DAWOOD PUBLIC SCHOOL

Course out line 2011-2012
Subject Maths
Class – X

Book:
Seng, T.et al, 2006, *New Syllabus Mathematics 1*(5th Edition), Singapore; Oxford University Press
Seng, T.et al, 2006, *New Syllabus Mathematics 2*(6th Edition), Singapore; Oxford University Press
Seng, T.et al, 2006, *New Syllabus Mathematics 3*(6th Edition), Singapore; Oxford University Press
Addendum 5th edition

Cambridge O Level Mathematics (Syllabus D)
Syllabus code 4024

All candidates take two papers.
Each paper may contain questions on any part of the syllabus and questions will not necessarily be restricted to a single topic.

Paper 1 **2 hours**

Paper 1 has approximately 25 short answer questions.
Candidates should show all working in the spaces provided on the question paper. Omission of essential working will result in loss of marks.
No calculators are allowed for this paper.
80 marks weighted at 50% of the total

Paper 2 **2 hours 30 minutes**
Paper 2 has structured questions across two sections.
Section A (52 marks): approximately six questions. Candidates should answer all questions.
Section B (48 marks): five questions. Candidates should answer four.
Electronic calculators may be used.
Candidates should show all working in the spaces provided on the question paper. Omission of essential working will result in loss of marks.
100 marks weighted at 50% of the total

Assessment at A Glance
Calculating aids:

Paper 1 – the use of all calculating aids is prohibited.
Paper 2 – all candidates should have a **silent** electronic calculator. A scientific calculator with trigonometric functions is strongly recommended.
Unless stated otherwise within an individual question, three figure accuracy will be required. This means that four figure accuracy should be shown throughout the working, including cases where answers are used in subsequent parts of the question. Premature approximation will be penalised, where appropriate.
In Paper 2, candidates with suitable calculators are encouraged to use the value of π from their calculators.
The value of π will be given as 3.142 to 3 decimal places for use by other candidates. This value will be given on the front page of the question paper only.

Units:

SI units will be used in questions involving mass and measures: the use of the centimeter will continue. Both the 12-hour clock and the 24-hour clock may be used for quoting times of the day. In the 24-hour clock, for example, 3.15 a.m. will be denoted by 03 15; 3.15 p.m. by 15 15, noon by 12 00 and midnight by 24 00.
Candidates will be expected to be familiar with the solidus notation for the expression of compound units, e.g. 5 cm/s for 5 centimeters per second, 13.6 g/cm3 for 13.6 grams per cubic centimeter.

Mathematical Instruments

Apart from the usual mathematical instruments, candidates may use flexi curves in this examination.

Syllabus Aims and Assessment:

The syllabus demands understanding of basic mathematical concepts and their applications, together with an ability to show this by clear expression and careful reasoning.
In the examination, importance will be attached to skills in algebraic manipulation and to numerical accuracy in calculations.

Aims

The course should enable students to:

- Develop their mathematical knowledge and oral, written and practical skills in a manner which encourages confidence;
- Read mathematics, and write and talk about the subject in a variety of ways;
- Develop a feel for number, carry out calculations and understand the significance of the results obtained;
- Apply mathematics in everyday situations and develop an understanding of the part which mathematics plays in the world around them;
- Solve problems, present the solutions clearly, check and interpret the results;
- Develop an understanding of mathematical principles;
- Recognize when and how a situation may be represented mathematically, identify and interpret relevant factors and, where necessary, select an appropriate mathematical method to solve problems;
- Use mathematics as a means of communication with emphasis on the use of clear expression;
- Develop the abilities to reason logically, to classify, to generalize and to prove;

Assessment objectives:

The examination tests the ability of candidates to:

- Recall, apply and interpret mathematical knowledge in the context of everyday situations;
- Set out mathematical work, including the solution of problems, in a logical and clear form using appropriate symbols and terminology;
- Organize, interpret and present information accurately in written, tabular, graphical and diagrammatic forms;
- Perform calculations by suitable methods;
- Use an electronic calculator;
- Understand systems of measurement in everyday use and make use of them in the solution of problems;
- Estimate, approximate and work to degrees of accuracy appropriate to the context;
- Use mathematical and other instruments to measure and to draw to an acceptable degree of accuracy;
- Recognize patterns and structures in a variety of situations and form generalizations;
- Interpret, transform and make appropriate use of mathematical statements expressed in words or symbols;
- Interpret, use and present information in written, graphical, diagrammatic and tabular forms;

Monthly Syllabus

AUGUST	● Solution of Quadratic Equations ● Functions and Graphical Solution of Functions
SEPTEMBER	● Angle Properties of Circle ● Congruent and Similar Triangles ● Area and Volume of similar figures
OCTOBER	● Area and Volume of similar figures (Contd) ● Frequency Distribution ● Linear Inequalities
NOVEMBER	● REVISION FOR MID TERM
DECEMBER	● **MID TERM EXAMS**
JANUARY	● Graphical Solution of Equations ● Trigonometric Ratios and Further Trigonometry
FEBRUARY	● Indices and Standard Form ● Graphs applied to Kinematics
MARCH	● REVISION ●**MOCK EXAMS**

Syllabus Content

Theme or Topic	Subject Content
● Solution of Quadratic Equations Book 3, Chap No.1 Pg No.(1-20)	*Students should be able to:* • use letters to express generalised numbers and express basic arithmetic processes algebraically, substitute numbers for words and letters in formulae; • transform simple and more complicated formulae; • construct equations from given situations. • solve quadratic equations by factorisation and either by use of the formula or by completing the square;

● Functions and Graphical Solution of Functions Addendum, Chap No.8	• use function notation, e.g. f(x) = 3x − 5, f: x a3x − 5 to describe simple functions, and the notation $f^{-1}(x) = \frac{x+5}{3}$ and f^{-1}: x a= $\frac{x+5}{3}$ to describe their inverses. • demonstrate familiarity with cartesian coordinates in two dimensions; • interpret and use graphs in practical situations including travel graphs and conversion graphs; • draw graphs from given data; • construct tables of values and draw graphs for functions of the form $y = ax^n$ where n = –2, –1, 0, 1, 2, 3, and simple sums of not more than three of these and for functions of the form $y = ka^x$ where a is a positive integer; • interpret graphs of linear, quadratic, reciprocal and exponential functions; • find the gradient of a straight line graph; • solve equations approximately by graphical methods; • estimate gradients of curves by drawing tangents.
●Angle Properties of Circle Book 3, Chap No.13 Pg No.(243-260) ● Congruent and Similar Triangles Book 3, Chap No.8 Pg No.(201-236) ● Area and Volume of Similar Figure and Solids Book 3, Chap No.9 Pg No.(239-256)	• calculate unknown angles and give simple explanations using the following geometrical properties: (a) angles on a straight line; (b) angles at a point; (c) vertically opposite angles; (d) angles formed by parallel lines; (e) angle properties of triangles and quadrilaterals; (f) angle properties of polygons including angle sum; (g) angle in a semi-circle; (h) angle between tangent and radius of a circle; (i) angle at the centre of a circle is twice the angle at the circumference; • use the following symmetry properties of circles: (a) equal chords are equidistant from the centre; (b) the perpendicular bisector of a chord passes through the centre; (c) tangents from an external point are equal in length. • differentiate b/w congruent and similar figure; • solve problems and give simple explanations involving similarity and congruence; • use and interpret vocabulary of simple solid figures: cube, cuboids, prism, cylinder, pyramid, cone, sphere; • use the relationships between areas of similar triangles, with corresponding results for similar figures, and extension to volumes of similar solids.
● Frequency Distribution Book 3, Chap No.13 Pg No.(281-300) ● Linear Inequalities Addendum, Chap No.3 Pg No.(42-55)	• use frequency density to construct and read histograms with equal and unequal intervals; • calculate the mean, median and mode for individual data and distinguish between the purposes for which they are used; • solve simple linear equations in one unknown; • solve simple linear inequalities. • order quantities by magnitude and demonstrate familiarity with the symbols =, ≠, >, <, ≤, ≥.
● Graphical Solution of Equations Book 3, Chap No. 8 Pg No.(141-173)	• solve equations approximately by graphical methods; • estimate gradients of curves by drawing tangents.
● Trigonometry and Three Dimensional Problems Book 3, Chap No.11 Pg No.(207-240)	• solve trigonometrically problems in two dimensions including those involving angles of elevation and depression and bearings; • extend sine and cosine functions to angles between 90° and 180°; solve problems using the sine and cosine rules for any triangle and the formula 1/2 ab sin C for the area of a triangle;

	• solve simple trigonometrically problems in three dimensions. (Calculations of the angle between two planes or of the angle between a straight line and plane will not be required.) • interpret and use three-figure bearings measured clockwise from the north (i.e. 000°–360°).

Assessment and Home Work

Students will be assessed by taking test of each and every chapter. Home Work shall be given on a daily basis.

Mathematical Notations:

The list which follows summaries the notation used

Mathematical Symbols

=	is equal to
≠	is not equal to
≡	is identical to or is congruent to
≈	is approximately equal to
<; <<	is less than, is much less than
<	is less than or equal to
>; >>	is greater than, is much greater than
>	is greater than or equal to
∞	infinity

Operations

$a + b$	a plus b
$a - b$	a minus b
$a \times b$, ab, $a.b$	a multiplied by b
$a \div b$, $\frac{a}{b}$, a/b	a divided by b

Functions

f	function f
f (x)	the value of the function f at x
f : $A \rightarrow B$	f is a function under which each element of set A has an image in set B
f : $x \rightarrow$a	y the function f maps the element x to the element y
f^{-1}	the inverse of the function f
sin, cos, tan, cosec, sec, cot }	the circular functions
$\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$, cosec^{-1}, $\sec^{-1}$, $\cot^{-1}$ }	the inverse circular relations

Resource List

New Mathematics Syllabus D work book 1,2,3,4;

Bostock, L, S Chandler, A Shepherd, E Smith ST(P) Mathematics Books 1A to 5A
(Stanley Thornes)

Book 1A	Book 2A	Book 3A	Book 4A,4B
Book 1B	Book 2B	Book 3B	Book 5A,5B

Buckwell, Geoff Mastering Mathematics (Macmillan Education Ltd) 0 333 62049 6
Collins, J, Warren, T and C J Cox Steps in Understanding Mathematics (John Murray)
Book 1
Book 2
Book 3
Book 4

National Mathematics Project (NMP) Mathematics for Secondary Schools Red Track Books 1 to 5 (Longman Singapore Publishers Pte Ltd)
Book 1
Book 2
Book 3
Book 4

Cox, C J and D Bell Understanding Mathematics Books 1–5 (John Murray)
Book 1
Book 2
Book 3
Book 4
MSM Mathematics Group MSM Mathematics Books 1, 2, 3Y, 4Y, 5Y (Nelson) Murray, Les Progress in Mathematics Books 1E to 5E (Stanley Thornes)
Book 1E
Book 2E
Book 3E
Book 4E
Book 5E

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