

Instructions:

- Time for Part I is **two hours**.
- Write your name, class, index number/section in the spaces provided.
- Each correct answer in Part I carries 2 marks.
- For Part I, select the correct or most appropriate answer and underline it clearly on the paper itself.
- Use of calculators and correction fluid (e.g. Tipp-Ex) is not allowed.
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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Index No: \_\_\_\_\_

**Part I**

- (1) Which of the following statements is incorrect with regard to the basic concepts of ICT?
1. Firmware is a major component of a computer system.
  2. Device drivers are used by computers to communicate with different kinds of computer software.
  3. An anti-virus program is an example for system software.
  4. A printer driver is an example for embedded software.
  5. Notepad is an example for application software.
- (2) An online magazine charges an annual subscription fee from its online users and sends a payment reminder to all its subscribed users one month prior to the completion of one year subscription period. This scenario can be best described as an example for,
1. Real time processing
  2. Batch processing
  3. Online processing
  4. Multi-processing
  5. On-demand processing
- (3) Consider the following statements with regard to cloud services provided by Internet:
- A. Using an online facility for delivering a software product developed by a Sri Lankan software developer, to a customer living in UK can be referred to as PaaS.
  - B. Microsoft Office 365 is an example for SaaS.
  - C. HTTP (Hyper Text Transfer Protocol) helps transfer video content available on websites among different Internet access computing devices.
- Which of the above statements is/are correct?
1. A only
  2. A and B only
  3. B and C only
  4. A and C only
  5. All A, B and C.
- (4) Consider the following statements with regard to computer hardware:
- A. Joystick, Barcode reader and mouse can be referred to as pointing devices.
  - B. MICR, OCR and OMR can be referred to as input devices.

C. DVD, monitor and printer can be referred to as output devices.

Which of the above statements is/are correct?

- |                 |                    |                 |
|-----------------|--------------------|-----------------|
| 1. A only       | 2. B only          | 3. B and C only |
| 4. A and C only | 5. All A, B and C. |                 |

(5) Which of the following statements is incorrect with regard to the main memory used in personal computers?

1. It holds only data/instructions on which the computer is currently working.
2. It functions synchronous to CPU.
3. It is a non-volatile memory.
4. It is not the fastest memory available in a computer.
5. CPU can access it without the use of peripheral devices.

(6) Consider the following storage media:

- |                 |              |                 |        |
|-----------------|--------------|-----------------|--------|
| A. Compact Disk | B. Hard disk | C. Blu-ray disk | D. DVD |
|-----------------|--------------|-----------------|--------|

Which of the above storage media use/s laser beams to read/write data/instructions?

- |                    |                      |                    |
|--------------------|----------------------|--------------------|
| 1. A and B only    | 2. B and C only      | 3. A, B and C only |
| 4. A, C and D only | 5. All A, B, C and D |                    |

(7) Consider the following statements with regard to cache memory used in modern personal computers:

- A. L1 cache is the fastest memory available in a modern computer.
- B. L1 and L2 cache memories are volatile while L3 cache is non-volatile
- C. All the cache memories are semi-conductor memories.
- D. All the cache memories act as buffers in between CPU and the main memory.

Which of the above statements is/are correct?

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. A and B only    | 2. C and D only       | 3. A, B and C only |
| 4. B, C and D only | 5. All A, B, C and D. |                    |

(8) Which of the following describes 'Plagiarism' correctly?

1. It is stealing of program source codes and selling them to third parties without permission of the real owner.
2. It is stealing of someone else's thoughts, ideas, expressions or works and representing them as one's own original work.
3. It is stealing of personal information from computer systems and using them for malicious reasons.
4. It is stealing of sensitive data such as usernames and passwords by hacking into computer systems and using them against the owners.
5. It is stealing of proprietary software and making the illegal copies by changing the source code and selling them.

(9) Consider the following statements with regard to proprietary software and FOSS:

- A. Source code of proprietary software can be purchased but cannot be modified without the written permission from the owner.
- B. FOSS can be developed by anyone who wishes so.
- C. Proprietary software can be developed only by registered companies willing to sell their digital products.
- D. There is no need or purchasing the FOSS software for anyone.

Which of the above statements is/are correct?

1. A and B only
2. C and D only
3. B and D only
4. A, B and D only
5. All A, B, C and D.

(10) Consider the following statements with regard to licensed & unlicensed software:

- A. A software license is a legal instrument governing the use or redistribution of software.
- B. Software handled as internal resource of an organization can be unlicensed software.
- C. There can be software outside the copyright protection.
- D. Purchasing FOSS by a user does not give him the full right for license.

Which of the above statements is/are correct?

1. A and B only
2. C and D only
3. A, B and C only
4. B, C and D only
5. All A, B, C and D.

(11) Consider the following computers:

- A. ENIAC      B. EDSAC      C. EDVAC      D. UNIVAC

Which of the above computers belong to the first generation computers?

1. A and B only
2. C and D only
3. A, B and C only
4. B, C and D only
5. All A, B, C and D.

(12) Which of the following is correct computer classification?

1. Based on technology, based on purpose, based on ownership
2. Based on purpose, based on size, based on technology
3. Based on size, based on manufacture, based on technology
4. Based on purpose, based on activity, based on size
5. Based on purpose, based on generation, based on size

(13) Consider the following statements with regard to hardware components:

- A. All secondary storage devices are non-volatile devices.
- B. Magnetic tape has the largest capacity among secondary storage devices.
- C. Virtual memory is a physical hardware component.
- D. Solid State Drives store data electronically.

Which of the above statements is/are correct?

1. A and B only
2. C and D only
3. A, B and D only
4. B, C and D only
5. All A, B, C and D.

(14) Which of the following should be considered when looking for compatibility of CPU with motherboard?

- A. Socket support      B. Chipset support
- C. Motherboard wattage support      D. BIOS support
1. A and B only
  2. C and D only
  3. A, B and C only
  4. B, C and D only
  5. All A, B, C and D.

(15) Consider the following statements with regard to memories labeled as “read only”:

- A. Firmware is typically embedded in read only memories.
- B. PROM memories can be erased many times to store instructions.
- C. EPROM memories should be exposed to ultraviolet light for erasing instructions on them.

D. Pen Drive can be considered as EEPROM

Which of the above statements is/are correct?

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. A and B only    | 2. C and D only       | 3. A, B and C only |
| 4. A, C and D only | 5. All A, B, C and D. |                    |

(16) Consider the following statements with regard to SRAM, DRAM and SDRAM:

- A. SDRAM is synchronized with CPU clock speed.
- B. SRAM is faster than DRAM.
- C. SRAM is denser than DRAM
- D. Both SRAM and DRAM are used for making volatile memories.

Which of the above statements is/are correct?

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. A and B only    | 2. C and D only       | 3. A, B and D only |
| 4. B, C and D only | 5. All A, B, C and D. |                    |

(17) Consider the following statements with regard to CPU:

- A. Multi-core processors typically have more than one processor.
- B. There is no memory device inside the CPU.
- C. CPU can access any type of memory directly.
- D. There is no firmware embedded inside CPU.

Which of the above statements is/are incorrect?

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. A and B only    | 2. C and D only       | 3. A, B and C only |
| 4. B, C and D only | 5. All A, B, C and D. |                    |

(18) Consider the following statements with regard to different people who contributed into the development of computing technologies:

- A. "Stored Program Architecture" was first proposed by John Von Neumann.
- B. Charles Babbage is regarded by some as the "Father of Computing".
- C. One of the designers of ENIAC was "John Mauchly"

Which of the above statements is/are correct?

- |                 |                    |                 |
|-----------------|--------------------|-----------------|
| 1. A only       | 2. A and B only    | 3. B and C only |
| 4. A and C only | 5. All A, B and C. |                 |

(19) Which of the following shows the correct classification of computers according to the size in descending order?

- 1. Mainframes, Laptops, Notebooks, Phablets, Smartphones
- 2. Super computers, Mainframes, Notebooks, Desktop computers, Smart phones
- 3. Mainframes, Super computers, Desktop computers, Laptops, Phablets
- 4. Super computers, Desktop computers, Mini computers, Laptops, Notebooks
- 5. Super computers, Mainframes, Desktop computers, Mini computers, Smart phones

(20) Consider the following statements with regard to computer monitors:

- A. The smallest unit on a computer display is known as a bit.
- B. LED monitors generate less heat and consume less power compared with CRTs.
- C. LED monitors have longer lifespans and less environmental impact.
- D. CRT monitors have wider viewing angles compared with LCD monitors.

Which of the above statements is/are correct?

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. A and B only    | 2. C and D only       | 3. A, B and C only |
| 4. B, C and D only | 5. All A, B, C and D. |                    |

(21)  $2^{20}$  bytes are equal to,

1. 1 KB      2. 1 MB      3. 1 GB      4. 1 TB      5. 1024 MB

(22) Binary representation of decimal  $47_{10}$  is,

1.  $011111_2$       2.  $0101111_2$       3.  $0110111_2$       4.  $0101101_2$       5.  $0111011_2$

(23) Decimal representation of binary  $01101011.101_2$  is,

1.  $107.125_{10}$       2.  $107.625_{10}$       3.  $110.225_{10}$       4.  $105.625_{10}$       5.  $107.325_{10}$

(24)  $53_8$  is equivalent to decimal

1. 42      2. 45      3. 35      4. 43      5. 62

(25) Decimal 0.3125 is equivalent to binary.....

1.  $.101_2$       2.  $.0101_2$       3.  $.11000110101_2$       4.  $.0011_2$       5.  $.01001_2$

(26) Which of the following is not a two's complement 8 bit representation?

1. -127      2. -128      3. -0      4. 0      5. +127

(27) Decimal 37.25 in binary .....

1.  $0100101.11001_2$       2.  $0100101.1_2$       3.  $0100101.01_2$       4.  $0100101.001_2$       5.  $0110011.01_2$

(28) Consider the following statements with regard to different character encoding schemes:

- A. Different versions of ASCII are mostly compatible with one another.
- B. BCD is space efficient.
- C. EBCDIC was widely used to represent characters in IBM personal computers.
- D. ASCII code points are compatible with that of Unicode code point.

Which of the above statements is/are correct?

1. A and B only      2. C and D only      3. A and D only  
4. A, C and D only      5. All A, B, C and D.

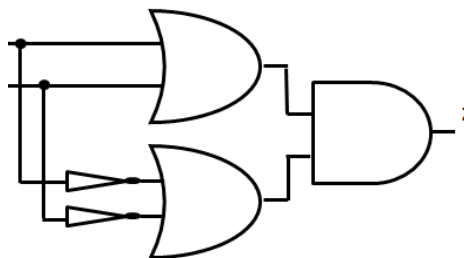
(29) Boolean algebra is used to simplify a given Boolean expression. Which of the following depicts "Identity Law"?

1.  $A + A = A$       2.  $0 + A = A$       3.  $A + AB = A$       4.  $A = A''$       5.  $A + A' = 1$

(30) Consider the following logic circuit:

Which of the following gates is depicted by the given logic circuit?

1. OR  
2. AND  
3. XOR  
4. NOR  
5. NAND



(31) Which of the following represents AND gate?

1.  $(A.B)'$       2.  $((A.B)'.(A.B)')'$       3.  $((A.A)'.(B.B)')'$   
4.  $(A+B)'$       5.  $((A+A)' + (B+B)')'$

(32) According to the "Redundancy Law",  $A + A'B =$  (result of output column), which of the following will be the output column of the truth table if input variables A and B in the truth table follows the binary number pattern from top to bottom?

1. 

1
0
0
0

      2. 

0
0
1
1

      3. 

0
1
1
1

      4. 

0
0
0
1

      5. 

1
1
1
1

(33) Consider the following Boolean expressions:

A.  $Z = AB'C + AB'C + ABC$

B.  $Z = AB + AB'C + BC'$

C.  $Z = (AB'C)' + (A'B'C) + (A'B'C)'$

D.  $Z = A' + AB' + A'B'C$

Which of the above can be referred to as Sum Of Products (SOP) expressions?

1. A and B only
2. C and D only
3. A, B and D only
4. A, C and D only
5. All A, B, C and D.

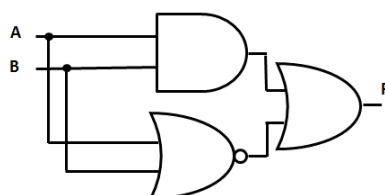
(34) What would be the result if the following Boolean expression is simplified?

$F(a,b) = (a' + b)(a + b)$

1. a
2. b
3. a + b
4. 1
5. 0

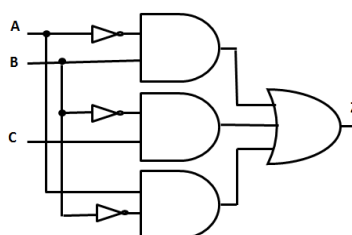
(35) Which of the following logic gates is represented by the given logic circuit?

1. AND gate
2. NOR gate
3. XOR gate
4. XNOR gate
5. OR gate



(36) The following is a simplified logic circuit of the given Karnaugh map.

		AB			
C		00	10	11	01
	0	0	P	Q	1
	1	1	R	S	1



Which of the following bit pattern should be used for P, Q, R and S in the Karnaugh map respectively?

1. 0,0,0,1
2. 1,1,1,0
3. 0,0,1,1
4. 1,1,0,0
5. 1,0,1,0

(37) Consider the following rules in relation to Karnaugh maps:

- A. Every "one" must be in at least one group when simplifying SOP expressions.
- B. Groups should be as small as possible.
- C. Diagonal grouping is allowed only if no grouping is possible
- D. There should be the fewest number of groups possible.

Which of the above statements are correct?

1. A and D only
2. C and D only
3. A, B only
4. A, B and D only
4. All A, B, C and D.

(38) Consider the following statements with regard to half adder circuit:

- A. It is a circuit used for addition of two bytes.
- B. There can be only two inputs and two outputs in a half adder.
- C. XOR gate is used to generate "sum" bit.
- D. It can be built by using only two basic logic gates.

Which of the above are correct?

1. B and C only
2. A and D only
3. B and D only
4. A, B and D only
5. All A, B, C and D.

(39) Which of the following is not considered as a function of a computer operating system?

1. Providing a virtual machine.
2. Granting/revoking permissions for resources.
3. Keeping track of resource usage.
4. Developing application software requested by the user.
5. Providing a user interface.

(40) Consider the following statements with regard to the evolution of computer operating systems:

- A. Programs were processed in parallel during 1940s – 1950s.
- B. There was a special system idle process to run during program I/O before 1950s.
- C. Only a single program could be executed at a time with simple batch processing systems.
- D. Central theme of modern operating systems started with multi-programmed batch systems.

Which of the above statements are correct?

1. A and B only
2. C and D only
3. A, B and C only
4. B, C and D only
5. All A, B, C and D.

(41) Consider the following statements with regard to different views of a file stored inside a computer:

- A. Linear collection of records.
- B. Pixels of intensity values.
- C. How the file is stored in the secondary storage.
- D. Linear collection of bytes.

Which of the above are related with the logical view of a file?

1. A and B only
2. B and D only
3. A, C and D only
4. A, B and D only
5. All A, B, C and D.

(42) Consider the following statements with regard to files stored inside computers:

- A. Only the executable files can be stored inside computers with only a file extension without a file name.
- B. Contiguous space allocation is the only method used by the modern operating systems in storing a file.
- C. An object file is a sequence of bytes organized into blocks that are understandable by the machine.
- D. A file extension is used for the benefit of the operating system.

Which of the above statements are correct?

1. A and D only
2. C and D only
3. A, C and D only
4. B, C and D only
5. All A, B, C and D.

(43) Which of the following statement is incorrect with regard to file systems?

1. NTFS is a freely downloadable file system.
2. FAT is a proprietary file system.
3. FAT maintains two copies to protect a volume.
4. NTFS supports Unicode encoding system.
5. FAT file system is supported by almost all the modern operating systems running in microcomputers.

(44) Assume that the block size of a disk is 2KB. A portion of its **File Allocation Table (FAT)** at a particular time is shown below together with its block addresses. The portion gives the blocks of two files namely *mypro.py* which is the larger file and the file *yourpro.py* as well.

Block address	200	201	202	203	204	205	206	207	208	209	210	211
		209	205	206	201	-1	204		202	-1	208	

Notes: 1. The last block of a file is indicated by -1.

2. The **directory entry** of a file contains the block number of the first block of the file.

Which of the following gives the *directory entry* for the *mypro.py* file and the disk space allocated for *yourpro.py* file respectively?

1. 210, 8KB    2. 203, 10KB    3. 203, 8KB    4. 210, 10KB    5. 201, 18KB

(45) Which of the following contains an illegal process transition?

1. Created-> Ready-> Running-> Ready/Suspend->Running
2. Created-> Ready-> Running-> Blocked-> Ready-> Running-> Exit
3. Created-> Ready/Suspend-> Ready-> Running-> Exit
4. Created-> Ready-> Ready/Suspend-> Ready-> Running-> Exit
5. Created-> Ready-> Running-> Exit

(46) Which of the following is used to translate a virtual address into a physical address?

1. Page table                      2. Process Control Block (PCB)                      3. Control Unit (CU)
4. Program Counter (PC)    5. Memory Management Unit (MMU)

(47) Which of the following will dispatch a process into the running state from ready state?

1. Very short term scheduler.    2. Short term scheduler.    3. Mid-term scheduler
4. Long term scheduler.    5. Very long term scheduler.

(48) Which of the following statements is incorrect with regard to computer operating system scheduling related functions?

1. In non-preemptive scheduling, a process will continue in the running state until it terminates or blocks itself for I/O.
2. In preemptive scheduling, the currently running process may be interrupted and moved to the ready state.
3. In preemptive scheduling, a process can monopolize the processor.
4. Modern multi-programming computers use preemptive scheduling policy.
5. Preemptive scheduling is not required in uni-programming environments.

(49) Which of the following statements is correct with regard to Process Control Block (PCB)?

1. PCB is a hardware component available in a modern computer which is used to control a process running.
2. At any given time, there can be one PCB in a computer.
3. In modern computers, PCB is embedded into a CPU.
4. It is a data structure maintained by the operating system for every process.
5. The architecture of a PCB is completely independent of an operating system.

(50) In a byte addressable computing device which uses a 16 bit physical memory address, the total capacity of the physical memory is,

1. 16KB                      2. 32KB                      3. 64KB                      4. 16MB                      5. 64MB