EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
33	50 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 33

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 The number of ways to arrange 5 different books in a row is ... (1)

A) 120 **B)** 10
C) 5 **D)** 25

1.2 The FUNDAMENTAL COUNTING PRINCIPLE says the total number of ways is found by ... (1)

A) taking the factorial of the number of stages **B)** multiplying the number of choices at each stage
C) adding the number of choices at each stage **D)** taking the largest number of choices

1.3 A PIN has 4 digits, each from 0 to 9, and repeats ARE allowed. The number of possible PINs is ... (1)

A) 24 **B)** 10 000
C) 5 040 **D)** 40

1.4 If repeats are NOT allowed, the number of 4-digit PINs is ... (1)

A) 5 040 **B)** 40
C) 24 **D)** 10 000

1.5 The number of ways to arrange the letters of the word LEVEL is ... (1)

A) 60 **B)** 120
C) 20 **D)** 30

1.6 Five people sit in a row, but two particular people must sit TOGETHER. The number of arrangements is ... (1)

A) 240 **B)** 120

C) 48 **D)** 24

1.7 Four DIFFERENT letters are arranged at random. The probability of one particular arrangement is ... (1)

A) $\frac{1}{4}$ **B)** $\frac{1}{16}$

C) $\frac{1}{24}$ **D)** $\frac{1}{12}$

1.8 Three coins are tossed and a die is rolled. The sample space has ... (1)

A) 36 outcomes **B)** 12 outcomes

C) 18 outcomes **D)** 48 outcomes

1.9 In how many ways can a chairperson and a secretary be chosen from 8 people? (1)

A) 40 320 **B)** 28

C) 64 **D)** 56

1.10 Two events are INDEPENDENT when ... (1)

A) $P(A) = P(B)$ **B)** $P(A \text{ and } B) = P(A) \times P(B)$

C) $P(A \text{ or } B) = P(A) + P(B)$ **D)** $P(A \text{ and } B) = 0$

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [11 MARKS]

The letters of the word **NUMBERS** are arranged in a row. The word has 7 different letters.

2.1 Determine the number of different arrangements possible, and how many of them begin with the letter N. (3)

2.2 Determine the number of arrangements in which the letters N and U are next to each other. (4)

2.3 Hence determine the probability that in a random arrangement N and U are NOT next to each other. (4)

QUESTION 3 [12 MARKS]

A code consists of 4 digits chosen from 0 to 9.

3.1 Determine how many codes are possible if digits may be repeated, and how many of those begin with an EVEN digit. (3)

3.2 Determine how many codes are possible if no digit may be repeated. **(3)**

3.3 Determine the probability that a randomly chosen 4-digit code has no repeated digit. **(3)**

3.4 Explain why the answer to the previous part would be smaller for a 5-digit code, and calculate that probability. **(3)**

TOTAL: 33 marks

This question paper consists of 3 questions.

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