**MILITARY COLLEGE OF SIGNALS**

**BESE-16B**

**ICT FUNDAMENTALS**

**Instructor: Rabia Khan Time: 90 Minutes Max Marks: 30**

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**Q No.1 Answer the following questions [15]**

1. What is meant by word size?

*Word size is the size of the processor’s registers. Technically, it is the number of bits that the CPU can process at one time.*

1. How many characters can be represented by a byte?

*A byte can represent 1 character only. For e.g. the byte 00000011 will always mean character ‘3’.*

1. What is POST? Explain.

*POST stands for Power-On Diagnostic Test. When you turn on the power to a computer, the first program that runs is usually a set of instructions kept in the computer's read-only memory (ROM). This code examines the system hardware to make sure everything is functioning properly.*

1. Differentiate between storage and memory.

*Storage is normally used to refer to permanent storage of data while memory is used to refer to temporarily storing of data. Storage devices are hard disk, while RAM is a memory device.*

1. Where do the registers reside? What is their function?

*When the processor executes instructions, data is temporarily stored in small, local memory locations of 8, 16, 32 or 64 bits called registers. A register may hold a computer instruction, a storage address, or any kind of data (such as a bit sequence or individual characters).*

*Registers are part of processor, not RAM.*

1. What is the cheapest way of increasing processing speed? How does it help in effecting speed?

*The cheapest way of increasing processing speed is to increase the capacity and speed of RAM.*

1. What is NIC?

*NIC stands for Network Interface Card and it Controls the flow of data on a network link.*

1. What applications are real operating systems good for?

*The applications which require the response very quickly and instantly use real time operating systems. It is a very fast small OS that is built into a device. Examples of such devices are MP3 players, Medical devices.*

1. What is a cache used for?

*Cache holds common or recently used data. It is a very fast memory location and is built in the processor. When a request is submitted by a user that result is first searched for in the* cache.

1. What is computer clock?

*Computer’s clock is used to synchronize all devices in the computer. It is quartz crystal*

*Whose every tick causes a cycle, and with each clock cycle, the processor performs an action that corresponds to an instruction.*

1. Which storage technique does a CD use?

*The CD (Compact Disk) uses optical storage technique.*

1. What were screen savers primarily used for?

*Screen savers were primarily used to prevent phosphor burn-in. It keeps the screen idle with a moving pattern that prevents the burn of phosphor of which screens are made of.*

1. How many bits does hexadecimal system use to represent a character?

*Hexadecimal system uses 16 bits to represent a character.*

1. What is the difference between application software and system software?

*System software is computer software designed to operate the computer hardware and to provide and maintain a platform for running application software. Operating system e.g. Windows XP is an example of System Software.*

*Application software accomplishes a specific task and is the most common type of software. Examples are MS Word. Normally application software is installed by the user according to his needs.*

1. What is an instruction set?

*Instruction set, also called a command set, is the basic set of commands, or*[*instructions*](http://www.webopedia.com/TERM/I/instruction.html)*, that a microprocessor understands. Whatever the request or instruction user submit is first decoded into these identifiable instructions which tells the computer what to do.*

**Q No.2 [4+3+1]**

1. What are the different categories of operating systems?

*Depending upon the usage and the tasks that an OS can perform at a given time the operating systems can be broadly classified into following categories:*

* *Single user/ Singletasking*
* *Single user/ Multitasking*
* *Multiuser/ Multitasking*

*With reference to the type of interface they provide OS can be classified into:*

* *Command Line Interfaces OS*
* *Graphical User Interface OS*

1. Demonstrate conversion of the following into binary and decimal
   1. 2A3B 16

*Converting to Decimal System:*

= (2\*163) +(10\*162)+(3\*161)+(11\*160)

= 10811 10

*Converting to Binary System using Direct Method:*

2A3B 16 = 0010 1010 0011 1011 OR 10101000111011

* 1. 2543 6

*Converting to Decimal System:*

= (2\*63) +(5\*62)+(4\*61)+(3\*60)

= 639 10

*Converting to Binary System by division method:*

2543 6  = 1001111111

1. Represent the binary number 11001001000011111100100 into Hexadecimal.

110 0100 1000 0111 1110 0100 = 6 4 8 7 E 4

**Q No.3 [5+2]**

1. You are to buy a computer for your personal usage. The vendor offers one with the following specifications. What does each specification mean? Explain.

* Intel Pentium® III processor at 733MHz with 256 KB full speed L2 cache integrated on processor
  + Processor information. Intel is the make of the processor, 733MHz is the processor speed, 256KB is the storage capacity of the cache
* 133 MHz data bus
  + The speed of the data bus.
* 9.1 GB Ultra3 SCSI hard drive (10,000 rpm)
  + 9.1 GB states the size in GigaBytes. Ultra3 SCSI is the type of the drive. 10,000 RPM hard drive is the “Rotations per Minute” Specification. Higher RPM results in a quicker response, which is greatly appreciated when booting.
* 128 MB SDRAM
  + 128 MB is the size of the RAM in MegaBytes. Synchronous dynamic random access memory (SDRAM) states the type of the RAM.
* 17” Flat Screen Color Monitor
  + Diagonal Measurement of the Monitor Screen.
* Toshiba CD-RW/DVD Drive 4x4x24x CD-RW 4.8x DVD
  + DVD: These drives allow you to watch DVD movies on your computer.  
    CD-RW: drives will allow you to create your own CD's. Supporting **r**ecordable and re**w**riteable media.  
    CD-R: drives will allow you to create you own CD's as well. However, the media (**r**ecordable media) for these drives can only be written to once.  
    Multi-media CD drives incorporate 2 or more technologies in one drive.  
    4x4x24x CD-RW 4.8x DVD (4 speed CD-RW, 4 speed CD-R, 24 speed standard CD-ROM, 4.8 speed DVD)

1. Express 1 GigaByte and 1 MegaByte in bits. Which one represents a bigger unit?

1 GigaByte = 1024 MegaByte

Since 1 MegaByte = 1024 KiloBytes and 1 KiloBytes = 1024 Bytes so,

1 GigaByte = 1024 x 1024 x 1024 x 8 bits

= 8589934592 bits

1 MegaByte = 1024 KiloByte

Since 1 KiloByte = 1024 Bytes so,

1 MegaByte = 1024 x 1024 x 8 bits

= 8388608 bits