

CLASS X – MATHEMATICS
MODEL QUESTION PAPER
(SET- 3)

Time Allowed: 3 Hours

Maximum Marks: 80

Section A (1 × 20 = 20 Marks)

Q1–Q18 MCQs

Q1.

HCF of 210 and 45 is:

- (a) 5
- (b) 15
- (c) 30
- (d) 35

Q2.

Zero of polynomial $6x - 18$ is:

- (a) 2
- (b) 3
- (c) -3
- (d) -2

Q3.

The pair of equations $2x + y = 7$ and $4x + 2y = 14$ has:

- (a) Unique solution
- (b) No solution
- (c) Infinitely many solutions
- (d) Exactly two solutions

Q4.

The 15th term of AP: 5, 8, 11, ... is:

- (a) 44

- (b) 47
- (c) 50
- (d) 53

Q5.

Probability of getting a prime number when a die is thrown:

- (a) $1/6$
- (b) $1/3$
- (c) $1/2$
- (d) $2/3$

Q6.

Value of $\cos 30^\circ$ is:

- (a) $1/2$
- (b) $\sqrt{3}/2$
- (c) 1
- (d) 0

Q7.

Distance between (0,0) and (5,12) is:

- (a) 13
- (b) $\sqrt{169}$
- (c) 12
- (d) Both (a) and (b)

Q8.

Nature of roots of $x^2 + 2x + 1 = 0$:

- (a) Real & distinct
- (b) Real & equal
- (c) Not real
- (d) Irrational

Q9.

Area of circle of radius 7 cm ($\pi = 22/7$):

- (a) 154 cm^2
- (b) 144 cm^2
- (c) 308 cm^2
- (d) 77 cm^2

Q10.

Mean of data: 2, 4, 6, 8, 10 is:

- (a) 4
- (b) 5
- (c) 6
- (d) 7

Q11.

If two similar triangles have sides in ratio 4:7, ratio of their areas is:

- (a) 4:7
- (b) 7:4
- (c) 16:49
- (d) 49:16

Q12.

Length of tangent drawn from external point to circle are:

- (a) Equal
- (b) Unequal
- (c) Parallel
- (d) Perpendicular

Q13.

Volume of cylinder of radius 7 cm and height 10 cm is:

- (a) 1540 cm^3
- (b) 1538 cm^3
- (c) 1400 cm^3
- (d) 1500 cm^3

Q14.

If $\sin \theta = 0$, then $\theta =$

- (a) 0°
- (b) 30°
- (c) 45°
- (d) 60°

Q15.

Median of 5, 9, 11, 15, 19 is:

- (a) 9
- (b) 11
- (c) 15
- (d) 13

Q16.

Mode of 1, 2, 2, 3, 4, 2, 5 is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Q17.

Value of $\sin^2\theta + \cos^2\theta$ is:

- (a) 0
- (b) 1
- (c) 2
- (d) -1

Q18.

Surface area of cube of side 6 cm is:

- (a) 216
 - (b) 144
 - (c) 36
 - (d) 180
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Q19–Q20 Assertion–Reason

Q19.

Assertion (A): The sum of angles of a quadrilateral is 360° .

Reason (R): A quadrilateral can be divided into two triangles.

- (a) Both true & R correct explanation
 - (b) Both true but R not explanation
 - (c) A true R false
 - (d) A false R true
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Q20.

Assertion (A): If discriminant is positive, roots are real and distinct.

Reason (R): Discriminant = $b^2 - 4ac$.

- (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 657 using Euclid's Division Algorithm.

Q22.

Find 20th term of AP: 3, 6, 9, ...

Q23.

Solve quadratic equation:

$$x^2 - 9x + 14 = 0.$$

Q24.

Find mean of:

10, 20, 30, 40, 50.

Q25.

Find area of sector of circle radius 14 cm, angle 60°.

Section C (3 × 6 = 18 Marks)**Q26.**

Solve pair of equations:

$$x + 2y = 5$$

$$3x - y = 5$$

Q27.

Prove: Diagonals of parallelogram bisect each other.

Q28.

Find median of grouped data:

Class Frequency

0-10 4

10-20 6

20-30 10

Class Frequency

30–40 8

40–50 2

Q29.

From top of tower 60m high, angle of depression is 30° . Find horizontal distance.

Q30.

Find sum of first 30 terms of AP: 2, 5, 8, ...

Q31.

Find curved surface area of sphere radius 14 cm.

Section D (5 × 4 = 20 Marks)

Q32.

Solve quadratic equation by quadratic formula:

$$3x^2 - 5x - 2 = 0.$$

Q33.

Prove Thales Theorem (Basic Proportionality Theorem).

Q34.

A bag contains 4 red, 5 blue and 6 green balls.

Find probability of selecting:

- (i) Green
- (ii) Not red

Q35.

A solid cone radius 7 cm height 24 cm is melted to form spheres of radius 2 cm. Find number of spheres formed.

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

Q36.

A circular garden radius 35 m.

- (i) Find circumference (1)

(ii) Find area (1)

(iii) Cost of fencing at ₹80 per metre (2)

Q37.

Grouped data of marks given.

Find mean using step deviation method.

Q38.

A ladder 20m long makes 30° angle with ground.

(i) Find height reached (1)

(ii) Distance from wall (1)

(iii) Verify $1 + \tan^2\theta = \sec^2\theta$ (2)
