YEAR 10		Description	Levels covered	Skills & content covered	Skills & content revisited
COMPUTING					
AUTUMN 1	Representation of data continued:	Addition of binary numbers and understanding of how different data is represented in a computer system, ie. sound, image, text.		(d) add two 8-bit binary integers and explain overflow errors which may occur (e) convert positive denary whole numbers (0-255) into 2-digit hexadecimal numbers and vice versa (f) convert between binary and hexadecimal equivalents of the same number (g) explain the use of hexadecimal numbers to represent binary numbers.(h) explain the use of binary codes to represent characters (i) explain the term character set (j) describe with examples (for example ASCII and Unicode) the relationship between the number of bits per character in a character set and the number of characters which can be represented. Images Candidates should be able to: (k) explain the representation of an image as a series of pixels represented in binary (l) explain the need for metadata to be included in the file such as height, width and colour depth (m) discuss the effect of colour depth and resolution on the size of an image file. Sound Candidates should be able to: (n) explain how sound can be sampled and stored in digital form (o) explain how sampling intervals and other considerations	Representation of data.

AUTUMN 2	Programming - theory and practise	Develop a deeper understanding of the concepts used in programming, with higher level tasks which use the content described.		Candidates should be able to: (j) define the terms variable and constant as used in an imperative language (k) use variables and constants (l) describe the data types integer, real, Boolean, character and string (m) select and justify appropriate data types for a given program (n) perform common operations on numeric and Boolean data (o) use one-dimensional arrays. Testing Candidates should be able to: (p) describe syntax errors and logic errors which may occur while developing a program (q) understand and identify syntax and logic errors (r) select and justify test data for a program, stating the expected outcome of each test.	Programming concepts.
SPRING 1	Databases	Describe and understand the use of Databases. Be able to identify components and entities. Creation of a relational database to aid understanding.		(a) describe a database as a persistent organised store of data (b) explain the use of data handling software to create, maintain and interrogate a database. The DBMS Candidates should be able to: (c) describe how a DBMS allows the separation of data from applications and why this is desirable (d) describe the principal features of a DBMS and how they can be used to create customised data handling applications. Relational databases Candidates should be able to: (e) understand the relationship between entities and tables (f) understand the components of a relational database, such as tables, forms, queries, reports and modules (g) understand the use of logical operators in framing database queries (h) explain the use of key fields to connect tables and avoid data redundancy (i) describe methods of validating data as it is input.	

SPRING 2	Networks	Understanding of networks including the Internet. Include connectivity and hardware.		(a) explain the advantages of networking stand-alone computers into a local area network (b) describe the hardware needed to connect stand-alone computers into a local area network, including hub/switches, wireless access points (c) explain the different roles of computers in a client-server and a peer-to-peer network (d) describe, using diagrams or otherwise, the ring, bus and star network topologies (e) describe the differences between a local area network and a wide area network such as the internet (f) explain the terms IP addressing, MAC addressing, packet and protocols (g) explain the need for security measures in networks, such as user access levels, suitable passwords and encryption techniques (h) describe and justify network policies such as acceptable use, disaster recovery, failover, back up, archiving. The internet Candidates should be able to: (i) describe the nature of the internet as a worldwide collection of computer networks (j) describe the hardware needed to connect to the internet including modems, routers (k) explain the need for IP addressing of resources on the internet and how this can be facilitated by the role of DNS services	Web design unit in Year 7
SUMMER 1	Programming theory and practise - A452 - practical investigation	Introduction to practical investigation. Start of controlled assessment		PART A (a) plan and carry out a practical investigation of a topic (b) use practical skills effectively and efficiently to develop solutions to problems (c) test their solutions (d) evaluate and modify these solutions in light of test results. Candidates should be able to: PART B(a) select suitable techniques for the development of their solution (b) use suitable techniques to solve all aspects of the problem (c) deploy practical techniques in an efficient and logical manner. PART C (a) show an understanding of the relevant information by presenting evidence of the development of their solutions (b) show an understanding of the technical terminology/concepts that arise from their investigation through their analysis of the data collected (c) use the terminology/concepts surrounding their topic and contained in the information collected, correctly when it comes to producing their analysis in the	Programming concepts and practise. ICT systems. Software.

SUMMER 2	**A452 - practical investigation - cont. Revision of content covered so far.**	Controlled assessment continued, production of final report.		(a) produce a full report covering all aspects of the investigation (b) present the information in a clear form which is understandable by a third party and which is easily navigable (c) critically appraise the evidence that they have presented (d) test their own solution (e) present their evaluation in a relevant, clear, organised, structured and coherent format (f) use specialist terms correctly and appropriately (g) present a conclusion to the report (h) justify their conclusions based on the evidence provided	Topics for mock exam to include: