

GMIS
SCHEME OF WORK
GRADE XI (Aug 2009)
BOOK: MATHEMATICS SL Book: HAESE AND HARRIS

FIRST SEMESTER

1 Term (16 Weeks)	Chapter Name & Number	Contents	Exercise	Reference Number
1 week	Ch10-Practical Trigonometry	Pythagoras theorem, right angle triangle, finding sides and angles, chords and tangents, heights and distances, Definition of $\cos \theta$ and $\sin \theta$ terms of unit circle, $\tan \theta = \frac{\sin \theta}{\cos \theta}$	Ex10A-Ex10F	3.1
2 week	Ch 12- Non Right Angled Trigonometry	Areas of Δ , slope, length of an arc; area of a sector, cosine rule, sine rule, application based questions.	Ex 12 A – 12 E	3.2
3 week	Statistics	<ul style="list-style-type: none"> Histograms, mean, median, Mode (Ungrouped & Grouped data) Frequency polygons, Stem & leaf diagrams 	Ex18A, B1, B2, B3	6.1
4 week	--do--	<ul style="list-style-type: none"> Cumulative data, curves, Range, IQR, & Box & whisker plots, percentiles & quartiles. 	Ex 18 C, D1, D2, E1, E2	6.2
5 week	--do--	<ul style="list-style-type: none"> Standard deviation, Variance, Normal curve. Use of G.D.C in statistics 	Ex 18 F, G	6.3
6 week	Ch 19 – Probability	<ul style="list-style-type: none"> Sample space: event, complementary event, equally likely events, Grid, Independent events. 	Ex 19 A- 19 D, 19 E1	6.4
7 week	--do--	<ul style="list-style-type: none"> Dependent events, tree diagrams; tables of outcomes, Problems using “with replacement” and “without replacement 	Ex 19 E2, F, G	6.5
8 week	--do--	<ul style="list-style-type: none"> Sets & Venn diagrams; Laws of probability: Combined events, Mutually exclusive events, Independent & Conditional events. 	Ex19I, J, K	6.6, 6.7, 6.8
9 week	Ch 1- Functions	<ul style="list-style-type: none"> Concept of function; domain, range, image, notation, Composite, Reciprocal, Inverse, Identity function. 	Ex 1A, 1D, E,F,G	2.1
10 week	Ch 6 Graphing & Transforming functions	<ul style="list-style-type: none"> Investigation of key features of graphs – identification of horizontal and vertical asymptotes, functional transformations. 	Ex 6 A, B 6C1,C2,C3,D	2.2

11 week	Ch 3 Exponents	<ul style="list-style-type: none"> Laws of exponents, rational indices, expansion, exponential equations, Graphs of exponential functions, growth and decay. <ul style="list-style-type: none"> ➤ Surds (Presumed Knowledge) 	Ex 3A – 3F Ex 3 G, H, I	
12 week	Ch 4 & 5 Logarithms & Natural Logarithms	<ul style="list-style-type: none"> Introduction, Base 10, Laws of logarithms, Exponential equations.. <ul style="list-style-type: none"> ➤ Natural Log (Presumed Knowledge) 	Ex 4 A – 4D	
13 week	--do--	<ul style="list-style-type: none"> Growth and Decay, C.I, Change of base 	Ex 4E, F,G	2.3, 2.4

GMIS

SCHEME OF WORK

GRADE XI (Jan 2010) BOOK: MATHEMATICS SL

Book: HAESE AND HARRIS

SECOND SEMESTER

1 Term (13) Weeks	Chapter Name & Number	Contents	Exercise	Reference Number
1 week	Ch 8 - Quadratic Equations and functions	<ul style="list-style-type: none"> Quadratic function: its graph, y – intercept, rational coefficients only, axis of symmetry ,completing the square. Form: $x \mapsto a(x-h)^2 + k$: Form $x \mapsto a(x - p)(x - q)$ 	Ex 8B1,B2, C	2.5 2.6
2 week	--do--	<ul style="list-style-type: none"> Solution of quadratic equation, quadratic formula, 	Ex 8E,F,G, H	2.7
3 week	--do--	<ul style="list-style-type: none"> Applications, Discriminant, Modelling. 	Ex 8 I.1,I.2, J, K	2.8
4 week	Ch 11, 13- Unit circle & Periodic phenomena	<ul style="list-style-type: none"> radian measure of angles, conversions, unit circles, sine function. 	Ex 13. C1 to C3 & 13 D.1, D.2	3.3, 3.4
5 week	--do--	<ul style="list-style-type: none"> Modeling Sine function, tide models, solving sine equations, Application of sine models 	Ex 13 E, 13 F.1 to F.4	3.5, 3.6
6 week	--do--	<ul style="list-style-type: none"> Cosine function, cosine equations, Identities, double angle formula 	Ex 13 G, H, I, J	

7 week	--do--	<ul style="list-style-type: none"> Tan function, Tangent equations, other equations 	Ex 13. k1, K2, 13 11, L2, M	
8 week		Introduction of practice portfolio followed by type –II portfolio		
9 week	Ch 20 & 21 Introduction to calculus, Differential calculus	<ul style="list-style-type: none"> Introduction – rate of change Graphical & algebraic method, Informal ideas of limit and convergence, Definition of derivative, use of this definition for derivatives of polynomial functions, first principle. 	Ex 20 B1, B2 Ex 21 A, B,C	7.1
10 week	--do--	<ul style="list-style-type: none"> Simple rules, chain rule, product and quotient rules 	Ex 21 D, E1, E2, F1, F2	7.2
11 week	--do--	<ul style="list-style-type: none"> Finding equations of tangents and normals, second derivative. 	Ex 21 G,H	
12 week	Ch 23: Derivatives of exponential & Log functions	<ul style="list-style-type: none"> Basic rules, chain rule, natural log 	Ex 23 A, B,C (23 D will be covered after ch 22)	
13 week	Ch24: Derivatives of Trigonometric functions & Ch 22 – Applications of differential calculus	<ul style="list-style-type: none"> Derivatives of $\sin x$, $\cos x$, $\tan x$, Rate of change, economic models 	Ex 24 A, (Ex 24 B will be covered after Ch 22), Ex 22 A, B, C1, C2	7.3, 7.4

GMS
SCHEME OF WORK
GRADE XII (Aug 2010)
BOOK: MATHEMATICS SL Book: HAESE AND HARRIS

FIRST SEMESTER

1 Term (13 Weeks)	Chapter Name & Number	Contents	Exercise	Reference Number
1 week	Ch 22	<ul style="list-style-type: none"> Kinematic problems, Identifying increasing and decreasing functions, Graphical behaviour of functions – both “global” and “local” behaviour, Tangents and normals, behaviour for large x 	Ex 22 D1, D2, E1,E2	7.6
2 week	--do--	<ul style="list-style-type: none"> Local maximum and minimum points, , horizontal inflections, stationary points, Distinction between maximum and minimum points. 	Ex 22 E3, F1,F2,F3	
3 week	--do--	<ul style="list-style-type: none"> rational functions, Horizontal and vertical asymptotes, Use of terms “concave-up” for $f''(x) > 0$, “concave-down” for $f''(x) < 0$. Points of inflexion with zero and non-zero gradients. 	Ex 22 G	
4 week	Ch 22	Optimisation, The significance of the second derivative; , Economic models.	Ex 22 H, I	7.7
5 week	Ch 26 - Integration	<ul style="list-style-type: none"> Indefinite integration as anti-differentiation. Indefinite integral , of $x^n (n \in Q), \sin x, \cos x, \frac{1}{x}, e^x$. Composites of any of the above with the linear function $ax+b$ Anti- differentiation with a boundary condition to determine the constant term. Integration by substitution, Distance from velocity 	Ex 26 E.1, E2, F Ex 26G,H	7.5
6 week	--do--	<ul style="list-style-type: none"> Definite integrals, Areas under curves (between the curve and the x-axis), areas between curves. Only the form $\int_a^b y dx$.($\int_a^b x dy$ <u>not included</u>) <p style="text-align: center;"><u>Application based questions</u></p>	Ex 26 I, J	
7 week	--do--	<ul style="list-style-type: none"> Trigonometric integration, functions, definite integrals properties 	Ex 26K Ex 27 A, B,C	

8 week	--do--	<ul style="list-style-type: none"> Area determination, Volumes of revolution – Revolution about the x-axis only, $V = \int_a^b \pi y^2 dx$. Area under velocity-time graph represents distance. 	Ex 27 D, Ex 28.A1, A2, B	
9 week	Ch 14 – Matrices	<ul style="list-style-type: none"> Definiton of a matrix”. Use of matrices to store data. (<u>Use of matrices to represent transformations excluded</u>) Algebra of matrices: equality; addition; subtraction; multiplication by a scalar. Multiplication of matrices. Identity and zero matrices. 	Ex 14 A, B, C, D, E1, E2	4.1 4.2
10 week	--do--	<ul style="list-style-type: none"> Determinant of a square matrix – elementary treatment only Calculation of a 2×2 and 3×3 determinants – <u>cofactors and minors excluded.</u> Inverse of a 2×2 matrix. Conditions for the existence of the inverse of a matrix. – Obtaining the inverse of a 3×3 matrix using a GDC. Solutions of systems of linear equations using inverse matrices: a maximum of three equations in three unknowns. Only systems with unique solution to be considered. 	Ex 14 G, H Ex 14 I, J, K,L	4.3 4.4
11 week	Ch 9 – Binomial Theorem	<ul style="list-style-type: none"> The binomial theorem: expansion of $(a + b)^n, n \in N$, Binomial coefficients can be determined by using Pascal’s triangle or by using a GDC. 	Ex 9 A, B	1.3
12 week	Ch2:Sequences & series	<ul style="list-style-type: none"> Arithmetic sequences & series, sum of finite arithmetic series. 	Ex 2 A, B,C, 2E1, E2,	1.1
13 week	--do--	<ul style="list-style-type: none"> Geometric sequence, sum of finite & infinite geometric series, Applications: compound interest & population growth and use of G.D.C INTRODUCTION TO TYPE 1 PORTFOLIO 	Ex 2D, E3, F, Ex 2 D Ex 2 D	1.2 1.1

GMS
SCHEME OF WORK
GRADE XII (Jan 2011)
BOOK: MATHEMATICS SL Book: HAESE AND HARRIS

SECOND SEMESTER

1 Term (16 Weeks)	Chapter Name & Number	Contents	Exercise	Reference Number
1 week	Ch 16- Vectors in 3- dimensions	<ul style="list-style-type: none"> • Vectors as displacements in the plane and in three dimension • Distance between points in three dimension • Components of a vector: 	Ex 16 A, B1, B2, C	5.1
2 week	--do--	<ul style="list-style-type: none"> • Algebraic and geometric approaches to the following topics: sum and difference of two vectors; zero vector; the vector $-v$; • Multiplication by a scalar; magnitude of a vector, v; unit vectors – base vectors i, j, k; position vectors . 	Ex 16 D - E	5.2
3 week	--do--	<ul style="list-style-type: none"> • Scalar product of two vectors- • Perpendicular vectors • Parallel vectors • Angle between two vectors. 	Ex 16 F, G	5.3
4 week	Ch 17 Lines in the plane and in space	<ul style="list-style-type: none"> • Representation of a line as $r = a + tb$ - lines in the plane and in three-dimensional space. - Examples of applications: interpretation of t as time and b as velocity, with b representing speed. - <u>Cartesian form of the equation of a line excluded.</u> - Distinguishing between coincident and parallel lines. - Finding points where lines intersect. - Awareness that non-parallel lines may not intersect. 	Ex 17 A, B, C Ex 17 D, E, F, G	5.4

5 week	Ch 29 – Statistical Distributions	<ul style="list-style-type: none"> • Concept of discrete random variables and their probability distributions • Expected value (mean), $E(X)$ for discrete data Applications of expectation .	Ex 29 A - D	6.9
6 week	--do--	<ul style="list-style-type: none"> • Binomial distribution. Mean of the binomial distribution • Normal distribution. Properties of the normal distribution. 	Ex 29 E, F, G 1	6.10
7 week	--do--	<ul style="list-style-type: none"> • Standardization of normal variables, z - distribution. • Use of calculator or tables to find normal probabilities: the reverse process. 	Ex 29 G2, H1, H2, H3	
8 week		<ul style="list-style-type: none"> • Applications of normal distribution 	Ex 29 I	
		REVISION		