CLASS X – MATHEMATICS

MODEL QUESTION PAPER

SET 5

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

Section A (1 × 20 = 20 Marks)

Q1–Q18 MCQs

Q1.

HCF of 180 and 324 is:
(a) 12
(b) 18
(c) 36
(d) 9

Q2.

Zero of polynomial 8x – 32 is:
(a) 2
(b) 4
(c) –4
(d) 8

Q3.

The pair of equations
5x + 3y = 19
10x + 6y = 38
has:
(a) Unique solution
(b) No solution
(c) Infinitely many solutions
(d) Exactly two solutions

Q4.

The 20th term of AP: 7, 12, 17, ... is:
(a) 102
(b) 97
(c) 112
(d) 107

Q5.

Probability of getting a multiple of 4 when a die is thrown:
(a) 1/6
(b) 1/3
(c) 1/2
(d) 2/3

Q6.

Value of sin 45° is:
(a) 1
(b) 1/2
(c) $1/\sqrt{2}$
(d) $\sqrt{3}/2$

Q7.

Distance between (1, –2) and (4, 2) is:
(a) 5
(b) $\sqrt{25}$
(c) $\sqrt{41}$
(d) $\sqrt{20}$

Q8.

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

Q9.

Area of circle of radius 14 cm ($\pi = 22/7$) is:
(a) 616 cm^2
(b) 308 cm^2
(c) 154 cm^2
(d) 196 cm^2

Q10.

Mean of 3, 6, 9, 12, 15 is:
(a) 6
(b) 9
(c) 12
(d) 10

Q11.

If sides of similar triangles are in ratio 6:9, then ratio of their areas is:
(a) 2:3
(b) 4:9
(c) 36:81
(d) 3:2

Q12.

Length of tangent drawn from external point to circle are:
(a) Equal
(b) Unequal
(c) Parallel
(d) Perpendicular

Q13.

Volume of cylinder radius 7 cm height 14 cm ($\pi = 22/7$) is:
(a) 2156 cm^3
(b) 2000 cm^3
(c) 2100 cm^3
(d) 2200 cm^3

Q14.

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

Q15.

Median of 4, 8, 12, 16, 20, 24 is:
(a) 12
(b) 14
(c) 16
(d) 18

Q16.

Mode of 5, 6, 5, 7, 8, 5, 9 is:
(a) 6
(b) 5
(c) 7
(d) 8

Q17.

Value of $\cos^2\theta + \sin^2\theta$ is:
(a) 0
(b) 1
(c) 2
(d) –1

Q18.

Surface area of cube of side 10 cm is:
(a) 600
(b) 1000
(c) 400
(d) 800

Q19–Q20 Assertion–Reason

Q19.

Assertion (A): If two triangles are similar, their corresponding angles are equal.
Reason (R): Similar triangles have proportional sides.

(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): The probability of an event is never negative.
Reason (R): Probability always lies between 0 and 1.

(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 405 and 252 using Euclid's Division Algorithm.

Q22.

Find 30th term of AP: 2, 7, 12, ...

Q23.

Solve quadratic equation:
$x^2 – 10x + 21 = 0$.

Q24.

Find mean of:
8, 16, 24, 32, 40.

Q25.

Find area of sector of circle radius 21 cm, angle 60°.

Section C (3 × 6 = 18 Marks)

Q26.

Solve pair of equations:
$3x + 4y = 18$
$2x – y = 1$

Q27.

Prove: In a circle, angle subtended by arc at centre is double the angle at circumference.

Q28.

Find median of grouped data:

Class	Frequency
0–10	5
10–20	9
20–30	14

Class	Frequency
30–40	6
40–50	3

Q29.

From top of tower 70m high, angle of depression is 30°. Find horizontal distance.

Q30.

Find sum of first 35 terms of AP: 5, 9, 13, ...

Q31.

Find curved surface area of cone radius 7 cm height 25 cm.

Section D (5 × 4 = 20 Marks)

Q32.

Solve quadratic equation by quadratic formula:
$2x^2 – 9x + 7 = 0$.

Q33.

Prove Basic Proportionality Theorem.

Q34.

A bag contains 6 red, 5 blue and 4 green balls.
Find probability of selecting:
(i) Blue
(ii) Not green

Q35.

A solid sphere radius 14 cm is melted into small cubes side 2 cm. Find number of cubes formed.

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

Q36.

A circular ground radius 42 m.
(i) Find circumference (1)

(ii) Find area (1)
(iii) Cost of fencing at ₹100 per metre (2)

Q37.

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

Q38.

A ladder 30m long makes 45° angle with ground.
(i) Find height reached (1)
(ii) Distance from wall (1)
(iii) Verify $1 + \tan^2\theta = \sec^2\theta$ (2)
