	<b>ධර්මසාරා ජාතික පාසල - නාච්ඡන්දිය</b> <b>Dhammisa National School - Naththandiya</b>	
	<b>First Term Test - 2023</b>	
<b>ICT - I</b>	අනුප්‍රාප්තිමය අංකය - ..... නම - .....	<b>Grade 12</b>  <b>2 Hours</b>

**Instructions:**

- Answer all the questions.
- Select the correct oh most appropriate answer from the given answers of 1,2,3,4 or 5

1. Which of the following is a feature of the 5<sup>th</sup> generation computer?
  - 1) Use Of Large - Scale Integrated circuit technology.
  - 2) Use of technology such as artificial intelligence
  - 3) Use of keyboard and mouse
  - 4) Using many vacuum tubes
  - 5) Introduction of operating systems
  
2. Life Cycle of data consist of three stages. Select correct order of stages.
  - 1) Data creation, Management, Removal of obsolete data
  - 2) Management, Data creation, Removal of obsolete data
  - 3) Removal of big data, Management, Data creation
  - 4) Data collection, Management, Removal of big data
  - 5) Management, Data collection, Removal of obsolete data
  
3. Consider the following statements.
 

A – Pin Number of an ATM card ✓

B – Calendar for 2023

C– The price list displayed in front of a glossary

Which of the above statements can be considered as Data?

1) A only                      2) B only                      3) C only                      4) A and B only                      5) A and C only
  
4. Consider the following statements regarding computer evolution.
 

A - Addition and subtraction could be done using Pascaline.

B - Vacuum tubes were invented in 1956.

C - ENIAC, which was founded by Maurice Wilks, is the first stored- program computer in the world

Which of the above is are correct?

1) A only                      2) B only                      3) C only                      4) A and B only                      5) A, B and C
  
5. Tharushi did advance Level Examination in science stream in 2015, got good results and selected to the medical faculty. Although her parents, teacher, relations and neighbors highly interested in inquiring her results on the day she received a results, nobody ask about A/L results during fast few years.



This expression mentions about a fact related to a characteristic of valuable information. What is it?

- |                 |                |              |
|-----------------|----------------|--------------|
| 1) Relevancy    | 2) Accuracy    | 3) Timelines |
| 4) Completeness | 5) Reliability |              |

6. Consider the following statements.

**Statement 1** -Encryption is a technique used to protect the confidentiality of data and information'.

**Statement 2** -Encryption is a service of internet like Email and file sharing.

Which of the following is correct regarding above statements?

- 1) Both statements are correct
- 2) First is correct and second is incorrect
- 3) First is incorrect and second is correct
- 4) Both statements are incorrect
- 5) First statement is explained by the second statement.

7. What is the **incorrect** statement regarding parallel computing and grid computing?

- 1) In parallel computing, programs and processes are done simultaneously.
- 2) In parallel computing, large problems are divided into smaller ones and not solved at different times.
- 3) In parallel computing, server computers which are connected by internet, run independent tasks.
- 4) Grid computing is a distributed architecture of large number of computers connected to solve a complex problem.
- 5) The computers which were used in parallel computing contain multi core processors

8. Which of the following systems is **not** suitable for real time data processing?

- |                               |                                  |                   |
|-------------------------------|----------------------------------|-------------------|
| 1) Weather forecasting system | 2) Flight Reservation system     |                   |
| 3) Radar detection system     | 4) Spacecraft controlling system | 5) payroll system |

9. Phishing can be defined as,

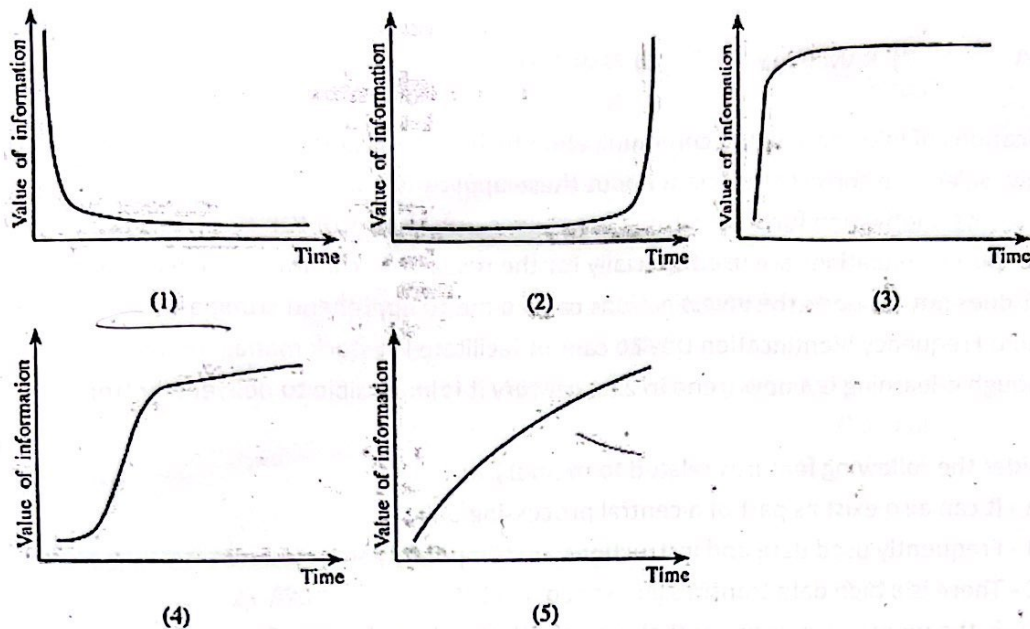
- 1) Collecting information about bank accounts or electronic accounts by deceiving users.
- 2) Prompting the user for another web pages buy misguiding when connecting to internet.
- 3) A harmful software which automatically activates maintaining connections with other networks.
- 4) Claiming the ownership of a copied product made by ideas or creations of another producer.
- 5) A software that displays unnecessary notices on the screen.

10. Choose the **incorrect** statement about copyrighted (proprietary) software and Free and Open Source Software.

- 1) Once a person buys a licensed software, it can be installed on multiple computers without any legal restrictions.
- 2) The user only has the right to use free and open source software and its distribution and copying is illegal.
- 3) Free and Open Source Software is available without any payment.
- 4) Licensed software often needs to be renewed after a certain period of time.
- 5) The source code of free software cannot be edited.

11. Which of the following graph illustrates the golden rule of information?





12. Which of the following device is not in use to gather data automatically in a computer system?
- 1) Optical character reader (OCR)
  - 2) Magnetic ink character reader (MICR)
  - 3) Magnetic stripe reader
  - 4) Sensor
  - 5) Touch screen
13. When using the online registration method for the universities, it is compulsory to enter the private and academic details of the students. What is the most suitable data validation method to be used for this situation?
- 1) Range check
  - 2) Format check
  - 3) Presence check
  - 4) Data type check
  - 5) Value check
14. .... is very expensive computer which is capable of handling thousands of users simultaneously.
- 1) Super computer
  - 2) Mainframe Computer
  - 3) Mini Computer
  - 4) Micro Computer
  - 5) Digital Computer
15. Hardware is considered as a major component of a computer system. Select the correct statement/ statements about hardware.
- A - Scanner, joy stick and touch screen are examples for input devices of computer.
- B - Use of LCD technology reduces the consumption of electricity instead of using LED technology for the visual display unit of the computer
- C - Cache memory is a device made up of semi-conductors and help to speed up the functions of CPU
- 1) A only
  - 2) B only
  - 3) C only
  - 4) A and B only
  - 5) A and C only
16. Which is the answer that correctly mentions the phases of Fetch Execute cycle.
- 1) Fetching next instruction from memory, Decode the instruction, Execute the instruction.
  - 2) Decode the instruction, Fetching next instruction from memory, Execute the instruction.
  - 3) Decode the Instruction, Execute the instruction, Fetch next instruction from memory.
  - 4) Fetch next instruction from memory, store the instruction, Decode the instruction, Execute the instruction.
  - 5) Increment the program counter, Decode the instruction, Execute the instruction, Fetch next instruction from memory
17. What is the interface used to connect Hard Disk to Motherboard

- 1) ISA      2) RAM Bank      3) USB Port      4) AGP Slot      5) SATA

18. Applications of information and communication technology is getting popularized in various domains rapidly. Select the correct statement about these applications.

- 1) Students' motivation for self-learning is reducing due to uses of ICT
- 2) Computer simulations are used specially for the researches cannot be done in laboratories
- 3) ICT does not supports the investigations carried out to apprehend criminals.
- 4) Radio Frequency Identification Device cannot facilitate livestock management
- 5) Though e-learning is a new trend in 21st century it is impossible to deliver a better content

19. Consider the following features related to memory

A - It can also exist as part of a central processing unit.

B - Frequently used data and instructions are temporarily stored.

C - There is a high data transmission speed.

What is the memory component that works with the above features?

- 1) L1 Cache memory      2) L2 Cache memory
- 3) Static Random Access Memory      4) Register      5) Main memory

20. Select the statement which shows the ascending order of accessing speed of storage devices correctly

- 1) Registers , optical disc, magnetic disc      2) Cache memory, solid disc,, magnetic disc
- 3) Optical disc, magnetic disc, solid disc      4) Magnetic tape, solid disc, optical disc
- 5) Cache memory, main memory, registers

21. Consider the following statements on Static Random Access Memory (SRAM).

A – SRAM needs periodic refreshing

B – It is use for cache memory

C – Registers are made of SRAMs

Which of the above statements (s) is/are correct?

- 1) A only      2) B Only      3) A and B Only
- 4) A and C only      5) B and C only

22. Which storage device follows Sequential Data Access Method to read data?

- 1) floppy Disk      2) Hard Disk      3) Magnetic Tape
- 4) Compact Disk      5) Digital Versatile Disk

23. Consider the following statements about Hard Disk Drive

X – Hard Disk is a volatile data storage device that stores data permanently.

Y – It contains one or more platters which can store data on both sides.

Z – Hard disk is divided into many physical partitions called tracks and sectors.

Which of the above are true?

- 1) X only      2) Y only      3) Z only      4) X and Y only      5) Y and Z only

24. Select the MSD and LSD of the decimal number 0.0248 respectively.

- 1) 8 and 0      2) 2 and 8      3) 0 and 8      4) 8 and 0      5) 2 and 0



25. Which of the following represents the equivalent hexadecimal value of  $75_8$ ?

- 1)  $2B_{16}$       2)  $3E_{16}$       3)  $2E_{16}$       4)  $CD_{16}$       5)  $3D_{16}$

26. What is the decimal representation of the binary value  $1111.011_2$ ?

- 1) 15.375      2) 15.875      3) 16.145      4) 16.375      5) 15.775

27. Consider the following three numbers given in hexadecimal, octal and decimal notations respectively.

A -  $BD_{16}$

B -  $745_8$

C - 485

Which of the above is/are equivalent to  $111100101_2$  in binary notation?

- 1) A Only      2) B Only      3) C Only  
4) A and B only      5) B and C only

28. What is the decimal number equivalent to  $4D5_{16}$ ?

- 1) 483      2) 825      3) 1237      4) 1325      5) 4135

29. In a competition, Kusal scored marks 23 and Mathew scored  $10110_2$ , if they want to win the Competition, they must score 84 marks, how many more marks they should score in order to win?

- 1)  $46_8$       2) 37      3) 55      4)  $101111_2$       5)  $100111_2$

30. Which of the following is true about two's complement?

- 1) An extra bit is used to represent the sign  
2) Makes it possible to build low-cost, high speed hardware to perform arithmetic operations.  
3) Addition and subtraction used as two different operations.  
4) Usually represented in hexadecimal number system.  
5) Used in 1<sup>st</sup> generation computers to perform Logic operations

31. If two's complement of an integer is  $11001011$ , the integer is,

- 1) 51      2) (-53)      3) (-63)      4) 53      5) (-61)

32. Which of the following answer shows the one's complement and two's complement of the values  $9_{10}$  and  $(-16)_{10}$  respectively,

- 1) 00001001 and 11101111      2) 00010110 and 00010000      3) 00001001 and 11110000  
4) 11110111 and 11110000      5) 00001001 and 00010000

33. Which of the following represents the bitwise XOR operation of the two binary numbers  $1010111001_2$  and  $1000111011_2$ ?

- 1)  $1110001110_2$       2)  $0110000011_2$       3)  $0010000010_2$   
4)  $0010111001_2$       5)  $1101111011_2$

34. What are the answers for bitwise complement of  $\sim 5$  and  $\sim (-5)$  respectively?

- 1) (-6), 6      2) (-6), 4      3) 10, (-2)      4) (-10), 11      5) (-6), 10

35. Consider the following statements.

- A - Symbols such as ☺ 🇳🇵 are easier to use in communication because of the Unicode code.  
B - Unicode is an 8 bits coding system.  
C - The ASCII code system also provides unique codes for Sinhala and Tamil characters.

Which of the above is/are correct?

- 1) Only statement A is correct.
- 2) The statements A and B are correct and the C statement is incorrect.
- 3) The A statement is incorrect and the statements B and C are correct.
- 4) The statements A and C are correct and the statement B is incorrect.
- 5) The statements A, B and C all are incorrect.

36. If the ASCII value for A is 0000001 what is the ASCII code for the word WIND ?

- 1) 0010110 0001000 0001101 0000100
- 2) 0010111 0001001 0001010 0000101
- 3) 0001111 0001001 0001101 0000101
- 4) 0010111 0001001 0001110 0000100
- 5) 0010111 0001000 0001101 0000101

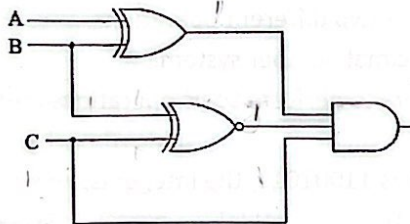
37. Which gate represents the following truth table?

A	B	Output
0	0	1
1	0	0
0	1	0
1	1	1

- 1) OR
- 2) NAND
- 3) XNOR
- 4) XOR
- 5) NOR

38. What should be A, B, C if output X=1 in the following logic circuit

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



39. The expression obtained when  $(X+Y)(X+Z)$  is simplified using Boolean laws.

- 1)  $B+AC$
- 2)  $C+AB$
- 3)  $A+C$
- 4)  $A+B$
- 5)  $A+BC$

40. Consider the following truth table.

Which of the following expression is represented by the Boolean function  $F(A,B,C)$  ?

- 1)  $BC' + A'C$
- 2)  $AC + B'C'$
- 3)  $AC + A + A'B'C'$
- 4)  $A'C + CB$
- 5)  $AC + AB' + A'B'C'$

A	B	C	$F(A,B,C)$
1	1	1	1
1	1	0	0
1	0	1	1
1	0	0	1
0	1	1	0
0	1	0	0
0	0	1	0
0	0	0	1

41. When using a karnaugh map for simplifying a logical expression, the correct statement /statements regarding that logical expression are,

- A – It should be standard logical expression
- B – It should be in Sum of product (SOP) form.
- C – It should be in product of sums (POS) form

- 1) A only
- 2) B only
- 3) C only
- 4) A and B only
- 5) A and C only

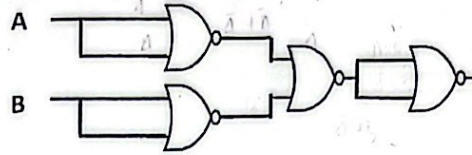


42. Complement of the expression  $A'B + CD'$  is .....

- 1)  $(A' + B)(C' + D)$       2)  $(A + B')(C' + D)$       3)  $(A' + B)(C + D')$   
 4)  $(A + B') + (C' + D)$       5)  $(A' + B')(C' + D')$

43. What is the gate equivalent to the given logic circuit implemented using universal gates?

- 1) AND Gate      2) OR Gate  
 3) NOT Gate      4) NOR Gate  
 5) NAND Gate



44. The Boolean function of a  $(X, Y, Z) = \sum(0, 2, 3, 4, 6)$  has been represented in following K- map.

X \ YZ	00	01	11	10
0	1		1	1
1	1			1

The simplified expression obtained from this map is,

- 1)  $X'Y + Z'$       2)  $XY' + Z$       3)  $X'Y + Z$       4)  $X'Y' + Z$       5)  $XY + Z'$

45. The gates required to build up a half adder are .....

- 1) XOR and NOR      2) XOR and OR      3) XOR and AND  
 4) XNOR and AND      5) XNOR and AND

46. Consider the following statements regarding digital logic circuits.

A – The output states of combinational circuits are depends on present input states.

B – In sequential circuits the output states depends on present as well as the past inputs.

C – Memory registers are made by using sequential circuits.

What is /are the correct statement/s?

- 1) A only      2) C only      3) A and C only      4) B and C only      5) A, B and C all

47. An Operating system,

1) is a software that manages computer hardware and software resources.

2) is a program which converts high level language into machine code.

3) provides facilities to activate BIOS.

4) is a application Software.

5) is a system of notation for writing computer programs.

48. Which is not an example for Operating system?

- 1) Android      2) Safari      3) Windows 10      4) Ubuntu      5) Fedora


49. When the user powers up the computer the CPU (Central Processing Unit) activates the .....

- 1) Operating System      2) Application software      3) BIOS  
 4) RAM      5) Utility Software

50. What is not a main function of an operating system?

- 1) Providing user interface      2) Process Management      3) Booting up a computer  
 4) networking computers      5) Operating devices

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<b>PART B - Essay</b>		
• Answer any four questions only		

(5) Suppose a logic circuit needs to be implemented for a digital system that has three inputs P, Q and R and one output S. Its behaviour is as follows:

If the input  $R=0$ , the output S has the value of P.

If the input  $R=1$ , then output S has the value of Q.

(a) Obtain the truth table for the output S.

(b) (i) Write down the sum of products (SOP) Boolean expression for S.

(ii) Write the min term

(c) (i) Write down the product of sum (POS) Boolean expression for S.

(ii) Write the Max term

(d) Simplify above, either a SOP or a POS Boolean expression using Karnaugh map.

(6) (a) Define data and information and explain their relationship in the context of processing.

(b) Compare the "Characters of data" vs "characters of information" (at least two).

(c) Compare the "nature of data" vs "nature of information" (one enough).

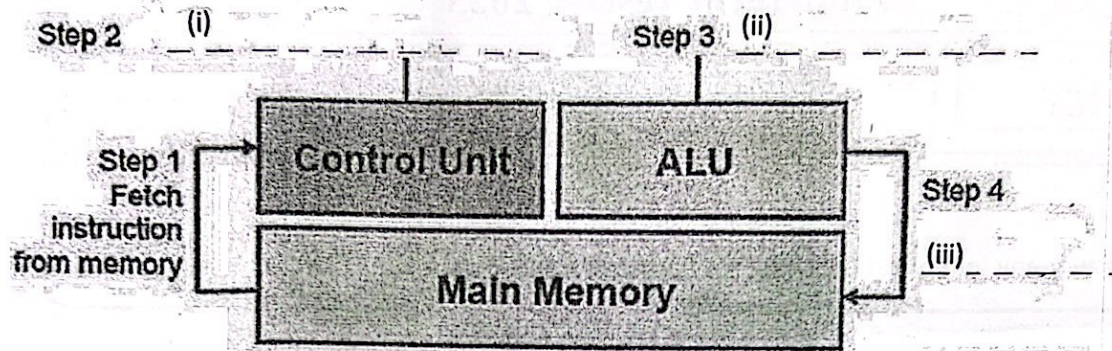
(d) Draw three stages of the data lifecycle diagram.

(e) Explain the concept of the golden rule of information using graph.

S =

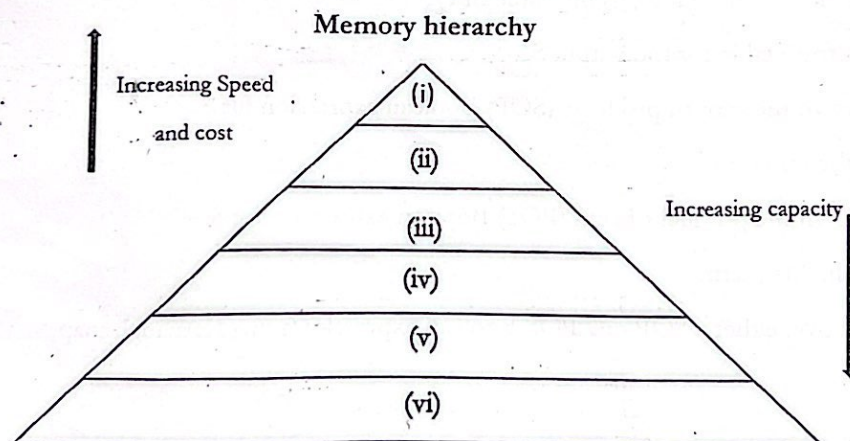


(7) (a) Fill the blanks of the diagram given below which shows the functions of the relevant steps of fetch execution cycle.



(b) Write the appropriate letter from the list.

- |                        |                   |           |
|------------------------|-------------------|-----------|
| A = Magnetic Hard Disk | B = Registers     | C = Cache |
| D = SSD hard disk      | E = Optane memory | F = RAM   |



(c) Give short answers for the following questions.

- (i) Who is considered the "father of the computer"?
- (ii) Who is the first programmer?
- (iii) Who invented the Pascaline?
- (iv) Who invented the ENIAC (Electronic Numerical Integrator and Calculator)?
- (v) Define the term Plagiarism.
- (vi) Define the term Phishing.

- (8)(a) (i) Write 8 bit representation of signed magnitude of -39  
(ii) Write 8 bit representation of one's complement of -39  
(iii) Write 8 bit representation of two's complement of -39  
(iv) Write 8 bit representation of two's complement of 69  
(v) Simplify the  $69 + (-39)$  use two's complement method and convert the final answer to decimal value.
- Simplify following using bitwise operator and convert it into decimal integer.
    - (vi) NOT( 69 )                      (vii) NOT(-39)                      (viii) 69 AND 39
- (b) show that  $01010_2$  is a positive number of  $10110_2$ . Both are in two's complement form.

- (9) (a) Simplify the following Boolean expression using Boolean Laws.

$$F = (\overline{A} + \overline{BC})(A + \overline{BC}) + A B C$$

- (a) Draw logic gate circuits only using
- Basic Gates
  - NAND gates
  - NOT gates

- (10) (a) Convert the number  $1234_{16}$  into a

- a binary equivalent and
- an octal equivalent.

- (b) Convert the binary number  $101011.011$  into Decimal equivalent.

- (c) Convert the following decimal numbers into BCD code.

- 48
- 56

- (d) Simplify the following s using above BCD codes and finally convert the answers into decimal integer numbers.

- $47 + 56$
- $56 - 47$

- (e) Fill in the blank using ASCII code

Character	ASCII code
D	1000100
G	.....(i).....
...(ii).....	1001001
...(iii).....	1000010







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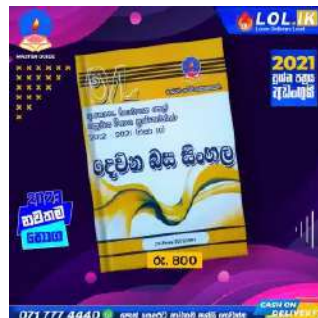
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