G063 ICT revision list

3.3.1 The systems cycle □ systems cycle □ project management □ process modelling	• Describe the stages of the system life cycle • Advantages and disadvantages of different approaches an analyst might use when investigating a system • Software development methodologies: prototyping and rapid application development (RAD) • The purpose of test data and explain the importance of testing and test plans; • Contents of the requirements specification • Roles and responsibilities of the project team • Interpret and create critical path analysis (CPA) and Gantt charts • Interpret and create data flow diagrams and flowcharts
3.3.2 Designing computer-based information systems □ processing systems; □ designing the user interface.	• Batch, interactive and real-time processing systems in terms of processing methods, response time and user interface requirements • Difference between types of operating systems • Designing a human–computer interface • Good methods of human–device communications, particularly human–computer interfaces (HCI) using command line interfaces, menus/submenus, graphical user interfaces (GUIs), natural languages (including speech input–output) and forms dialogue • How a user's perception, attention, memory and learning can be taken into account when designing an interface • Mental models and how they can be applied to the design of a user interface • Importance of designing a system model that matches closely the user's mental model • The Model Human Processor, developed by Card, Moran and Newell, and its application.
3.3.3 Networks and communications	• The characteristics of a local area network (LAN), a wide area network (WAN) and a virtual network • The characteristics and purpose of intranets, the internet and extranets;

□ network environments: intranets, internets, on-line services; □ Communications and standards.	• Client-server and peer-to-peer networks giving advantages and disadvantages of each • Importance of bandwidth when transmitting data and analyse how different types of communication media • The role of the following network components: switches, hubs, wireless access points, network interface cards, wireless network interface cards, routers, repeaters, gateways, firewalls and servers (file, applications, mail, proxy, print, backup) • Optical communication methods (infrared, fibre optic, laser), their advantages and disadvantages and typical applications; • Wireless communication methods (Bluetooth®, radio) • Facilities of the following communication applications: fax, email, bulletin (discussion) boards, tele/video conferencing and instant messaging • Use and implications of social networking; • Asymmetric digital subscriber line (ADSL), cable, wireless, leased line, satellite • How a mobile phone network operates (cellular and satellite) • How satellite communications systems are used and work in global positioning, weather, data transfer systems and television • How mobile technology and networks can enable communication from anywhere in the world; • Implications of being able to communicate from anywhere in the world using • Standards for communicating between devices and explain how protocols are used to enable this communication (candidates will not be expected to have detailed knowledge of specific protocols).
3.3.4 Applications of ICT □ applications and limitations of ICT;	• Advantages and disadvantages of the following software-based training methods: online tutorials, computer based training, video conferencing

□ converging communications and information technologies; □ distributed databases; □ Systems.	• The limitations of using ICT in society today and how advances in technology may overcome some of those limitations • The use of networks of computers at work and at home • Distributed database systems may be stored in more than one physical location using the following approaches: partitioned between sites (vertical and horizontal), entire databases duplicated at each site, central database with remote local indexes • The use of different types of distributed database systems • Security issues of distributed databases: interception of data, physical access to data, consistency and integrity of data and analyse methods of overcoming these issues • components of an expert system (user interface, inference engine, knowledge base) • the features of an effective management information systems (MIS) • How MIS and expert systems can be used by organisations • Range of services offered by digital television networks and the impact of these services on individuals, television companies and broadcasters • Range of services offered by mobile communication services and the impact of these services on individuals and organisations • The internal resources of an organisation: human, technological and premises.
3.3.5 Implementing computer-based information systems □ custom-written and off-the-shelf approaches; □ upgrading systems; □ system installation; □ system maintenance.	• Involvement of the client when a custom-written computer-based information system is to be produced • The implications of selecting, implementing and supporting the installation of custom-written and off-the-shelf solutions • Explain how the expertise of staff, costs, benefits and current systems affect decisions about upgrading or installing software and hardware • Methods for installing a new computer-based information system: parallel, phased, direct, pilot • Choosing a particular installation method or methods for a range of applications

	• Role of reviews during the life of a computer-based information system • Perfective, adaptive and corrective maintenance during the life of a computer-based information system.
3.3.6 Implications of ICT □ the impact of external change; □ managing change; □ the impact of ICT on the role of the manager; □ quality issues; □ advanced systems.	• Impact of external change on an organisation, individuals within the organisation and on the systems in use; • Managing change and the factors that must be considered (staff capability, staff views, systems, equipment and accommodation) • Importance of consultation, participation and communication when managing change • Ethics relating to ICT with reference to codes of conduct, the British Computer Society (BCS) code of conduct and the Association for Computing Machinery (ACM) Code of Ethics and Professional Conduct • Data confidentiality • Encryption, authorisation, authentication, virus checking, virus protection and physical security • Hardware and software developments that are changing, or might change, the way we live