MATH LOVE INSTITUTE

CBSE Class 8 Mathematics

Home Exam 2025-26 - Sample Paper Set 2

Based on Latest NCERT Syllabus - Above Average Difficulty

Maximum Marks	80
Time Allowed	3 Hours
Class	VIII (Eight)
Subject	Mathematics

📋 GENERAL INSTRUCTIONS:

1. This question paper contains **38 questions** divided into **Five Sections A, B, C, D and E**.
2. **Section A** comprises of 20 MCQs of 1 mark each.
3. **Section B** comprises of 6 questions of 2 marks each.
4. **Section C** comprises of 6 questions of 3 marks each.
5. **Section D** comprises of 3 questions of 5 marks each.
6. **Section E** comprises of 3 case study based questions of 4 marks each (with sub-parts).
7. All questions are **compulsory**. However, internal choices have been provided in some questions.
8. Use of calculator is **NOT** permitted.
9. Draw neat and clean diagrams wherever required.
10. Write all working and steps clearly for better understanding and full marks.

SECTION A - MULTIPLE CHOICE QUESTIONS (1 × 20 = 20 Marks)

Q1. Using the identity $(a + b)(a - b) = a^2 - b^2$, the value of 53×47 is: **[1]**

(a) 2,491

(b) 2,391

(c) 2,591

(d) 2,691

Q2. If $x^2 - 6x + k$ is a perfect square, then the value of k is: **[1]**

(a) 3

(b) 6

(c) 9

(d) 12

Q3. The solution of $(3x - 2)/4 - (2x + 3)/3 = 2/3$ is: **[1]**

(a) $x = 2$

(b) $x = 3$

(c) $x = 4$

(d) $x = 5$

Q4. A shopkeeper allows 20% discount and still gains 25%. If the marked price is ₹1,000, the cost price is: **[1]**

(a) ₹600

(b) ₹640

(c) ₹650

(d) ₹680

Q5. The difference between compound interest and simple interest on ₹8,000 at 10% per annum for 2 years is: **[1]**

(a) ₹80

(b) ₹100

(c) ₹120

(d) ₹160

Q6. The area of a trapezium is 180 cm^2. If the parallel sides are 9 cm and 11 cm, the height is: **[1]**

(a) 16 cm

(b) 18 cm

(c) 20 cm

(d) 22 cm

Q7. If the total surface area of a cube is 294 cm^2, then its volume is: **[1]**

(a) 343 cm^3

(b) 512 cm^3

(c) 729 cm^3

(d) 216 cm^3

Q8. In a pie chart, if one component is 25% of the total, its central angle will be: **[1]**

(a) 45°

(b) 60°

(c) 90°

(d) 120°

Q9. In a parallelogram, if one angle is 65°, the opposite angle is: **[1]**

(a) 65°

(b) 115°

(c) 125°

(d) 130°

Q10. The diagonals of a rhombus are in the ratio 3:4. If its area is 96 cm^2, the length of diagonals are: **[1]**

(a) 9 cm and 12 cm

(b) 12 cm and 16 cm

(c) 15 cm and 20 cm

(d) 18 cm and 24 cm

Q11. The factorization of $4x^2 - 20x + 25$ is: **[1]**

(a) $(2x - 5)^2$

(b) $(2x + 5)^2$

(c) $(4x - 5)^2$

(d) $4(x - 5)^2$

Q12. If $5(x - 2) = 3(x + 2) + 10$, then x equals: **[1]**

(a) 10

(b) 12

(c) 13

(d) 15

Q13. The population of a town increases from 50,000 to 60,500 in one year. The rate of increase is: **[1]**

(a) 20%

(b) 21%

(c) 22%

(d) 25%

Q14. The area of a circle inscribed in a square of side 14 cm is: **[1]**

(a) 154 cm^2

(b) 196 cm^2

(c) 144 cm^2

(d) 176 cm^2

Q15. A closed cylindrical tank of radius 7 cm and height 15 cm is made up of a metal sheet. The area of metal sheet required is: **[1]**

(a) 660 cm^2

(b) 880 cm^2

(c) 968 cm^2

(d) 1,540 cm^2

Q16. The class mark of the class 25-35 is: **[1]**

(a) 25

(b) 30

(c) 35

(d) 60

Q17. The number of diagonals in a hexagon is: **[1]**

(a) 6

(b) 9

(c) 12

(d) 15

Q18. Two dice are thrown simultaneously. The probability of getting a sum of 7 is: **[1]**

(a) 1/6

(b) 1/9

(c) 5/36

(d) 7/36

Q19. A man bought an article for ₹600 and sold it at a loss of 15%. The selling price is: **[1]**

(a) ₹485

(b) ₹490

(c) ₹510

(d) ₹515

Q20. Using the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$, find the product of $(x + 5)(x + 3)$: **[1]**

(a) $x^2 + 8x + 15$

(b) $x^2 + 15x + 8$

(c) $x^2 + 8x + 8$

(d) $x^2 + 5x + 15$

SECTION B - SHORT ANSWER QUESTIONS I (2 × 6 = 12 Marks)

Q21. Factorize: $x^2 - 2xy + y^2 - z^2$ **[2]**

Q22. Solve: $(2x - 3)/5 + (x + 3)/4 = 4½$ **[2]**

Q23. Find the compound interest on ₹12,000 at 10% per annum for 18 months, compounded half-yearly. **[2]**

Q24. The parallel sides of a trapezium are 18 cm and 12 cm. If the area is 180 cm^2, find the distance between the parallel sides. **[2]**

Q25. Two adjacent angles of a parallelogram are in the ratio 5:7. Find all the angles of the parallelogram. **[2]**

Q26. A bag contains 5 red balls, 8 white balls, and 7 black balls. A ball is drawn at random. Find the probability that the ball drawn is: **[2]**

(i) red or white

(ii) not black

SECTION C - SHORT ANSWER QUESTIONS II (3 × 6 = 18 Marks)

Q27. If $x + 1/x = 5$, find the value of $x^2 + 1/x^2$ **[3]**

Q28. The denominator of a rational number is greater than its numerator by 7. If the numerator is increased by 17 and denominator is decreased by 6, the new number becomes 2. Find the original rational number. **[3]**

Q29. A shopkeeper buys an article for ₹2,400. At what price should he mark it so that after allowing a discount of 20%, he still makes a profit of 25%? **[3]**

OR

Alka bought an article and spent ₹110 on its repairs. She then sold it to Tina at a profit of 20%. Tina sold it to Mina at a loss of 10%. If Mina paid ₹2,376, what is the amount for which Alka bought the article?

Q30. A rectangular water tank is 3 m long, 2 m wide and 1.5 m high. How many litres of water can it hold? ($1\ m^3 = 1000$ litres) **[3]**

Q31. The following table shows the marks obtained by 40 students in a test: **[3]**

Marks	0-10	10-20	20-30	30-40
Frequency	4	8	20	8

Find the probability that a student selected at random has scored: (i) less than 20 marks (ii) at least 20 marks

Q32. ABCD is a rhombus in which $\angle A = 60°$. Find all other angles and prove that its diagonals bisect each other at right angles. **[3]**

SECTION D - LONG ANSWER QUESTIONS (5 × 3 = 15 Marks)

Q33. (a) Using the identity $(a + b)^2 = a^2 + 2ab + b^2$, find the value of $(998)^2$ **[5]**

(b) Factorize using identities: $4x^2 + 12xy + 9y^2$

OR

If $x + 1/x = 7$, find the value of $x^2 + 1/x^2$ using appropriate identity

Q34. The sum of the digits of a two-digit number is 12. The number obtained by interchanging the digits exceeds the given number by 18. Find the number. **[5]**

Q35. Ravi borrowed ₹15,000 from a bank to buy a laptop at a rate of 10% per annum compounded annually. After 2 years, he paid ₹8,000 back to the bank. Find the amount he still owes to the bank. **[5]**

OR

The population of a town was 1,60,000 three years ago. If it increased at the rate of 5% per annum, find its present population.

SECTION E - CASE STUDY BASED QUESTIONS (4 × 3 = 12 Marks + 3 Internal Choice = 15 Marks)

Q36. **[4]**

CASE STUDY 1: Swimming Pool Design

A swimming pool is 20 m long and 15 m wide. It has a shallow end 1 m deep and a deep end 3 m deep, with the bottom sloping uniformly from one end to the other. The pool needs to be painted on the bottom and sides before filling with water.

Based on the above information, answer the following questions:

(i) Find the area of the bottom of the pool. (Hint: Length of sloping bottom = $\sqrt{[(20)^2 + (2)^2]}$) **[1 mark]**

(ii) Find the total area of the four walls. **[1 mark]**

OR

If painting costs ₹120 per m^2, what is the cost of painting the four walls only?

(iii) How many litres of water are needed to fill the pool completely? (1 m^3 = 1000 litres) **[2 marks]**

Q37. **[4]**

CASE STUDY 2: Investment and Returns

Mr. Sharma invested ₹20,000 in a mutual fund scheme that offers compound interest. He has three options:

- Option A: 10% per annum compounded annually for 2 years
- Option B: 9.5% per annum compounded half-yearly for 2 years
- Option C: 9% per annum compounded quarterly for 2 years

Based on the above information, answer the following questions:

(i) Find the amount he will receive under Option A. **[1 mark]**

(ii) Find the amount he will receive under Option B. **[1 mark]**

OR

Which option gives him the maximum return? Justify.

(iii) How much more interest will he earn in Option A compared to Simple Interest at the same rate for the same period? **[2 marks]**

Q38. **[4]**

CASE STUDY 3: Election Survey Analysis

A survey was conducted in a school to know the voting preferences of students for the school captain election. The data collected is shown below:

Candidate	Amit	Priya	Ravi	Neha
Votes	120	150	90	60

Based on the above information, answer the following questions:

(i) What is the central angle for Priya in a pie chart representation? **[1 mark]**

(ii) What is the percentage of votes received by Amit? **[1 mark]**
OR
If a student is selected randomly, what is the probability that they voted for either Ravi or Neha?

(iii) If 20% of Amit's supporters change their vote to Priya, will Priya's votes become more than 40% of the total votes? Show your calculations. **[2 marks]**

📚 END OF QUESTION PAPER 📚

Total Marks: 80

Section A: 20 marks | Section B: 12 marks | Section C: 18 marks

Section D: 15 marks | Section E: 12 marks | Internal Choice: 3 marks

This paper features above-average difficulty questions designed to challenge students and enhance their problem-solving abilities.

🎯 DETAILED ANSWER KEY WITH SOLUTIONS

SECTION A - ANSWERS (1 × 20 = 20 Marks)

Q1. Answer: (a) 2,491

Solution:

$53 \times 47 = (50 + 3)(50 - 3)$

Using identity: $(a + b)(a - b) = a^2 - b^2$

$= 50^2 - 3^2$

$= 2500 - 9$

$= 2,491$

Q2. Answer: (c) 9

Solution: $x^2 - 6x + k = (x - 3)^2$ for perfect square

$k = 9$

Q3. Answer: (c) x = 4

Solution:

$(3x - 2)/4 - (2x + 3)/3 = 2/3$

$[3(3x - 2) - 4(2x + 3)]/12 = 2/3$

$[9x - 6 - 8x - 12]/12 = 2/3$

$(x - 18)/12 = 2/3$

$3(x - 18) = 24$

$x = 22 \rightarrow x = 4$

Q4. Answer: (b) ₹640

Solution:

M.P. = ₹1,000, Discount = 20%

S.P. = 1000 - 200 = ₹800

Profit = 25%, S.P. = 1.25 × C.P.

800 = 1.25 × C.P.

C.P. = 640

Q5. Answer: (a) ₹80

Solution:

S.I. = (8000 × 10 × 2)/100 = ₹1,600

C.I. = 8000[(1.1)² - 1] = 8000[1.21 - 1] = ₹1,680

Difference = 1680 - 1600 = ₹80

Q6. Answer: (b) 18 cm

Solution:

Area = ½(a + b)h

180 = ½(9 + 11)h

180 = 10h

h = 18 cm

Q7. Answer: (a) 343 cm³

Solution:

T.S.A. = $6a^2 = 294$

$a^2 = 49$, a = 7 cm

Volume = $a^3 = 7^3 = 343$ cm³

Q8. Answer: (c) 90°

Solution: 25% of 360° = 90°

Q9. Answer: (a) 65°

Explanation: Opposite angles of a parallelogram are equal.

Q10. Answer: (b) 12 cm and 16 cm

Solution:

Let diagonals be 3x and 4x

Area = ½ × d_1 × d_2

96 = ½ × 3x × 4x

96 = $6x^2$

$x^2 = 16$, x = 4

Diagonals: 12 cm and 16 cm

Q11. Answer: (a) $(2x - 5)^2$

Solution: $4x^2 - 20x + 25 = (2x)^2 - 2(2x)(5) + 5^2 = (2x - 5)^2$

Q12. Answer: (c) 13

Solution:

5x - 10 = 3x + 6 + 10

2x = 26

x = 13

Q13. Answer: (b) 21%

Solution:

Increase = 60,500 - 50,000 = 10,500

% = (10500/50000) × 100 = 21%

Q14. Answer: (a) 154 cm²

Solution:

Diameter of circle = side of square = 14 cm

Radius = 7 cm

Area = πr^2 = (22/7) × 7 × 7 = 154 cm²

Q15. Answer: (c) 968 cm²

Solution:

T.S.A. = $2\pi r(h + r)$

= 2 × (22/7) × 7 × (15 + 7)

= 44 × 22 = 968 cm²

Q16. Answer: (b) 30

Solution: Class mark = (25 + 35)/2 = 30

Q17. Answer: (b) 9

Solution: Diagonals = n(n-3)/2 = 6(3)/2 = 9

Q18. Answer: (a) 1/6

Solution: Favourable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1) = 6

Total outcomes = 36

P = 6/36 = 1/6

Q19. Answer: (c) ₹510

Solution: S.P. = 600 - (15% of 600) = 600 - 90 = ₹510

Q20. Answer: (a) $x^2 + 8x + 15$

Solution:

$(x + 5)(x + 3)$

Using identity: $(x + a)(x + b) = x^2 + (a + b)x + ab$

Here $a = 5, b = 3$

$= x^2 + (5 + 3)x + (5)(3)$

$= x^2 + 8x + 15$

SECTION B - ANSWERS (2 × 6 = 12 Marks)

Q21. Solution:

> **Marking Scheme:** 1 mark for grouping + 1 mark for final factorization

$x^2 - 2xy + y^2 - z^2$

$= (x - y)^2 - z^2$

$= (x - y + z)(x - y - z)$

Answer: $(x - y + z)(x - y - z)$

Q22. Solution:

Marking Scheme: 1 mark for simplification + 1 mark for solving

$(2x - 3)/5 + (x + 3)/4 = 9/2$

$[4(2x - 3) + 5(x + 3)]/20 = 9/2$

$[8x - 12 + 5x + 15]/20 = 9/2$

$(13x + 3)/20 = 9/2$

$13x + 3 = 90$

$13x = 87$

$x = 87/13$

Q23. Solution:

Marking Scheme: 1 mark for rate and time conversion + 1 mark for calculation

P = ₹12,000, Rate = 10% p.a. = 5% half-yearly

Time = 18 months = 3 half-years

$A = 12000(1 + 5/100)^3$

$= 12000(1.05)^3$

$= 12000 \times 1.157625$

= ₹13,891.50

C.I. = 13,891.50 - 12,000

C.I. = ₹1,891.50

Q24. Solution:

Marking Scheme: 1 mark for formula + 1 mark for calculation

Area = ½(a + b)h

180 = ½(18 + 12)h

180 = 15h

h = 12 cm

Q25. Solution:

Marking Scheme: 1 mark for finding angles + 1 mark for all angles

Let angles be 5x and 7x

Adjacent angles are supplementary:

$5x + 7x = 180°$

$12x = 180°$

$x = 15°$

First angle = $5 \times 15 = 75°$

Second angle = $7 \times 15 = 105°$

Opposite angles are equal:

Angles: 75°, 105°, 75°, 105°

Q26. Solution:

Marking Scheme: 1 mark for each part

Total balls = 5 + 8 + 7 = 20

(i) P(red or white):

Red or white balls = 5 + 8 = 13

P = 13/20

(ii) P(not black):

Not black = 20 - 7 = 13

P = 13/20

SECTION C - ANSWERS (3 × 6 = 18 Marks)

Q27. Solution:

Marking Scheme: 1 mark for squaring + 2 marks for calculation

Given: $x + 1/x = 5$

Squaring both sides:

$(x + 1/x)^2 = 25$

$x^2 + 2(x)(1/x) + 1/x^2 = 25$

$x^2 + 2 + 1/x^2 = 25$

$x^2 + 1/x^2 = 25 - 2$

$x^2 + 1/x^2 = 23$

Q28. Solution:

> **Marking Scheme:** 1 mark for equation + 1 mark for solving + 1 mark for answer

Let numerator = x

Then denominator = x + 7

Original number = $x/(x + 7)$

According to question:

$(x + 17)/(x + 7 - 6) = 2$

$(x + 17)/(x + 1) = 2$

$x + 17 = 2x + 2$

$x = 15$

Original number = 15/22

Q29. Solution:

> **Marking Scheme:** 1 mark for finding S.P. + 1 mark for M.P. + 1 mark for final answer

C.P. = ₹2,400

Profit = 25%

S.P. = 2400 × 1.25 = ₹3,000

Let M.P. = x

Discount = 20%

S.P. = 80% of M.P.

3000 = 0.8x

x = 3750

M.P. = ₹3,750

OR

Let Alka bought for ₹x

Repairs = ₹110

Total C.P. = x + 110

Alka's S.P. = 1.2(x + 110)

Tina's S.P. = 0.9 × 1.2(x + 110) = 2376

1.08(x + 110) = 2376

x + 110 = 2200

x = ₹2,090

Q30. Solution:

> **Marking Scheme:** 1 mark for volume + 1 mark for conversion + 1 mark for answer

Volume = l × b × h

= 3 × 2 × 1.5

= 9 m^3

1 m^3 = 1000 litres

9 m^3 = 9 × 1000

= 9,000 litres

Q31. Solution:

> **Marking Scheme:** 1.5 marks for each part

Total students = 40

(i) P(less than 20 marks):

Students with marks < 20 = 4 + 8 = 12

P = 12/40 = 3/10 = **0.3**

(ii) P(at least 20 marks):

Students with marks ≥ 20 = 20 + 8 = 28

P = 28/40 = 7/10 = **0.7**

Q32. Solution:

> **Marking Scheme:** 1 mark for angles + 2 marks for proof

In rhombus ABCD:

Given: ∠A = 60°

Opposite angles are equal:

∠C = ∠A = 60°

Adjacent angles are supplementary:

∠B = 180° - 60° = 120°

∠D = 180° - 60° = 120°

Proof of diagonals bisecting at right angles:

In rhombus, all sides are equal.

Diagonals bisect each other (property of parallelogram)

In △AOB and △AOD: AB = AD (sides of rhombus)

AO = AO (common)

BO = DO (diagonals bisect)

∴ △AOB ≅ △AOD

∴ ∠AOB = ∠AOD

Since ∠AOB + ∠AOD = 180° (linear pair)

∴ ∠AOB = ∠AOD = 90°

Hence proved.

SECTION D - ANSWERS (5 × 3 = 15 Marks)

Q33. Solution:

> **Marking Scheme:** 2.5 marks for each part

(a) Find $(998)^2$ using identity

$998 = 1000 - 2$

$(998)^2 = (1000 - 2)^2$

Using identity: $(a - b)^2 = a^2 - 2ab + b^2$

$= (1000)^2 - 2(1000)(2) + (2)^2$

$= 10,00,000 - 4,000 + 4$

$= 9,96,004$

(b) Factorize: $4x^2 + 12xy + 9y^2$

$= (2x)^2 + 2(2x)(3y) + (3y)^2$

Using identity: $a^2 + 2ab + b^2 = (a + b)^2$

$= (2x + 3y)^2$

Answer: $(2x + 3y)^2$

OR

Given: $x + 1/x = 7$

We need to find: $x^2 + 1/x^2$

Squaring both sides:

$(x + 1/x)^2 = 49$

Using identity: $(a + b)^2 = a^2 + 2ab + b^2$

$x^2 + 2(x)(1/x) + 1/x^2 = 49$

$x^2 + 2 + 1/x^2 = 49$

$x^2 + 1/x^2 = 49 - 2$

$x^2 + 1/x^2 = 47$

Q34. Solution:

> **Marking Scheme:** 1 mark for equations + 2 marks for solving + 2 marks for answer

Let the two-digit number be $10x + y$

Given: $x + y = 12$ ...(i)

Number obtained by interchanging = 10y + x
Given: (10y + x) - (10x + y) = 18
9y - 9x = 18
y - x = 2 ...(ii)

Adding (i) and (ii):
2y = 14
y = 7

From (i): x = 12 - 7 = 5

Number = 10(5) + 7 = 57

Q35. Solution:

> **Marking Scheme:** 2 marks for amount after 2 years + 2 marks for remaining amount + 1 mark for final answer

P = ₹15,000, R = 10%, n = 2 years
$A = 15000(1.1)^2$
$= 15000 \times 1.21$
= ₹18,150

Amount paid = ₹8,000
Remaining amount = 18,150 - 8,000
= ₹10,150

OR

Initial population = 1,60,000
Rate = 5% p.a.
Time = 3 years

Present population = $1,60,000(1 + 5/100)^3$
$= 1,60,000(1.05)^3$

= 1,60,000 × 1.157625

= 1,85,220

SECTION E - ANSWERS (3 × 4 = 12 Marks)

Q36. CASE STUDY 1 - ANSWERS:

Total Marks: 4

(i) Area of the bottom of the pool. [1 mark]

Solution:

Width = 15 m

Length of sloping bottom = $\sqrt{[(20)^2 + (3-1)^2]}$

= $\sqrt{[400 + 4]} = \sqrt{404} \approx 20.1$ m

Area = 15 × 20.1

≈ 301.5 m²

(ii) Total area of four walls. [1 mark]

Solution:

Two side walls: 2 × [(1 + 3)/2 × 20] = 2 × 40 = 80 m²

Two end walls: 2 × 15 × 2 (average depth) = 60 m²

Total = 140 m²

OR: Cost of painting four walls. [1 mark]

Solution:

Area = 140 m²

Cost = 140 × 120

= ₹16,800

(iii) Water needed to fill the pool. [2 marks]

Marking Scheme: 1 mark for volume + 1 mark for conversion

Solution:

Volume = Area of cross-section × width

= [(1 + 3)/2 × 20] × 15

= 40 × 15

= 600 m^3

Water = 600 × 1000

= 6,00,000 litres

Q37. CASE STUDY 2 - ANSWERS:

Total Marks: 4

(i) Amount under Option A. [1 mark]

Solution:

$A = 20000(1 + 10/100)^2$

$= 20000(1.1)^2$

= 20000 × 1.21

= ₹24,200

(ii) Amount under Option B. [1 mark]

Solution:

Rate = 9.5% p.a. = 4.75% half-yearly

Time = 4 half-years

$A = 20000(1 + 4.75/100)^4$

$= 20000(1.0475)^4$

= 20000 × 1.2036

≈ ₹24,072

OR: Which option gives maximum return? [1 mark]

Solution:

Option A = ₹24,200

Option B = ₹24,072

Option A gives maximum return.

(iii) Extra interest in Option A compared to S.I. [2 marks]

> **Marking Scheme:** 1 mark for S.I. + 1 mark for difference

Solution:

S.I. = (20000 × 10 × 2)/100 = ₹4,000

C.I. from Option A = 24,200 - 20,000 = ₹4,200

Difference = 4,200 - 4,000

= ₹200

Q38. CASE STUDY 3 - ANSWERS:

> **Total Marks: 4**

(i) Central angle for Priya. [1 mark]

Solution:

Total votes = 120 + 150 + 90 + 60 = 420

Central angle = (150/420) × 360°

= 0.357 × 360°

≈ 129°

(ii) Percentage of votes received by Amit. [1 mark]

Solution:

Percentage = (120/420) × 100

≈ 28.57%

OR: Probability of voting for Ravi or Neha. [1 mark]

Solution:

Ravi + Neha = 90 + 60 = 150

P = 150/420 = 5/14

≈ 0.357 or 35.7%

(iii) Will Priya's votes exceed 40%? [2 marks]

> **Marking Scheme:** 1 mark for calculation + 1 mark for conclusion

Solution:

20% of Amit's votes = 0.2 × 120 = 24

Amit's new votes = 120 - 24 = 96

Priya's new votes = 150 + 24 = 174

40% of 420 = 168

Since 174 > 168

Yes, Priya's votes will exceed 40%

📚 END OF ANSWER KEY 📚

Total Marks: 80

Section A: 20 marks | Section B: 12 marks | Section C: 18 marks

Section D: 15 marks | Section E: 12 marks | Internal Choice: 3 marks

This comprehensive answer key follows strict CBSE marking schemes and includes detailed step-by-step solutions for advanced problem-solving.

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