEL QUESTION PAPER

(SET- 8)

Time Allowed: 3 Hours **Maximum Marks:** 80

Section A (1 × 20 = 20 Marks)

Q1–Q18 MCQs

Q1.

HCF of 315 and 189 is:
(a) 9
(b) 21
(c) 27
(d) 63

Q2.

Zero of polynomial 15x – 45 is:
(a) 2
(b) 3
(c) –3
(d) 5

Q3.

The pair of equations
3x + 4y = 10
6x + 8y = 20
has:
(a) Unique solution
(b) No solution
(c) Infinitely many solutions
(d) Exactly two solutions

Q4.

The 30th term of AP: 2, 5, 8, ... is:
(a) 87
(b) 89
(c) 90
(d) 92

Q5.

Probability of getting a number less than 3 on a die:
(a) 1/6
(b) 1/3
(c) 1/2
(d) 2/3

Q6.

Value of tan 45° is:
(a) 1
(b) $\sqrt{3}$
(c) $1/\sqrt{3}$
(d) 0

Q7.

Distance between (1,1) and (4,5) is:
(a) 5
(b) $\sqrt{25}$
(c) $\sqrt{32}$
(d) $\sqrt{41}$

Q8.

Nature of roots of $x^2 + 7x + 10 = 0$ is:
(a) Real & distinct
(b) Real & equal
(c) Not real
(d) Irrational

Q9.

Area of circle of radius 21 cm ($\pi = 22/7$) is:
(a) 1386 cm^2
(b) 1400 cm^2
(c) 1500 cm^2
(d) 1320 cm^2

Q10.

Mean of 5, 15, 25, 35, 45 is:
(a) 20
(b) 25
(c) 30
(d) 15

Q11.

If sides of similar triangles are in ratio 3:4, ratio of areas is:
(a) 3:4
(b) 9:16
(c) 4:3
(d) 16:9

Q12.

Tangent at any point of circle is perpendicular to:
(a) Chord
(b) Diameter
(c) Radius
(d) Arc

Q13.

Volume of sphere radius 7 cm ($\pi = 22/7$) is:
(a) 1437.33 cm^3
(b) 1372 cm^3
(c) 1500 cm^3
(d) 1300 cm^3

Q14.

If $\sin \theta = \sqrt{3}/2$, then θ =
(a) 30°
(b) 45°
(c) 60°
(d) 90°

Q15.

Median of 2, 6, 10, 14, 18, 22 is:
(a) 10
(b) 12
(c) 14
(d) 16

Q16.

Mode of 8, 9, 8, 10, 11, 8 is:
(a) 8
(b) 9
(c) 10
(d) 11

Q17.

Value of $1 + \tan^2\theta$ is:
(a) $\cos^2\theta$
(b) $\sec^2\theta$
(c) $\sin^2\theta$
(d) $\cot^2\theta$

Q18.

Surface area of cube of side 7 cm is:
(a) 294
(b) 343
(c) 196
(d) 250

Q19–Q20 Assertion–Reason

Q19.

Assertion (A): The sum of first n terms of AP is $n/2\ [2a + (n–1)d]$.
Reason (R): AP has constant difference between consecutive terms.

(a) Both true & R correct explanation
(b) Both true but R not explanation
(c) A true R false
(d) A false R true

Q20.

Assertion (A): If two triangles are congruent, they are similar.
Reason (R): Congruent triangles have equal corresponding sides and angles.

(a) Both true & R correct explanation
(b) Both true but R not explanation
(c) A true R false
(d) A false R true

Section B (2 × 5 = 10 Marks)

Q21.

Find HCF of 306 and 153 using Euclid's Division Algorithm.

Q22.

Find 40th term of AP: 3, 7, 11, ...

Q23.

Solve quadratic equation:
$x^2 – 9x + 20 = 0$.

Q24.

Find mean of:
9, 18, 27, 36, 45.

Q25.

Find area of sector of circle radius 28 cm, angle 60°.

Section C (3 × 6 = 18 Marks)

Q26.

Solve pair of equations:
$2x + 3y = 11$
$4x – y = 5$

Q27.

Prove: Diagonals of parallelogram bisect each other.

Q28.

Find median of grouped data:

Class	Frequency
0–10	5
10–20	10
20–30	15

Class	Frequency
30–40	7
40–50	3

Q29.

From top of building 100m high, angle of depression is 45°. Find horizontal distance.

Q30.

Find sum of first 60 terms of AP: 1, 5, 9, ...

Q31.

Find curved surface area of cylinder radius 7 cm height 30 cm.

Section D (5 × 4 = 20 Marks)

Q32.

Solve quadratic equation by completing square method:
$x^2 – 7x + 10 = 0$.

Q33.

Prove Pythagoras Theorem.

Q34.

A card is drawn from deck of 52 cards.
Find probability of getting:
(i) King
(ii) Black card

Q35.

A solid cone radius 21 cm height 28 cm is melted into spheres radius 3 cm. Find number of spheres formed.

Section E (Case Study Based) (4 × 3 = 12 Marks)

Q36.

A circular park radius 63 m.
(i) Find circumference (1)

(ii) Find area (1)
(iii) Cost of fencing at ₹200 per metre (2)

Q37.

Grouped data of marks given.
Find mean using step deviation method.

Q38.

A ladder 60m long makes 30° angle with ground.
(i) Find height reached (1)
(ii) Distance from wall (1)
(iii) Verify $\sin^2\theta + \cos^2\theta = 1$ (2)
