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Bandaranayake College – Gampaha
G.C.E (A/L) 2024 – Grade 12 – First Term End Evaluation

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புதிய பாடத்திட்டம்
New Syllabus

– Gampaha බණ්ඩාරනායක විද්‍ය
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தகவல், தொடர்பாடல் தொழிநுட்பவியல் I
Information & Communication Technology I

20 E I

Instructions:

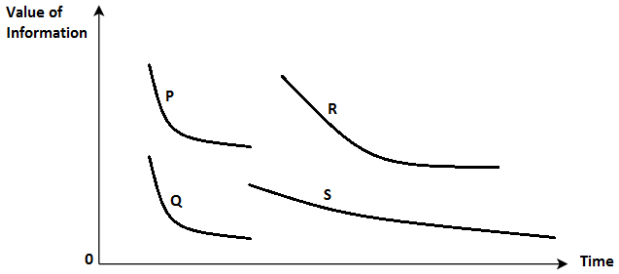
- *Time for Part I and Part II is **two hours and thirty minutes.***
- *Write your name, class, index number/section in the space provided.*
- *Each correct answer in Part I carries 1 mark.*
- *For Part I, select the correct or most appropriate answer and underline it clearly on the paper itself.*
- *Use of calculators is not allowed.*
- *This paper is a property of Bandaranayake College – Gampaha.*

Name: _____ *Class:* _____ *Index No:* _____

(1) Which of the following statements is incorrect with regard to data and information?

1. More accurate decisions can be taken when data are available in a computerized system.
2. Data and information do not have the same value.
3. Data can be processed accurately by using both computerized and manual methods.
4. Information generated from one system may be data for another system.
5. To take a decision, information should be reached to the relevant person/organization.

(2) Consider the following graph that shows the information generated and its value for a particular organization as well as the statements given below.



A. The above graph is known as the 'Abstract Model of Information':
B. 'P' and 'Q' have the same value for the organization.
C. 'P' and 'R' should be allocated more resources by the organization compared with 'Q' and 'S'.
D. 'S' has the highest value for the organization.

Which of the above statements are incorrect?

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

(3) Which of the following correctly describes the term 'Big Data'?
1. They are the large volume of data stored in super computers around the world.
2. All the data stored in the Internet.
3. Large volumes of data that cannot be handled by the typical computer software.
4. Data files stored in computers exceeding the Petabyte limits.
5. Data stored in social media.

(4) Consider the following statements with regard to 'mobile communication':
A. CDMA can be used in mobile communication for sharing a common channel but not FDMA.
B. Mobile communication was initially limited between only two users.
C. With modern facilities available, mobile computing is possible even with guided media.

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.

(5) Which of the following statements is incorrect with regard to Internet?
1. www is a major service provided by Internet.
2. Internet is controlled centrally by 'Internet Assigned Numbers Authority - IANA'.
3. Internet was practically restricted for the general public until www was invented and made widely available.
4. Internet uses a set of protocols called TCP/IP (Transmission Control Protocol/ Internet Protocol)
5. ARPANET is the forerunner of Internet.

(6) Consider the following statements with regard to data processing:
A. Manual data processing always generates errors.
B. Computerized data processing always generates accurate data even when inaccurate data are provided if the instructions given to the computer are correct.
C. It is essential to retain (keep) even obsolete data in a computerized system.

Which of the following statements is/are incorrect?
1. A only 2. A and B only 3. B and C only
4. A and C only 5. All A, B and C.

(7) A web programmer in Sri Lanka intends to deploy (deliver) a web based application to a client living in USA. Which of the following cloud computing service model is most appropriate for his/her requirement?
1. IaaS 2. SaaS 3. PaaS 4. NaaS ` 5. FaaS

(8) A student wants to scan a hard copy of a document and extract the text on it to a computing device so that he/she can open it up in a text editing software and edit the text on it. Which of the following device is most appropriate to get this task done?
1. Optical Mark Reader 2. Flatbed scanner 3. Bar Code Reader
4. Optical Character Recognition 5. Magnetic Ink Character Recognition

(9) Consider the following statements with regard to printers:

A. Impact printers are more suitable for using inside an operation theatre in a hospital.
B. Unit cost of an impact printer is comparatively low.
C. Print quality of an impact printer is comparatively low.

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.

(10) Consider the following statements with regard to memories used in personal computers:

A. Volatile memories retain data/instructions even after the power supply is interrupted.
B. Volatile memories are typically faster than non-volatile memories.
C. CPU can access the volatile memories directly.

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.

(11) Which of the following statements is incorrect with regard to memories used in personal computers?

1. Cache memory is not the fastest memory available in a computer.
2. CPU can access the cache memory directly.
3. Cache memory is typically embedded into the computer system.
4. L1 cache has the least capacity compared with other type of memories.
5. Cache memory was introduced with the aim of increasing the efficiency of CPU.

(12) Consider the following statements with regard to storage media:

A. Digital Versatile Disk is a magnetic storage device.
B. Floppy disk is a magnetic storage device.
C. Pen Drive is an optical storage device.
D. Compact Disk is an optical storage device.

Which of the above statements are correct?

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

(13) Consider the following applications:

A. Compiler B. Notepad C. Linux D. Windows

Which of the above are considered as system software?

1. A and B 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

(14) Consider the following statements with regard to firmware:

A. They are also called embedded software.
B. Firmware should be installed into a computer immediately after the operating system is installed.
C. Firmware typically handles the booting up process of a computer.

Which of the following 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.

(15)Which of the following statements is correct with regard to computer software?

1. Proprietary software source code is available to the user only after the purchase of the relevant software.
2. Source code of FOSS is freely available to the user.
3. A user can modify or redistribute the source code of FOSS if it is available.
4. A user cannot share the proprietary software though he/she purchases it without the prior agreement of the owner.
5. Proprietary software cannot be modified as the source code is not available to the user.

(16)The technology used in the second generation computers is,

1. Transistors 2. Vacuum tubes 3. Integrated Circuits
4. Very Large Scale Integration (VLSI) 5. Ultra Large Scale Integration (ULSI)

(17)Which of the following is not a component of the Central Processing Unit?

1. Control Unit 2. L1 Cache 3. RAM 4. Registers 5. ALU

(18)Consider the following statements with regard to parallel- processing:

A. Multi – core processor computers enable parallel-processing.
B. Any kind of a computer program can be executed as parallel-processing, in a modern parallel-processing environment.
C. Multi-processing has been introduced with the aim of gaining a high performance from a computer.

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)Consider the following statements with regard to SRAM and DRAM:

A. SRAM is faster than DRAM.
B. DRAM is more dense (denser).
C. SRAM has to be refreshed at regularly occurring intervals.

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.

(20)Which of the following statements is incorrect with regard to ROM used in computing devices?

1. Firmware is typically embedded in ROMs.
2. DVD is an example for Electrically Erasable Read Only Memory-EEROM.
3. PROM chips are available as empty chips and they can be programmed only once.
4. ROM retains its contents even when the computing device is turned off.
5. EPROM contents can be erased by exposing them ultraviolet light.

(21) Which of the following statements is correct with regard to register memory used in a computer?

1. It is the memory available in a computer system with the least storage capacity.
2. A part of registers is volatile while some other part is non-volatile.
3. After processing data by the CPU, they will never be passed to the RAM through registers.
4. Registers are a part of the main memory.
5. It is a sequential access memory.

(22) Consider the following statements with regard to ASCII:

A. ASCII initially represented 128 characters.
B. ASCII is used to represent world languages used in IBM personal computers.
C. It was originally proposed as a 7 bit character representation scheme.

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.

(23)Which of the following is a correct BCD code?

1. 10010111_2 2. 00000000_{BCD} 3. 11000000_{BCD}
4. 00001111_{BCD} 5. 00001011_{BCD}

(24)Which of the following statements is correct with regard to EBCDIC?

1. EBCDIC stands for External Binary Coded Decimal Interchange Code.
2. It does not use a linear ordering of letters.
3. EBCDIC is mainly used to represent characters in IBM personal computers.
4. It uses 16 bits to represent a character.
5. Different versions of EBCDIC are mostly compatible.

(25)Decimal value represented by the bitwise operation 10001011_2 XOR 10011101_2 is,

1. 16 2. 22 3. 25 4. 32 5.78

PART II

(1) a. Calculate the following and write the answer together with the calculation process.
   1. $11001011_2 + 11001101_2$ (binary answer expected) *(2 marks)*
   2. $253_8 + 527_8$ (octal answer expected) *(2 marks)*
   3. $16A3_{16} + 49CF_{16}$ (hexadecimal answer expected) *(2 marks)*

   b. Make the following conversions.
   1. Convert 52.625_{10} into binary number system. *(2 marks)*
   2. Convert 356_8 into decimal number system. *(2 marks)*
   3. Convert $12AC_{16}$ into octal number system. *(2 marks)*

   c. Calculate the following by using 8 bits.
   1. Represent the decimal number –12 in signed magnitude notation. *(2 marks)*
   2. Represent the decimal number –127 in one's complement notation. *(2 marks)*
   3. Represent the decimal number –128 in two's complement notation. *(2 marks)*

   d. Perform the following calculation using 8 bits.
   1. Write down decimal 10 and –20 in one's complement arithmetic. Perform the calculation (10) + (–20) using 8 bits one's complement. *(5 marks)*
   2. Write down decimal 23 and –19 using 8 bits two's complement arithmetic. Perform the calculation 23 + (–19) using two's complement arithmetic. Clearly state how you deal with the carry bit. *(5 marks)*

(2) a. Draw and name the components of data life cycle. *(3 marks)*

   b. Draw the Fetch-Execute cycle with the correct components together with the functions of each component. *(5 marks)*

   c. Draw and name the memory hierarchy you have learnt and name the components correctly while considering the size of each memory type. *(6 marks)*

(3) a. Name three characteristics of quality information. *(3 marks)*

   b. Name three major services of Internet. *(3 marks)*

   c. Name three major functions of a digital computer. *(3 marks)*

   d. Name the five computing eras together with their time periods. *(3 marks)*

   e. Name three types of cache memories and the places they are possibly located. *(3 marks)*

(4) a. Explain the importance and one major use of cache memory used in a personal computer. *(3 marks)*

   b. Explain the major role of the main memory of a personal computer and two of its specific characteristics. *(3 marks)*

   c. Explain the role of the register memory in mathematical calculations. *(3 marks)*

(5) a. Explain how firmware helps for a computer to run its operations. *(3 marks)*

   b. Explain the use of utility software and give two examples of commonly used utility software. *(3 marks)*

   c. Explain the role of system software in a computer. *(3 marks)*