

# Form 4 Information Technology

## Term 1

### SECTION 1: COMPUTER FUNDAMENTALS AND INFORMATION PROCESSING

Week			
1	explain the concept of Information Technology;	Definition and scope of Information Technology	
	distinguish among the major types of computer systems in terms of processing speed, storage and portability	Major types: (a) Super Computers (for example, Cray). (b) Mainframes (for example, IBM zEnterprise System). (c) Desktop systems. (d) Mobile devices (for example, laptops, notebooks, netbooks, smartphones, tablets and game consoles). (e) Embedded devices (for example, special-purpose systems such as controllers in microwaves, car ignition systems, answering machines).	
	explain the functions of the major hardware components of a computer system;	Major components: input, central processing unit, primary memory (RAM and ROM), secondary storage, output. (a) Secondary storage devices: hard disk, magnetic tape, flash drive, memory card, and optical disks (CD, DVD and Blu-Ray). (b) Units of storage: bits, bytes, kilobytes, megabytes, gigabytes, terabytes.	
	how the major hardware components interrelate;	Input processing output storage (IPOS) cycle.	
2	cloud storage and local storage	Definition of cloud and local storage. Assessment criteria: capacity, cost, accessibility; security issues.	
	select input/output devices	Associate the following devices with suitable applications: (a) Input: Optical mark reader (OMR), character readers (OCR, MICR), mouse, joystick, bar code reader, document scanner, light-pen, touch terminals, voice response unit, Touch Screens (tablets, point of sale, ATM), keyboard, digital camera, biometric systems, sensors, remote control, sound capture, pointing devices, webcam. (b) Visual output: Monitors, Printers (laser, inkjet, dot matrix, thermal, plotters, 3D Printers), microfilm (c) Audible output: speakers, headphones, earphones.	
3	explain the role of the different types of software in computer operation;	System Software: Operating System, Utilities Application software: general-purpose and special-purpose; integrated package; source: off the shelf, custom-written, and customized.	
	User Interfaces	Hardware: touch screens, specialized keyboards. Software: command line, menu-driven, graphical user, touch.	
4	evaluate the suitability of a given computer system for a specific purpose	Basic knowledge of system specification needed for purposes such as: to run a video game, web browsing, graphic design, video editing, and desktop publishing. (a) Processing speed (CPU type and speed); (b) Memory (RAM); (c) Secondary storage (capacity and speed); (d) Types of software; and, (e) Input/Output devices.	
5	troubleshoot basic computer hardware problems;	Cable problems (for example, loose cables). Monitor problems (for example, improperly adjusted monitor controls). Printer problems (for example, changing printer cartridges). Battery problems (for example, loose or dead battery).	
6	distinguish between data and information;	Data as raw unprocessed facts; information as processed data. Sources of data and information (people, places and things). Document types: turnaround document, human-readable and machine-readable forms; hard copy, and soft copy.	
	evaluate the reliability of information obtained from online sources	Evaluation of information retrieved electronically for authenticity, currency, relevance, and bias	
7	validation and verification	Difference between validation and verification.	
	identify validation and verification checks	Methods of validation: range check, reasonableness checks, data type checks, consistency checks, presence, format and length. Methods of verification: double entry and proofreading (to identify and correct typographical and transpositional errors).	
8	file organization	File access methods: sequential, serial, direct and random.	
	Processing Modes	real time, batch, online	
<b>SECTION 2: COMPUTER NETWORKS AND WEB TECHNOLOGIES</b>			
9	distinguish among types of networks;	Types of networks (local area network, metropolitan area network, wide area network, mobile network). (a) Concept of mobile network as radio based common carrier (b) Overview of mobile networks: from 2G to current. (Knowledge of the inner workings of mobile systems is NOT required) Wireless network technologies (for example, Bluetooth, Wi-Fi, hotspot). Level of privacy (intranet, extranet, Internet).	
10	explain the functions of the basic components of a network;	(a) Transmission media: (i) Wired: twisted pair, coaxial, fibre; (ii) Wireless: infrared, microwave, satellite.	

		(b) Switch, router, modem. (c) Network interface card/network adapter.	
	mobile communication technologies	Suitability of mobile networks to various applications (for example, education, commerce, and journalism).	
11	explain the interrelationship among key Web technology concepts.	World Wide Web. Hypertext Mark-up Language. Hypertext Transfer Protocol. Hyperlinks. Web server. Web Page. File Transfer Protocol. Web Browser. Uniform Resource Locator. Upload and download. Email.	

## Term 2

### SECTION 3: SOCIAL AND ECONOMIC IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

1	outline the concepts of computer security, cybersecurity and computer misuse; assess the potential impact of computer systems misuse based on the main entities impacted;	Computer security and cybersecurity as related to the assessment and minimization of risk. – Elements: vulnerability, threat, attack, countermeasure. Computer misuse by individuals and groups/organizations. (a) Cyberbullying, copyright infringement, data theft, denial of service attacks, transmission of viruses and malware, identity theft, online publication of obscene materials, phishing attacks, software and music piracy, financial abuses, violation of privacy, propaganda, electronic eavesdropping, industrial espionage; (b) Entity impacted: individual, organization, government.	
2	describe suitable countermeasures to mitigate effects of identified threats;	Physical measures: backup and recovery procedures; hardware firewall, intrusion detection systems, biometrics. Software measures: effective passwords and authentication systems, encryption of data, firewall, biometrics, antivirus and malware detection. Personal Security practices. - verifying authenticity of email from companies or individuals, assessing website URLs for authenticity, limiting access to open Wi-Fi networks, securing mobile devices, protection in an online environment (for example, social media).	
3	effect of automation on job security; describe the roles of various personnel in computer-related professions assess the impact of information and communications technology	Job loss vs productivity gains in skilled and unskilled job categories. Network Engineer, Computer Programmer, Computer Support Specialist, Computer Systems Analyst, Administrators (Network, Systems and Database), Software Developer, Web Developer, Social Media Specialist. Economic implications of ICT on Education, Medicine, Business, Law Enforcement and Recreation.	

### SECTION 4: WORD-PROCESSING AND WEB PAGE DESIGN

4	create a document using content from a range of sources; use appropriate document formatting features;	Importing text (combining documents). Typewritten text, images and other objects. font types and sizes, colour, underline, bold, italics, superscript and subscript, tab stops, bullets and numbering, bullets and numbering, line spacing, justification (left, right, centre, full), highlight, uppercase, word wrap, Page size, margins, page and section breaks, Page numbers, headers, footers, footnotes and endnotes.	
5	BEGIN SBA	Receive the SBA Question and begin work on the SBA	
6	use appropriate editing features to structure and organize a document; use the review feature protection of documents;	Drag and drop editing: perform block operations on selected areas of text within a document. Use search and replace functions appropriately to edit a document. Use of tables, table styles, shading, borders, row and column insertion, split cells, split tables, text direction and cell margins, cell size. Use of columns (one, two, three, left and right columns, column breaks). use the review feature of a word processor to enhance document readiness; Automatic save and backup copy, edit restrictions – password protection.	
7	generate table of contents	Auto table of contents.	
8	use mail merge feature	Creation of primary documents and data files in mail merge application. Field names.	
9	create a fillable electronic form for online use; plan a website structure and organization of page;	Use of content controls, such as check boxes, text boxes, date picker, drop-down lists, and command buttons. Reasons for the website. The intended audience. Number of web pages. Content of each page. Layout of the web page.	
10	create simple web pages using a variety of design features;	Choosing an appropriate design for a page. Inserting and deleting text and graphics. Wrap text with image. Create home page with hyperlinks.	
11	insert hyperlinks within different locations of a typical web page; evaluate a website for accuracy, user friendliness and effective display.	Link to another web page, a location within the web page, an email address, user-created files. Considerations for publishing a website: Verify that all the hyperlinks work correctly. Use a test audience. Verify that all content is up-to-date.	
12	Revision		

### Term 3

#### SECTION 5: SPREADSHEETS

1	spreadsheet;	Purpose of a spreadsheet:	
	spreadsheet terminologies and notions	Common features: workbook, worksheet, column, row, cell (cell address, range, label, value), formula, function.	
2-4	use basic pre-defined functions	Including sum, average, date, max, min, count, counta, countif, vlookup, pmt, if.	
5	create advanced arithmetic formulae;	Formulae including addition, subtraction, multiplication, division, and use of brackets.	
6	replicate (copy) formulae into other cells;	Relative addressing, absolute addressing, naming of ranges.	
		Effect of move, copy, delete operations on formulae.	
7-8	manipulate columns and rows;	Insert, delete and modify columns and rows.	
	manipulate data in a spreadsheet;	Numeric Data formatting (currency, accounting, percentage, comma, decimal places). Sorting data (primary field, secondary field, ascending vs descending order). Filtering data (multiple criteria, complex criterion). Pivot Table (create one or two dimensional pivot tables, create frequency distribution from data & create pivot chart)	
9	perform charting operations;	Select appropriate chart types: Column charts, Bar charts, line graphs, pie charts. Labelling charts: graph titles, labels on axes, data labels.	
	Manipulate one or more worksheets	Use of one or more worksheets to solve problems involving some of or all the functions and operations listed above. Linking of two or more worksheets to solve problems.	