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Provincial Department of Education - NWP

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First Term Test - Grade 12 - 2019

Index No : ..... Information and Communication Technology I Two - Hours

Instructions:

- **Answer all the Questions**
- **Write down your index number in the space provided in the answer sheet.**
- **In each of the questions 1 to 50, pick one of the alternative from (1), (2), (3), (4), (5) which is correct or most appropriate and mark your response on the answer sheet with a cross (×).**

1. The most significant digit (MSD) and the least significant digit (LSD) of the number 2573.069×10^{-3} respectively is,

   (1) 2 and 6 (2) 2 and 3 (3) 2 and 9 (4) 3 and 6 (5) 10 and 2

2. Refer the statements given bellow regarding the data and information
   A. Data can exist as numbers, characters and images
   B. the processed data in a meaningful way is called as information
   C. data can use directly for decision making
   D. Data can dive into two categories as Quantitative and Qualitative

   Among the above statements which statement/statements best describe the information
   (1) A, and B. only (2). A, and C. only. (3).B and C. only.
   (4). A,B and D. only (5). A, B, C and D.

3. The main technologies used in each generation according to the order

   (1) Vacuum Tube, Integrated Circuit, Transistor, Very Large-Scale Integrated Circuit, Ultra Large-Scale Integrated Circuit
   (2) Vacuum Tube, Transistor, Integrated Circuit, Very Large-Scale Integrated Circuit, Ultra Large-Scale Integrated Circuit
   (3) Integrated Circuit, Very Large-Scale Integrated Circuit, Ultra Large-Scale Integrated Circuit, Vacuum Tube, Transistor
   (4) Very Large-Scale Integrated Circuit, Ultra Large-Scale Integrated Circuit, Vacuum Tube, Transistor, Integrated Circuit
   (5) Transistor, Integrated Circuit, Very Large-Scale Integrated Circuit, Ultra Large-Scale Integrated Circuit, Vacuum Tube

4. State the technology that is being removed at the beginning of the third generation
(1) Vacuum tube (2).Transistor (3). Integrated circuit
(4). Micro processor (5). Micro chips

5. The binary representation of 47

(1). 110111_2 (2). 111011_2 (3). 110011_2 (4). 101111_2 (5). 110101_2

6. $101101_2 + 11011_2$ is?

(1). 1001000_2 (2). 1011000_2 (3). 1001100_2 (4). 1101110_2 (5). 1010100_2

7. The octal representation of FB_{16} is?

(1) 377_8 (2) 375_8 (3) 373_8 (4) 573_8 (5) 537_8

8. $216_8 + 5A2_{16} =$

(1). 1658 (2). 3034_8 (3). 1658_{16} (4). 3120 (5). 1657_8

9. Consider the following computer memories

A. Read Only Memory B. Secondary Storage C. Register Memory
D. Flash Memory E. Random Access Memory

What are the pair of Volatile Memory given above?

(1) A,B. (2). A,C. (3). A,D. (4). C,E. (5) D,E.

10. What is the 8 bits 1^s compliment representation of -16?

(1). 00010000 (2) 11110000 (3) 11101111 (4) 00010011 (5) 10101010

11. What is the incorrect BCD value?

(1). 10011000 (2). 01011001 (3). 11001000 (4). 10001010 (5). 00110111

12. The 2^s compliment representation of a number is 01010101. What is the decimal representation of that number?

(1). -170 (2). -171 (3). 85 (4). 170 (5). -85

13. How many bits are required to represent a character according to the ASCII cording system?

(1). 4 (2). 12 (3). 8 (4). 16 (5). 7

14. Who invented the first automated computer called Mark-1 ?

(1) Charles Babbage (2) Gotfried Libnize (3)Horward Aiken
(4) John Morchly (5) Blaise Pascal

15. Consider the following statements

A The most expensive memory B The most fastest memory

C The least storage capacity

What is the memory that described by the above statements ?

(1) Register Memory (2) Random Access Memory (3) Cache Memory

(4) Flash Memory (5) Read Only Memory

16. Consider the following statements

A. Programs or processes can run simultaneously

B. Large number of Networked computers in order to solve complex problems

C. Solving the sub tasks of a complex problem at once by dividing the complex task into several sub tasks

What is the answer best described by the above statements?

(1) A is a characteristic of a networked computer

(2) A and C are characteristics of a parallel computing

(3) C is a characteristic of a parallel computing

(4) A and B are the characteristics of a networked computer

(5) B is a characteristic of a parallel computing

17. The correct classification of computers based on the Technology is,

(1) Super Computer, Main frame computer, Micro Computer

(2) Analog Computer, Digital Computer

(3) Desktop Computer, Laptop Computer, Palm top Computer

(4) Server Computer, Client Computer

(5) Special Purpose Computer, General Purpose Computer

18. Consider the following statements

A. PROM -can purchase as an empty chip in order to write programs using a special device

B. EPROM -at the time of erasing a program all the saved program get erased from the chip

C. EEPROM – can erase a saved program without affecting to the other saved programs in the chip

Which statements are true regarding the above?

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

19. What is the first computer, that the stored programming concept was used?

(1) ENIAC (2) EDVAC (3) MARK 1

(4) PASCALINE (5) ANALYTICAL ENGINE

20. The medical equipment, that is using radio waves for its operation is

(1) CAT scanner (2) MRI scanner (3) CT scanner

(4) X – ray machine (5) ECG machine

21. The correct processing order of the fetch execute cycle is,

A - Fetch next instruction B - Encode the instruction

C - Decode the instruction D - Execute the instruction

(1) A, B, and C (2) A, B and D (3) A, C and D (4) B, C and D (5) A, B, C and D

22. The device that input the text in an editable format of a hard copy

(1). Optical character reader (2). Optical Mark reader (3).Magnetic Ink character reader

(4). Bar Code reader (5). Closed circuit TV

23. A. Capability of using the softwares stored in the server without installing in the personal computer

B. High efficiency

C. There is no possibility of doing the payments based on the usage

D. provide platform for developing softwares

What are the statement/statements are true regarding the cloud computing?

(1) A only (2) A and B only (3) A, B and C only

(4) A, B and D only (5) A, B, C and D all

24. What is the incorrect statement regarding the manual and computerized data input methods

(1) accuracy is high (2) faster data input

(3) cost effectiveness (4) minimal requirements of data verification

(5) compulsory to verify all the data inserted using computerized method

.25 Consider the statements related to an Operating System

A. System Software coordinate hardware, software and the user of a computer system

B. Most of the time only one Operating system exist in a computer

C. It is not possible to work with a computer without a system software

What are the statement/statements are true regarding the above?

(1) A only (2) B only (3) C only (4)A and B only (5) all statements are correct

26. The simplification of the booleon expression $F_{(X,Y)} = (X'.Y')'.(X+Y)'$ using DE Morgan's law is?

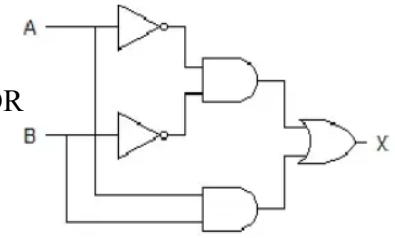
(1). 0 (2). 1 (3). X (4). Y (5). X.Y

27. The result of the simplification of $\left(\overline{A\overline{B}\overline{C}}\right)+\left(\overline{A\,\overline{B}C}\right)$ is ?

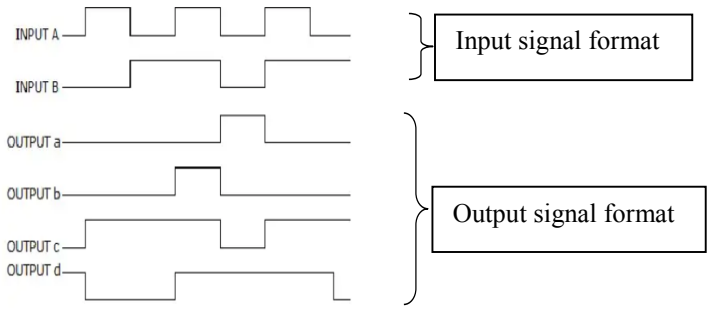
(1). 0 (2). 1 (3). A (4). B.C (5). A.B.C

28. The output of the given logic circuit is equal to

(1) XOR (2) XNOR (3) AND (4) NAND (5) NOR



29. Which of the following is the correct output digital wave format when A,B two digital waves are input to a XNOR logic gate with two inputs ?



(1) OUTPUT A (2) OUTPUT B
(3) OUTPUT C (4) OUTPUT D
(5) None of the above

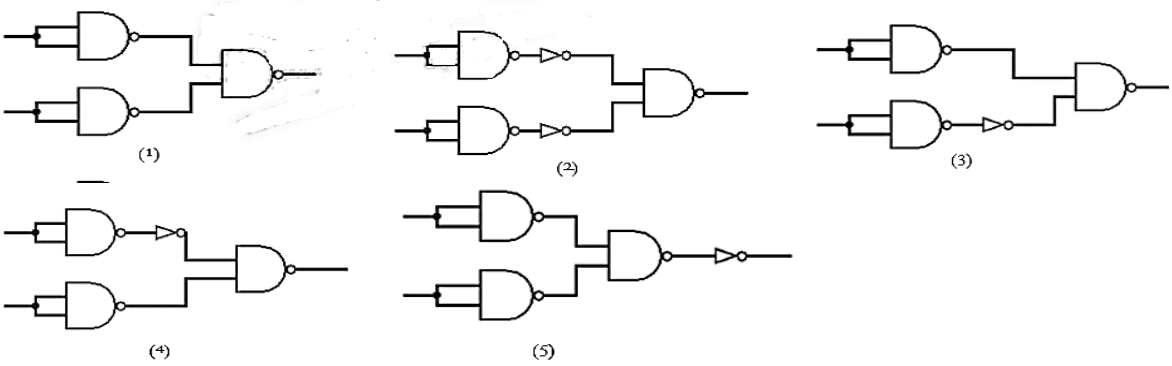
30. According to the Boolean law A+1 =
(1) 1 (2) A (3) 0 (4) A' (5) X

31. Select the expression/expressions which is not equal to X.(X'+Y)+Y
(1) x .x' + y.(1 + x) (2) 0 + x · y + y (3) x . y (4) y (5) x.

32. Inserting a photo of a rose flower in your garden with a digital camera is considered as
(1) Batch input (2) Direct input (3) Distance input (4) Online input (5) Offline input

33. The binary number equal to 345.56_8
(1) 10001001.101001_2 (2) 11001001.101001_2 (3) 110001001.101001_2
(4) 110001001.0001_2 (5) 11100101.10111_2

34. Which one of the following is equal to an OR gate



35. Consider the following statement about firmware
a. Firmware are the programs needed to start the computer
b. Firmware is included in washing machines
c. Firmware can be edited easily
The correct statement/statements of above is/are
(1) A only (2) B only (3) A and B only (4) A and C only (5) B and C only

36. Input is the inserting of data or instructions to a computer. The false statement regarding input is:
(1) Input devices are devices that enter data into the computer.
(2) The input data is processed by a program stored in its memory and converted into meaningful instructions.
(3) Information is generated after processing data

(4) Manual & automatics methods are the two ways to insert data and instructions into the computer.
(5) Keyboards, mouse, scanner are input devices

37. What is the false statement regarding The Golden Rule of Information?
(1) The information gets its highest value at the moment it is generated
(2) The value of the information is very high when the time value is zero
(3) The value of information is depend on the timeliness
(4) The value of the information is decreasing when time passes and finely it becomes data
(5) Time can represent graphically against the value of the information

38. Which of the following pair of terms is the best answer to fill in the blanks in the statement below?
Video conferencing is best described as a ……. And ……. discussion between two or more people in different locations
(1) Television, Video (2) Telephone, Audio (3) Network, Audio
(4) Television, Audio – Visual (5) Network, Audio – Visual

39. The most appropriate statement to describe the booting process of the computer is,
(1) It is the process of copying the data from main memory into cache memory
(2) Loading of data from the hard disk to the main memory
(3) Lording the operating system from cache memory into the main memory
(4) Loading the operating system into main memory via a secondary storage device such as a hard disk, compact disk, or floppy disk.
(5) Loading data from the hard disk into the cache memory

40. Similar to the Boolean expression $X \oplus Y \oplus Z$ is
(1) X'YZ + XY'Z + XYZ'
(2) XY'Z'+ X'YZ'+ X'Y'Z
(3) X'YZ+ XY'Z+ XY'Z+ XYZ
(4) XY'Z'+ X'YZ'+ X'Y'Z+ XYZ
(5) XY' + X'Y + XZ' + X'Z + YZ' +Y'Z

41. The world's first electronic digital computer was invented by
(1) Blaise Pascal (2) Charles Babbage (3) John Presper Eckert
(4) Von Neumann (5) John V. Atanasoft

42. The 8 bits 2's complement representation of the number 5_{10} and -9_{10} respectively is?
(1) 00000101 and 11110111 (2) 11111011 and 11110111
(2) 00000101 and 10001001 (3) 00000101 and 11110110
(5) 11111011 and 11110110

43. Which of the following is the most appropriate answer to fill in the blank
Cached memory is usually used to store ……..

(1) Large volume of data temporarily
(2) The least frequently accessed data permanently
(3) Least frequently accessed data temporarily
(4) Most frequently accessed data temporarily
(5) Most frequently accessed data permanently

44. The microprocessor is generally compared by the clock speed measured in ……. or by is the word size of……. that can be set in a single clock cycle. What is the most appropriate answer to fill in the blanks of the above statement

(1) Bit, MHz (2) Byte, GHz (3) GHz, Byte (4) MHz, Bit (5) Second, Bit

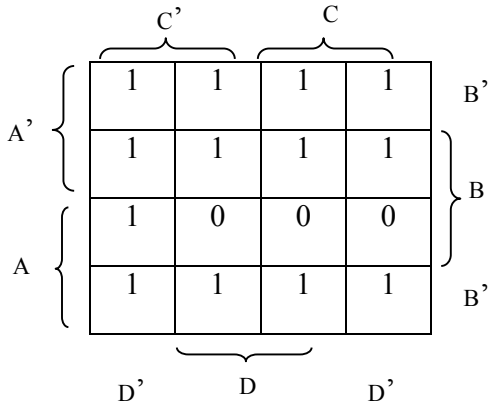
45. Which of the following is best suited to fill in the blank of this statement?
Laser technology is used to read data stored in a.....

(1) Floppy disk (2) Magnetic Tape (3) Compact disk
(4) Magnetic hard disk (5) Flash memory

46. The least capacity of a portable flash drive needed to store a presentation of having 10,256 bits is

(1) 1KB (2) 1MB (3) 1GB (4) 8bit (5) 256 byte

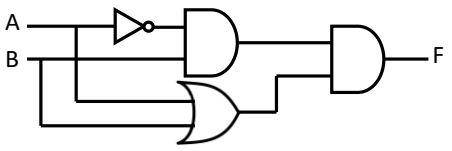
47. Most suitable simplified expression for the following karnaugh map representation is?



(1) A'+AB'+C'D'
(2) A'+B'+AD'C'
(3) A'+B'+C'D'
(4) C'D'+A'C'+A'C'+B'
(5) B'C+B'C'+A'C+C'D'

48. The true statement about the inputs A and B to get output as 1 in the given circuit diagram

(1) A=1 is sufficient
(2) A=1 and B=1
(3) A=0 and B=1
(4) A=0 and B=0
(5) Should be B=0



49. What is the relevant logical expression for the following truth table?

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

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

50. The true expression regarding utility software is
(1) This software is installed to the computer with application software
(2) This software is installed to the computer with operating system
(3) Folders are permanently stored in hard disk by disk defragmentation
(4) It is essential to create computer programs
(5) Function of computer slow down by installing utility software

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Provincial Department of Education - NWP

20 E II

First Term Test - Grade 12 - 2019

Index No : .... Information and Communication Technology II Three Hours

Answer all questions in Part A and only four questions selected from part B

Part –A - Structured essay

- **Answer all the four questions on this paper itself.**
- **Write your answers in the space provided for each question.**

(1) (a). Write down the main technical difference between first and fourth generations in computer evolution and mention two advantages of forth generation computers.

1. ………………………………………………………………………………………………………
2. ………………………………………………………………………………………………………

(b). According to the representation of -126.75 in the IEEE Floating Point Single Precision number format,

i. What is the value of sign bit?
....

ii. Convert 126.75 into binary equivalent.
....

iii. Write the above (ii) answer in standard form
....

iv. What is the value for exponent in above (iii)?
....

v. Write down the fractional part in bits.
....

vi. Express -126.75 in IEEE 32bit floating point single precision number format.
....

(2) (a) Write down the computer generation in which the following devices belongs

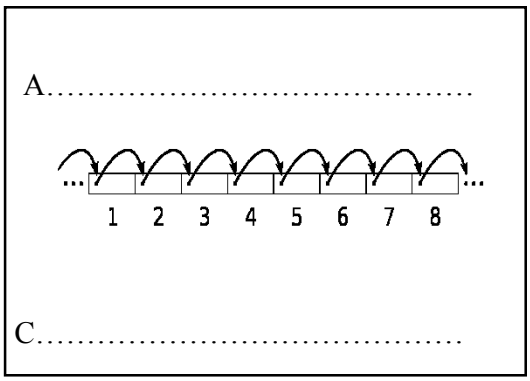
Device	Generation
Abacus	A. .....
Pascaline	B. .....
Automatic Sequence Controller	C. .....
ENIAC	D. .....

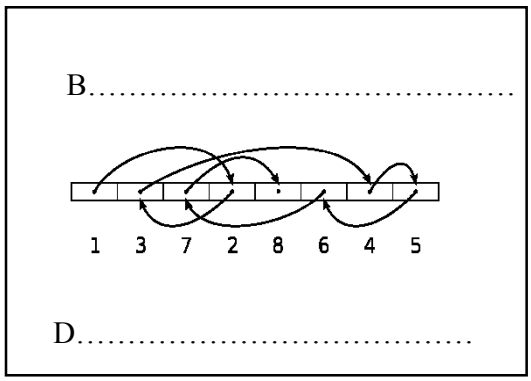
(b) At the time Considering the evolution of computer generations, write two improved and two declined features from the first-generation computers to fifth generation computers.

Improved features	Declined features
A.	C. .....
B.	D. .....

(c) i. Two memory access methods are mentioned bellow. Name the relevant memory access methods in the given spaces A and B.

ii. Write **two** storage devices that use the following access method in the given spaces C and D





(d) Consider the following comparison of two Random Access Memories. Underline the correct answer according to the given criteria.

	Criteria	SRAM	DRAM
A	**Cost**	High/Low	High/Low
B	**Data Density**	High/Low	High/Low
C	**Electricity Consumption**	High/Low	High/Low
D	**Speed**	High/Low	High/Low

03. (a) An engineer handover a piece of paper with the following Boolean expression on it, and ask you to build a logic circuit to perform the function of the given expression.

$$A\overline{B} + \overline{C}(A + B)$$

Draw a logic gate circuit for the above expression.

.....

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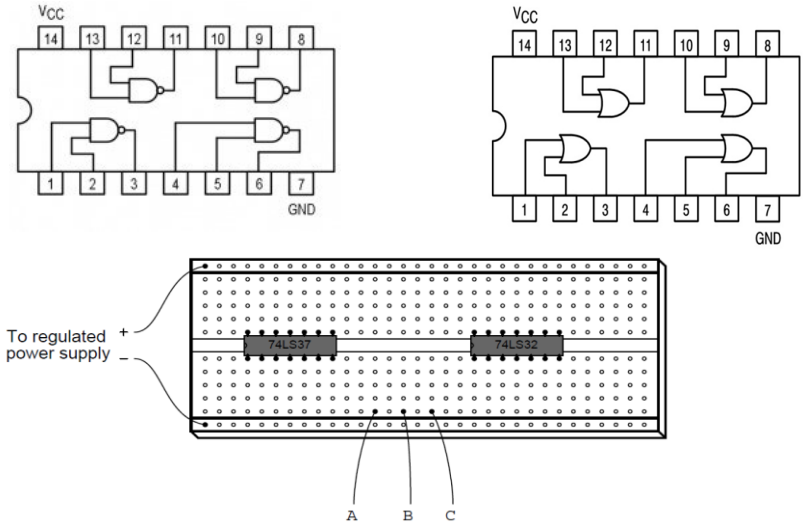
(b) Implement the following Boolean expression in the form of a digital logic circuit:

$$\overline{(\overline{AB} + C)B}$$

Form the circuit by making the necessary connections between pins of these integrated circuits on a breadboard: (given the 74LS37-2 input NAND gate & 74LS32-2 input OR gate)



(c) Map the following SOP expression on a Karnaugh map:

$$\overline{B}\,\overline{C} + A\overline{B} + AB\overline{C} + A\overline{B}C\overline{D} + \overline{A}\,\overline{B}\,\overline{C}D + A\overline{B}CD$$

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(d) Identify of the following expressions as SOP, standard SOP, POS and standard POS

(a) $AB + \bar{A}BD + \bar{A}C\bar{D}$ (b) $(A + \bar{B} + C)(A + B + \bar{C})$

(c) $\bar{A}BC + AB\bar{C}$ (d) $A(A + \bar{C})(A + B)$

.....

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(4) (a) i. Describe the term 'digital devide'.

.....

.....

.....

.....

ii. Give **two** actions that can be taken to overcome digital devide

.....

.....

.....

.....

(b) Choose and write down the most appropriate logical structure from the list given below. (half-adder, full-adder, flip-flop, combinational circuits, sequential circuits)

Statement	**logical structure**
A logical circuit that can create a temporary memory	
Give two outputs after adding three inputs.	
Output depends not only on the present inputs but also on the previous inputs and outputs	
considered as the most basic idea of a Random-Access Memory	

(d) The below truth table shows all alternative input values of a half-adder. Write the corresponding output values.

Inputs		**Outputs**	
A	B	*Sum*	*Carry out*
0	0		
0	1		
1	0		
1	1		

(e) Draw a logic circuit diagram to represent the binary half adder

First Team Test – 2019

Information Communication Technology -12 – Part II

Important:

*** Answer four questions from part** B.

Part B

Essay

(1)

1. Describe the cloud computing concept ?
2. State three characteristics of cloud computing concept
3. Name three services of cloud computing and give example for each service
4. Write two advantages and two disadvantages of cloud computing.
5. What is mobile computing?
6. State four incidents that a student can use cloud computing and mobile computing for his studies.
7. Name two legal issues in the usage of ICT and write two methods that can be taken to eliminate those issues.

(2)

1. Write two advantages of direct data input devices over keyboard.
2. Briefly describe how the role of cache memory affect in the efficiency of the computer
3. " Computer programs are stored in the memory of the computer. The processor (CPU) fetches an instruction from the memory at a time and executes it "
   Name the cycle that represents the above process and draw a diagram to depict the four steps of the above process.
4. (a) Describe about a multi-core processor.
   (b) Write two advantages of having a multi-core processor in a computer.
5. Draw the Von Neumann architecture and name the major components of it.

(3) An automotive engineer wants to design a logic circuit that prohibits the engine in a car from being started unless the driver is pressing the clutch pedal while turning the ignition switch to the" start" position. The purpose of this feature will be to prevent the car from moving forward while being started if ever the transmission is accidently left in gear.

Suppose we designate the status of the ignition switch" start" position with the Boolean variable S (1 =start; 0 = run or off), and the clutch pedal position with the Boolean variable C (1 = clutch pedal pressed;0 = clutch pedal in normal, un-pressed position).

a) Obtain the truth table for the output Z for the starter solenoid status, given the start switch (S) and clutch (C) statuses.
b) Write the Boolean expression for output Z
c) Draw a logic gate circuit to implement this Boolean expression.

(4) 1. RAM is very important in memory management process.
Explain what is RAM and compare the differences between static RAM and dynamic RAM.

2. Give two reasons why the automatic data process is more advanced in processing a large amount of data over namual data process
3. Write the respective output after applying bitwise AND, OR and XOR operations for the numbers 32 and 24
4. Explain about range check and mention a usage of it.

(5) 1. Name the three main types of computer monitors and name the technology used in each type.
2. Compare two differences between the three types of monitors you mentioned above.
3. Write an advantage and disadvantage of BCD, ASCII, EBCIDIC and UNICODE which are used in data representation inside the computer.
4. Describe the term ”universal gates” and name two logic gates relevant to it.

(6) The advancement of ICT has directly affect the development of various countries.
1. Describe the terms Hardware, Software and Firmware using examples.
2. Describe two economic and two environmental issues caused by ICT.
3. Describe the role of ICT in developing a country using two factors.
4. What is the process you should obey when you are coping and representing someone else’s creation or a part of a creation?

Information Communication Technology

First Term Test - 2019 Grase 12

Answers

Paper i

Question	Answer	Question	Answer	Question	Answer	Question	Answer	Question	Answer
1	3	11	4	21	3	31	1	41	3
2	4	12	1	22	1	32	2	42	1
3	2	13	2	23	4	33	5	43	4
4	2	14	3	24	4	34	1	44	4
5	2	15	1	25	5	35	3	45	3
6	1	16	2	26	1	36	4	46	1
7	2	17	2	27	2	37	5	47	3
8	5	18	5	28	2	38	5	48	3
9	4	19	2	29	4	39	4	49	4
10	3	20	2	30	1	40	3	50	2

Paper II – (Part A)

1. (a) first - vacuum tube

fourth - VLSI/microprocessor

Advantages - Smaller in size, much reliable than other **generations,** Heat **generation** was negligible, Portable and cheaper than the older versions, No cooling system required

(b)

i. 1
ii. 01111110.11
iii. 1.11111011×2^6
iv. 10000101
v. 11111011….0 (23 bits)
vi.

1	10000101	11111011….0

2 (a)

Device	Generation
Abacus	Pre mechanical era
Pascaline	Mechanical era
Automatic Sequence Controller	Electro mechanical era
ENIAC	1st generation

(b)

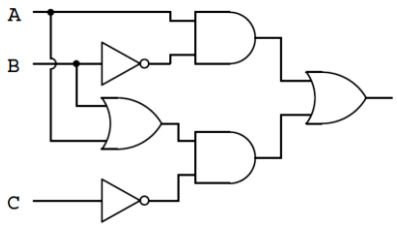
Increasing features	Decreasing features
speed, accuracy, work efficiency. reliability	size, weight, price, heat consumption

(c) A. Sequential/Serial access B. Random access
C. Magnetic tape D. Random Access Memory

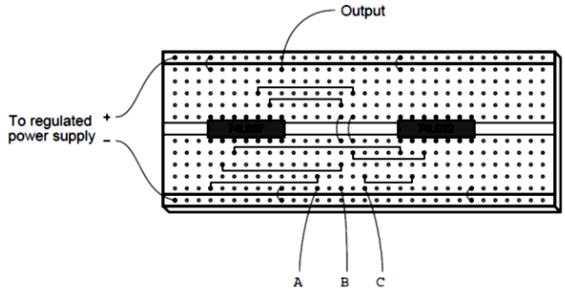
(d)

	Criteria	SRAM	DRAM
A	**Cost**	**High**/Low	High/**Low**
B	**Data Density**	High/**Low**	**High**/Low
C	**Electricity**	High/**Low**	**High**/Low
D	**Speed**	**High**/Low	High/**Low**

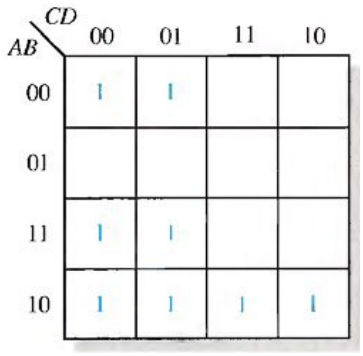
3. (a)



(b) The circuit shown is not the only possible solution to this problem.



(c)



(d) (a) sop (c) standard sop
(b) standard pos (d) pos

04. (a) i. Digital divide" is an economic and social inequality with regard to access to, use of, or impact of information and communication technologies

ii. Access to appropriate technological resources similar, improvements in ICT education

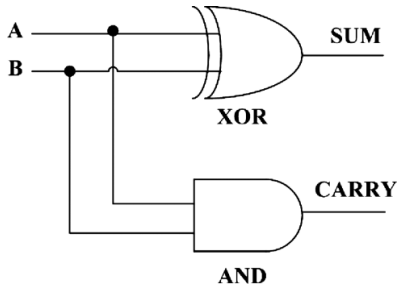
(b)

Statement	logical structure
A logical circuit that can create a temporary memory	
Give two outputs after adding three inputs.	
Output depends not only on the present inputs but also on the previous inputs and outputs	
considered as the most basic idea of a Random-Access Memory	

(c)

(d)

Inputs		Outputs	
A	B	Sum	$Carry\ out$
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1



PART B - ESSAY

01. (a) Cloud Computing
Cloud computing means storing and accessing data and programs over the Internet.

(Cloud Computing refers to manipulating, configuring, and accessing the applications online.)
(Cloud Computing provides access to applications as utilities, over the Internet.)

(b) 1. On demand self service 2. Broad network access 3. Resource pooling 4. rapid elasticity

(c) 1. Infrastructure as a Service (IaaS)
Ex - Customer Relationship Management, games, virtual desktop applications
2. Platform as a Service (PaaS)
Ex - Database, web server, deployment tools
3. Software as a Service (SaaS)
Ex - Virtual machines, servers, storage, networks

(d) Advantages -
- The ability of connecting software through internet
- The ability of updating software when online
- Can access our own data from any where
- Can get technical support through internet

Disadvantages –
- Requires a constant Internet connections
- Does not work well in low speed Internet connections

(e) Mobile Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link.

(f)
- Can search educational information through internet
- Can connect with any educational institute in the world
- Can connect with friends from anywhere and discuss
- Can connect with teachers from anywhere

(g) legal issues

- Stealing / Phishing
- Software piracy

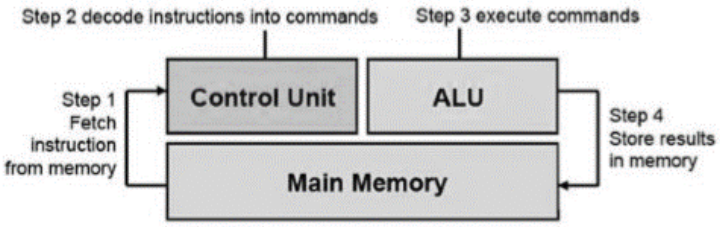
methods that can be taken to eliminate those issues.

- Put laws that deals with protecting the rights of those who create original works. **Copyright / Intellectual Property laws**
- setup firewall
- use of password protection
- use of digital signatures
- not opening suspicious emails
- not clicking on links of untrusted senders.

02. (a) Low cost
High Accuracy
Time saving

(b) **The cache memory is used to increase the processing speed of the computer**

(c) Fetch – Execute cycle

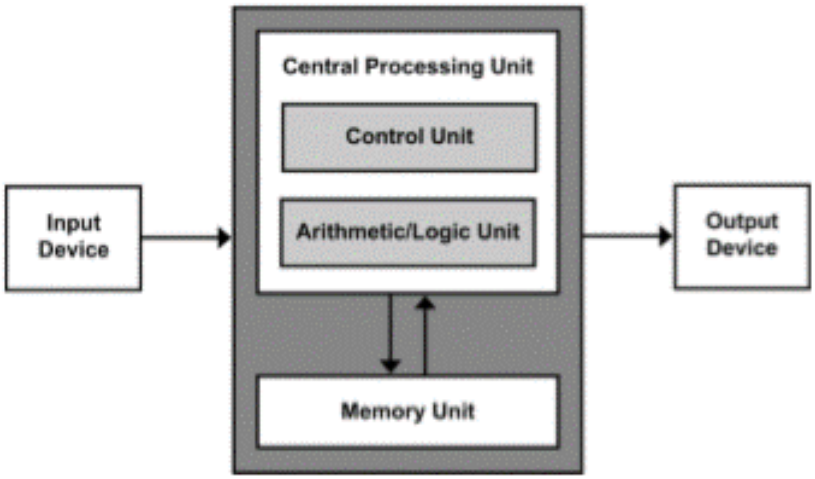


(d) (i) A multi-core processor is a single computing component with two or more independent actual processing units (cores), which are units that read and execute program instructions.

(ii)

1. Can be run a program by dividing some parts. So it gets executed fast.
2. It enables parallel programming.
3. To get the high performance from a single machine.

(e)

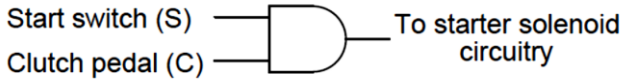


03. (a)

S	C	Z
0	0	0
0	1	0
1	0	0
1	1	1

(b) Boolean expression Z = SC

(c) Logic gate circuit:



04. (a) RAM is a volatile memory of the computer that holds data for running applications and required data for a computer.

SRAM	DRAM
Retains data bits in its memory as long as power is being supplied.	Retains data bits until the diodes are charged
Not continuously refreshed	continuously refreshed
SRAM is used for cache memory and register memory.	DRAM is used for main memory
Use only transistors	Use transistors and diodes
faster	slower
small	large
Expensive	cheep
Low power consumption	high power consumption

(b)

- Automatic method can control a large amount of data easily
- High speed
- High accuracy
- High efficiency

(c) $32 - 1\ 0\ 0\ 0\ 0\ 0_2$
$24 - \ \ 1\ 1\ 0\ 0\ 0_2$

$1\ 0\ 0\ 0\ 0\ 0_2$ AND $1\ 1\ 0\ 0\ 0_2 = 0\ 0\ 0\ 0\ 0\ 0_2$
$1\ 0\ 0\ 0\ 0\ 0_2$ OR $1\ 1\ 0\ 0\ 0_2 = 1\ 1\ 1\ 0\ 0\ 0_2$
$1\ 0\ 0\ 0\ 0\ 0_2$ XOR $1\ 1\ 0\ 0\ 0_2 = 1\ 1\ 1\ 0\ 0\ 0_2$

(d) Range check – Check whether the data is in allowed range
Usage – check whether the value is between 1-12 when entering a birth month

Difference	CRT	LCD	LED
Physical Size	Large	Flat	Flat
Power Consumption	High Power Consumption	High Power Consumption	low Power Consumption

05. (a) CRT - CRT Technology
LCD - Flat Panel Display Technology
LED - LED Back Light Technology

(b)

(c)

	Advantage	Disadvantage
BCD	• Easy to encode and decode decimals into BCD and vice versa. • Simple to implement a hardware algorithm for the BCD converter.	• Not space efficient. •Require a complex design of Arithmetic and logic Unit (ALU) than the straight Binary number system.
ASCII	• Uses a linear ordering of letters. • compatible with modern encodings	Not represent world languages.
EBCDIC	Contained more characters than ASCII.	• Different versions are mostly not compatible. • Not compatible with modern encodings
UNICODE	• Represents most written languages in the world	• Need twice memory to store ASCII characters.

(d) A universal logic gate is a logic gate that can be used to construct all other logic gates.
The NAND gate and NOR gates can be considered as universal logic gates.

06. (a) Hardware :-Physical components of a computer
Eg: Monitor, Mouse, Keyboard

Software :- softwares are installed to operate and control the computer and to do various functions using the computer.

Eg: System Software (Windows operating syatem)
Application Software (spreadsheet)
Utility Software (driver software)

Firmware :- Firmware is a computer program that is "embedded" in a hardware device, that is, an essential part of the hardware. It is sometimes called embedded software. In computers firmware embedded in ROM and which handles booting up process of computers.

Eg :- ROM

(b) For describing 2 economical issues and two environmental issues

(c). For describing using two points

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