CLASS X – MATHEMATICS

MODEL QUESTION PAPER

(SET- 4)

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

Section A (1 × 20 = 20 Marks)

Q1–Q18 MCQs

Q1.

HCF of 252 and 105 is:
(a) 7
(b) 14
(c) 21
(d) 35

Q2.

Zero of polynomial 9x – 27 is:
(a) 2
(b) 3
(c) –3
(d) 9

Q3.

The pair of equations
3x + 2y = 11
6x + 4y = 22
has:
(a) Unique solution
(b) No solution
(c) Infinitely many solutions
(d) Exactly two solutions

Q4.

The 18th term of AP: 4, 9, 14, ... is:
(a) 84
(b) 89
(c) 94
(d) 99

Q5.

Probability of getting an even number on throwing a die:
(a) 1/6
(b) 1/3
(c) 1/2
(d) 2/3

Q6.

Value of tan 60° is:
(a) 1
(b) $\sqrt{3}$
(c) $1/\sqrt{3}$
(d) 0

Q7.

Distance between (–2, –3) and (4, 3) is:
(a) $\sqrt{72}$
(b) 12
(c) $\sqrt{36}$
(d) 6

Q8.

Nature of roots of $x^2 + 5x + 6 = 0$ is:
(a) Real & distinct
(b) Real & equal
(c) Not real
(d) Irrational

Q9.

Area of circle of radius 28 cm ($\pi = 22/7$) is:
(a) 2464 cm^2
(b) 2500 cm^2
(c) 2300 cm^2
(d) 2000 cm^2

Q10.

Mean of 5, 10, 15, 20, 25 is:
(a) 10
(b) 15
(c) 20
(d) 12

Q11.

If sides of similar triangles are in ratio 5:8, then ratio of their areas is:
(a) 5:8
(b) 25:64
(c) 8:5
(d) 64:25

Q12.

The angle between tangent and radius at point of contact is:
(a) 30°
(b) 45°
(c) 60°
(d) 90°

Q13.

Volume of sphere of radius 14 cm ($\pi = 22/7$) is:
(a) 11494.7 cm^3
(b) 11500 cm^3
(c) 11000 cm^3
(d) 12000 cm^3

Q14.

If $\cos \theta = 1/2$, then $\theta =$
(a) 30°
(b) 45°
(c) 60°
(d) 90°

Q15.

Median of 2, 4, 6, 8, 10, 12 is:
(a) 6
(b) 7
(c) 8
(d) 5

Q16.

Mode of 7, 8, 9, 7, 10, 7 is:
(a) 7
(b) 8
(c) 9
(d) 10

Q17.

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

Q18.

Surface area of cube of side 8 cm is:
(a) 256
(b) 384
(c) 512
(d) 448

Q19–Q20 Assertion–Reason

Q19.

Assertion (A): 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 867 and 255 using Euclid's Division Algorithm.

Q22.

Find 25th term of AP: 6, 11, 16, ...

Q23.

Solve quadratic equation:
$x^2 – 11x + 30 = 0$.

Q24.

Find mean of:
12, 18, 24, 30, 36.

Q25.

Find area of sector of circle radius 21 cm, angle 120°.

Section C (3 × 6 = 18 Marks)

Q26.

Solve pair of linear equations:
$4x + 3y = 20$
$2x – y = 4$

Q27.

Prove: In a triangle, angle opposite greater side is greater.

Q28.

Find median of grouped data:

Class	Frequency
0–10	3
10–20	7
20–30	12

Class	Frequency
30–40	6
40–50	2

Q29.

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

Q30.

Find sum of first 40 terms of AP: 1, 4, 7, ...

Q31.

Find curved surface area of cylinder radius 10 cm height 21 cm.

Section D (5 × 4 = 20 Marks)

Q32.

Solve quadratic equation by completing square method:
$x^2 – 6x + 8 = 0$.

Q33.

Prove Pythagoras Theorem.

Q34.

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

Q35.

A solid hemisphere of radius 14 cm is melted into small cones radius 2 cm height 7 cm.
Find number of cones formed.

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

Q36.

A circular park radius 35 m.
(i) Find circumference (1)

(ii) Find area (1)
(iii) Cost of fencing at ₹90 per metre (2)

Q37.

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

Q38.

A ladder 25m long makes 60° angle with ground.
(i) Find height reached (1)
(ii) Distance from wall (1)
(iii) Verify $\sin^2\theta + \cos^2\theta = 1$ (2)
