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Arrange & Design by

Muhammad Majid Hussain

Legal Advisor

Ch. Muhammad Naseer (Kakuana)
Advocate Hight Court
0300-7658213
Chamber # 26, Randhawa Law Building
Near CPO office Distt. Katchery, Faisalabad.

Mian Zahid Iqbal
Advocate Hight Court
0321-7618063
Chamber # 26, Randhawa Law Building
Near CPO office Distt. Katchery, Faisalabad.

For Complaints/Order

Rabbani Publications
36-Z, Commercial Center, Near Mujahid Hospital, Madina Town, Faisalabad.
0332-6682372, 0300-4537372
(rabanipublications@gmail.com)

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PREFACE

Updated Syllabus 2025-2026-2027

A committed team of enthusiastic mathematicians has designed this valuable resource for O Level students, with the aim of helping them practice systematically and master key mathematical skills. This edition has been carefully structured sub topic by sub topic, strictly in line with the latest Cambridge Assessment International Education (CAIE) syllabus (2025–2027). With this approach, learners can strengthen their concepts, improve problem-solving skills, and build the confidence required to excel in their examinations.

The questions included are fully consistent with the CAIE examination format. Students can therefore attempt them with a realistic and exam-oriented mindset. A wide range of questions from all variants has been compiled to ensure diverse practice opportunities for each topic. To make preparation even more effective, detailed solutions based on the official Mark Scheme are provided, allowing students to understand examiner expectations and develop accurate answering techniques.

Every effort has been made to check and edit this book to minimize errors. Nevertheless, constructive feedback is always welcome, as it will help us improve future editions. For suggestions or queries, please contact us at:

We are grateful to the experienced Mathematics teachers who contributed their guidance and expertise, making this book an effective and reliable companion for both classroom learning and self-study.

Team Coordinator

in case of any suggestion for improvement Team Head can be contacted at

Cell: 0332-6682372 / Email: rabanipublications@gmail.com

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- Customer satisfaction is our priority and achieve this goal we will always, work as a team.
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- Quality improvement to sustain through ideas and innovation.

- گاہک کا اطمینان ہماری اولین ترجیح ہے۔
- اپنے مقصد کے حصول کیلئے ہم ہمیشہ بحیثیت ایک ٹیم کام کرتے ہیں۔
- گاہک کی ضروریات اور ماحولیاتی حالات اور احتیاطی تدابیر کہ مدنظر رکھتے ہوئے معیاری اشیاء فراہم کرتے ہیں۔
- ہر فرد اپنے خیالات اور تخلیقات کے ذریعے بہتر کوالٹی اور اس کو برقرار رکھنے کیلئے موثر کردار ادا کرتا ہے۔

CONTENTS

Sr#	Topics	Page#
1	Numbers	
1.1	**Tpes Of Numbers H.c.f, L.c.m**	01
	MARK SCHEME	07
1.1 (a)	**Everyday Maths**	09
	MARK SCHEME	58
1.2	**Sets Venn Diagram**	73
	MARK SCHEME	88
1.4	**Standard Form**	93
	MARK SCHEME	97
1.5	**Limits Of Accuracy**	98
	MARK SCHEME	106
1.6	**Ratio And Proportion**	108
	MARK SCHEME	109
1.7	**Rates**	110
	MARK SCHEME	113
1.8	**Percentage/simple & Compound Interest**	114
	MARK SCHEME	124
1.9	**Time**	127
	MARK SCHEME	131
1.10	**Money**	132
	MARK SCHEME	133
1.11	**Exponential Growth And Decay**	134
	MARK SCHEME	135
1.13	**Variation**	136
	MARK SCHEME	139

CONTENTS

Sr#	Topics	Page#
2	Algebra and Graphs	
2.1	**Algebraic Equations**	140
	MARK SCHEME	216
2.2	**Sequences**	244
	MARK SCHEME	263
2.3	**Graphs In Practical Situation**	268
	MARK SCHEME	270
2.4	**Graph Of Functions**	271
	MARK SCHEME	325
2.5	**Functions Composite Functions**	340
	MARK SCHEME	350
2.6	**Inequality, Graphs**	354
	MARK SCHEME	363
2.7	**Sketching Curves**	366
	MARK SCHEME	374
3	**Coordinate Geometry**	376
	MARK SCHEME	395
4	**Geometrical Construction, Bearing**	402
	MARK SCHEME	411
4.1	**Angles And Polygons**	414
	MARK SCHEME	430
4.2	**Similarity**	434
	MARK SCHEME	445
4.3	**Circle Theorem I & Ii**	449
	MARK SCHEME	462

CONTENTS

Sr#	Topics	Page#
5	**Mensuration**	
5.1	**Area And Perimeter**	466
	MARK SCHEME	469
5.2	**Circle, Arcs And Sectors**	470
	MARK SCHEME	485
5.3	**Surface Area And Volume**	489
	MARK SCHEME	524
5.4	**Compound Shapes And Parts Of Shapes**	534
	MARK SCHEME	541
6	**Trigonometry**	
6.1	**Trigonometry**	543
	MARK SCHEME	603
6.2	**Pythagorus Therm & Trigonometry In 3d**	623
	MARK SCHEME	635
7	**Transformation**	640
	MARK SCHEME	656
8	**Vectors**	
8.1	**Vectors In Dimensional Magnitude**	661
	MARK SCHEME	675
8.2	**Vector Geometry**	680
	MARK SCHEME	690
9	**Probability**	693
	MARK SCHEME	729

CONTENTS

Sr#	Topics	Page#
10	Statistics	
10.1	**Stats Averages & Measure Of Spread**	741
	MARK SCHEME	759
10.2	**Statical Chart And Diagram**	764
	MARK SCHEME	770
10.3	**Scatter Diagrams**	771
	MARK SCHEME	781
10.4	**Cumulative Frequency Diagrams**	784
	MARK SCHEME	809
10.5	**Histogram**	815
	MARK SCHEME	824

Q5(a)/02/S/P/18

1 (a) (i) Write 84 as a product of its prime factors.

Answer ..... [1]

(ii) N is a two-digit number.
The lowest common multiple (LCM) of 84 and N is 504.

Find N.

Answer $N =$ ..... [2]

Q1(c)/21/M/J/18

2 (c) (i) Write 540 as the product of its prime factors.

Answer ..... [2]

(ii) p is the smallest possible integer such that $540p$ is a square number.

Find $\sqrt{540p}$, giving your answer as the product of its prime factors.

Answer ..... [2]

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Q4(c)/22/M/J/18

3 (c) A rectangular field measures 450 m by 306 m.
The whole field is divided into identical square plots with no land remaining.

Find the largest possible side length for the squares.

Answer ..... m [2]

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Q5(b)/21/M/J/23

4 (b) $M = 2^{2x} \times 3^4 \times 5 \times 7$
$N = 2^3 \times 3^{x-y} \times 5^2$

The lowest common multiple (LCM) of M and N is $2^8 \times 3^6 \times 5^2 \times 7$.

(i) Find the value of x and the value of y.

$x =$ .....

$y =$ ..... [2]

(ii) Find the largest square number that is a factor of M.

..... [1]

(iii) Find the highest common factor (HCF) of M and N.
Give your answer as a product of its prime factors.

..... [1]

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Q4/21/M/J/24

5 (a) Two of the factors of 50 are square numbers.
One of these square numbers is 1.

Find the other square number that is a factor of 50.

..... [1]

(b) $A = 2^{x-1} \times 3^{2y} \times 7$
$B = 2^{x+3} \times 3^{y} \times 5$

The numbers A and B are written as the product of their prime factors, where x and y are positive integers.

(i) Find the highest common factor (HCF) of A and B in terms of x and y.

..... [2]

(ii) Find the lowest common multiple (LCM) of A and B in terms of x and y.

..... [2]

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Q1/02A/S/P/25

6 Calculate.

$$\frac{4}{\sqrt{0.0025}}$$

..... [1]

Q9/02A/S/P/25

7 3.56 5 $\sqrt{196}$ 8 $\sqrt{7}$ 12

From the list, write down a number that is

(a) a multiple of 3

..... [1]

(b) a cube number

..... [1]

(c) a prime number

..... [1]

(d) an irrational number.

..... [1]

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Q1,2/02B/S/P/25

8 Find the reciprocal of 0.35 .

..... [1]

Calculate.

$$\frac{4^2 - 1.9}{3.2 - 2.6}$$

..... [1]

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1

5(a)(i)	$2^2 \times 3 \times 7$	**1**	
5(a)(ii)	72	**2**	**M1** for either [504 =] $2^3 \times 3^2 \times 7$ **soi** or answer 8×9 **oe**

2

1(c)(i)	$2^2 \times 3^3 \times 5$	**2**	**M1** for at least two correct stages in factor tree or ladder method
1(c)(ii)	$2 \times 3^2 \times 5$	**2**	**B1** for 90 seen or $2^2 \times 3^4 \times 5^2$

3

4(c)	18	**2**	**B1** for answer 2, 3, 6 or 9 or for $2 \times 3 \times 3 \times 5 \times 5$ **and** $2 \times 3 \times 3 \times 17$ seen or 2, 3, 3 with 25 and 17

4

5(b)(i)	$x = 4$ $y = -2$	**2**	**B1** for $x = 4$ or **B1FT** for $y =$ (*their x*) $- 6$ *their x* must be a positive integer
5(b)(ii)	20736	**1**	
5(b)(iii)	$2^3 \times 3^4 \times 5$ cao	**1**	

5

4(a)	25	**1**	
4(b)(i)	$2^{x-1} \times 3^y$ oe final answer	**2**	**B1** for correct answer seen and spoilt or answer $2^{x-1} \times k$ oe or $m \times 3^y$
4(b)(ii)	$2^{x+3} \times 3^{2y} \times 5 \times 7$ oe final answer	**2**	**B1** for correct answer seen and spoilt or answer $2^{x+3} \times 3^a \times 5 \times 7$ oe or $2^b \times 3^{2y} \times 5 \times 7$ oe or $2^{x+3} \times 3^{2y} \times 5$ oe or $2^{x+3} \times 3^{2y} \times 7$ oe

6

1	80	**1**	

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