De Mazenod College Kandana

| Grade 12 | 2nd Term Test 5th April 2016 | Information and Communication Technology |

Answer all questions MCQ Time : 2 hours Total: 100 marks

Underline the correct answer

1. The decimal number equivalent to 110110_2 is
   (1) 39 (3) 54 (5) 108
   (2) 48 (4) 55

2. Who is considered as father of computer?
   (1) Von Neumann (3) Charles Babbage (5) Alan Turin
   (2) Blaise Pascal (4) Adam Vogue

3. Which of the following statement is correct with respect to the evolution of computing devices?
   (1) Vacuum tubes were used by Blaise Pascal to build the Pascaline.
   (2) The Pascaline is considered as a first generation computing device.
   (3) Computers built using vacuum tubes are considered as second generation computers.
   (4) Electronic Numerical Integrator and Computer (ENIAC) was built using vacuum tubes.
   (5) Apple I and Apple II are two examples for second generation computers.

4. Which of the following converts digital data to analog data to transmit over an analog telephone network?
   (1) Network interface Card (NIC) (3) Multiplexer
   (2) Modem (4) Bluetooth adaptor
   (5) Wi-Fi card

5. The Sri Lankan cricket team won the T-20 world cup-2014 tournament. The Sri Lankan cricket fans had the highest value of this information when ....
   (1) The final match started
   (2) Thisara Perera scored the winning run
   (3) The caption Lasith Malinga received the trophy
   (4) They saw the news on the news on the newspapers
   (5) They saw the cricket team at the Katunayaka Airport

6. $4A6_{16} + 99_{10} =$
   (1) 615_{16} (3) 509_{10} (5) 659_{16}
   (2) 615_{10} (4) 509_{16}

7. Representation of 5_{10} and -9_{10} in 8-bit Two's complement forms are
   (1) 00 00 01 01 and 11 11 01 11 respectively
   (2) 11 11 01 11 and 11 11 01 11 respectively
   (3) 00 00 01 01 and 10 00 10 01 respectively
   (4) 00 00 01 01 and 11 11 01 10 respectively
   (5) 11 11 10 11 and 11 11 01 10 respectively

1

8. Consider the following logic circuit:
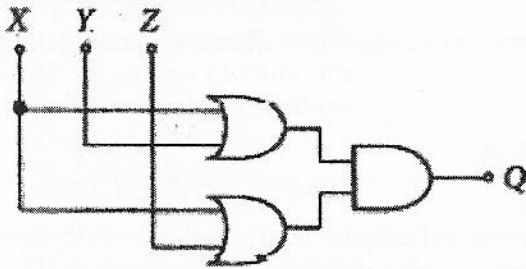
Which of the following circuit diagrams represents a simplified version of the above circuit?

(1)

(2)

(3)

(4)

(5)
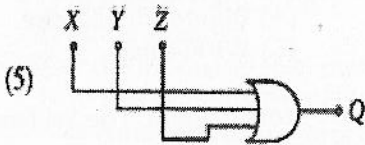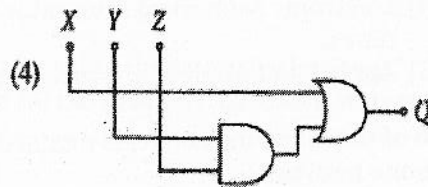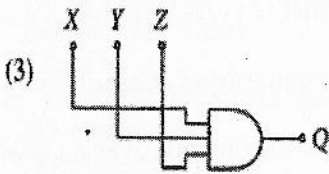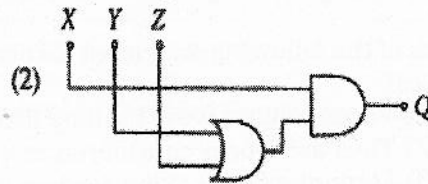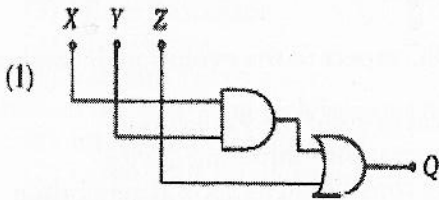
9. Which of the following is not a main function of an operating system?
    (1) Memory management
    (2) Process Scheduling
    (3) File Handling
    (4) Virus Detection
    (5) User Interfacing

10. In an operating system, moving a process from the main memory to the secondary storage in order to bring in another process to the main memory is called ....
    (1) Demand paging
    (2) Context Switching
    (3) Swapping
    (4) Interrupting
    (5) Scheduling

11. Facebook is a popular social network connecting millions of people with new members joining daily which of the following statements is most correct?
    (1) Facebook plays a very important role in building and manipulating your family relationship.
    (2) Facebook is the only social network available today.
    (3) Privacy settings of Facebook assure in the privarcy of its users completely.
    (4) Publishing private information in facebook has resulted in unfortunate incidents.
    (5) Real identity of a person is always guaranteed in facebook.

12. Consider the following statements about an automated system:
    A. Human intervention is not required or minimally required
    B. All the operations of the machine are controlled by the micro chip installed in the machine.
    C. A system that processes daily banking transactions can be considered as an automated system.
    (1) A only
    (2) A and B only
    (3) A and C only
    (4) B and C only
    (5) All A,B and C

13. Consider the following statements regarding the requirements of a Bank ATM:
    A. A customer shall be able to inquire his/her bank balance.
    B. A customer should be able to deposit money through ATM.
    C. Maximum withdrawal amount per day is 20,000.
       Which of the above requirements is/are functional requirement(s) of the ATM?
    (1) A only
    (2) B only
    (3) C only
    (4) A and B only
    (5) A and C only

14. Consider the following system:
    A. Human blood circulatory system
    B. Human digestive system
    C. Human nervous system
       The system(S) that can be considered as open system(s) is/are
    (1) A only
    (2) B only
    (3) C only
    (4) A and B only
    (5) A and C only

15. The decimal number equivalent to the 10111_2 is
    (1) 25_{10} (3) 23_{10} (5) 31_{10}
    (2) 24_{10} (4) 32_{10}

16. Who is considered as the first computer programmer?
    (1) John Von Neumann

      (2) Blaise Pascal
      (3) Charles Babbage
      (4) John Presper Eckert
      (5) Ada Augesta Lovelace

17. Which of the following technologies has been used in the first Generation Computers?
      (1) Integrated Circuits (ICs)
      (2) Large scale integration
      (3) Micro Processor
      (4) Transistors
      (5) Vacuum Tubes

18. Which of the following technologies has been used in the second Generation Computers?
      (1) Integrated Circuits (ICs)
      (2) Large scale integration
      (3) Micro Processor
      (4) Transistors
      (5) Vacuum Tubes

19. Which of the following technologies has been used in the third Generation Computers?
      (1) Integrated Circuits (ICs)
      (2) Large scale integration
      (3) Micro Processor
      (4) Transistors
      (5) Vacuum Tubes

20. "The data in .... Is read by using the Laser Technology."
Which of the following is most appropriate to fill the blank in the above statement .
      (1) Floppy Disk
      (2) Magnetic Tape
      (3) Compact Disk
      (4) Magnetic Hard Disk
      (5) Flash Memory

21. Consider the following statements about data and information
      A-The symbols '101011101'
      B-Numbers, characters and images
      C-Facts derived from a study
      D-Facts that have been processed in such a way as to be meaningful to the person
      who receives it .
Which of the above statements best describe/s 'information'?
      (1) D only
      (2) A and B only
      (3) C and D only
      (4) A,B and C only
      (5) B ,C and D only

22. An electronic washing machine can be best considered a/an
      (1) Information System
      (2) Automated system
      (3) Expert system
      (4) Management Support system
      (5) Transaction processing system

23. $144_8 + 175_8 =$

(1) 225_8 (3) 441_8 (5) 314_8
(2) 341_8 (4) 531_8

24. The type of operating system that is most suitable for an automated air traffic control system is
    (1) Multi-user multi -tasking
    (2) single-user multi -tasking
    (3) Single-user single- tasking
    (4) Error detection
    (5) Non of them

25. What would be the result if the following Boolean expression is simplified?
    $F(x,y)=x'y'(x'+y)(y+y')$

    (1) x' (3) x (5) xy
    (2) y' (4) y

26. Which of the following Boolean expressions represents the output of the given logic circuit?

    (1) $\overline{\left(\overline{A+B}\right)+\left(\overline{B \bullet C}\right)}$

    (2) $\left(\overline{A+B}\right)\bullet\left(\overline{B \bullet C}\right)$

    (3) $\overline{\left(A+B\right)+\left(B \bullet C\right)}$

    (4) $\overline{\left(A \bullet B\right)+\left(\overline{B \bullet C}\right)}$

    (5) $\overline{\left(A \bullet B\right)+\left(B+C\right)}$
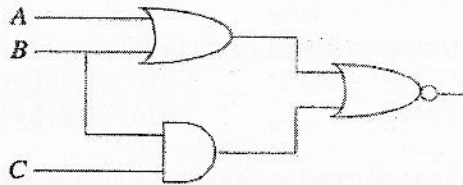
27. Consider the following terms:
    A – Input   B – Output   C – Process   D-Storage
    Which of the above are essential for a system?
    (1) A and B only.   (4) B , C and D only.
    (2) A, B and C only.   (5) All A, B, C and D
    (3) A, C and D only.

28. "Video conferencing is best described as a/an ....discussion through .... between two or more individuals in different locations".
    Which of the following is the most appropriate answer to fill the blanks in the above statement?
    (1) Video, TV   (4) Audio visual, TV
    (2) Audio, telephone   (5) Audio visual, network
    (3) Audio, network

29. The main advantage of creating more than one partition is a hard disk is the
    (1) Separation of the operating system and program files.
    (2) Ability to retrieve files efficiently.
    (3) Easiness of making directories and subdirectories.
    (4) Easiness of creating multiple users.
    (5) Easiness of taking backups of selected files.

30. Sharing a single microprocessor among number of application programs using context switching is known as
      (1) Multi-user processing
      (2) Multitasking.
      (3) Multiprocessing
      (4) Batch processing.
      (5) Online processing

31. Which multi of the following Boolean expressions represents the output (Q) of the circuit shown below?

A o—|>o—\
      [AND]—\
           [OR]—|>o— Q
B o—•————/
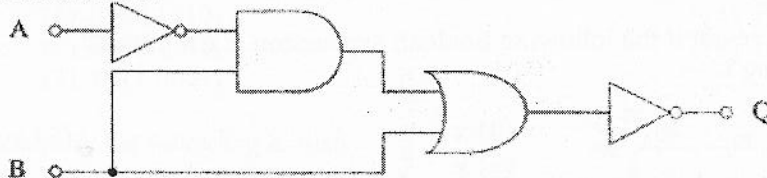
    (1) A'.B+A.B'
    (2) A'.B'+A.B
    (3) A.B+A'.B'
    (4) A'.B+A.B'
    (5) A'.B+A'.B'

32. The Boolean expression $(x+y).(x+z)$ simplifies to ....
    (1) x
    (2) x(y+z)
    (3) xyz
    (4) x+yz
    (5) x+y+z

33. The Boolean expression $(A+A')+(A')'$ simplifies to ....
    (1) A
    (2) A'
    (3) A+A'
    (4) 1
    (5) 0

34. The Boolean expression $(A+B')B+(AB'+B)$ simplifies to ....
    (1) A
    (2) AB
    (3) (AB)'
    (4) A+B
    (5) (A+B)'

35. Find the correct Boolean expression for following KMaps

A \ B	0	1
0	0	1
1	1	1

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

36. Find the correct Boolean expression for following KMaps

A \ B	0	1
0	1	0
1	0	1

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

37. Find the correct Boolean expression for following KMaps

AB\C	0	1
0,0	0	0
0,1	1	0
1,1	1	0
1,0	0	0

   (1) AB   (3) B'C   (5) A'B
   (2) BC'   (4) A'C

38. Find the correct Boolean expression for the following KMaps

AB\CD	0,0	0,1	1,1	1,0
0,0	1	0	0	1
0,1	0	1	1	0
1,1	0	1	1	0
1,0	1	0	0	1

   (1) BD+AC   (3) B'D'+BD   (5) BD+B
   (2) B'D'+D   (4) BD+AD

39. Find the correct Boolean expression for the following KMaps

AB\CD	0,0	0,1	1,1	1,0
0,0	1	0	0	1
0,1	0	1	0	0
1,1	0	1	1	0
1,0	1	0	0	1

   (1) B'D'+BD(C'+A)   (4) B'D'+BD(C+A)
   (2) B'D+BC'D+ABD   (5) B'D'+BD(C'+A')
   (3) B'D'+BCD+ABD

40. The hexadecimal number equivalent to the 10111.0110_2 is
   (1) 177.6_{16} (3) 17.16_{16} (5) 17.01_{16}
   (2) 17.06_{16} (4) 17.60_{16}

41. The hexadecimal number equivalent to the 65.56_{10} is
   (1) $41.8C5D_{16}$ (3) $41.8F5C_{16}$ (5) $41.8B6B_{16}$
   (2) $41.8D5B_{16}$ (4) $41.8A5B_{16}$

42. The binary number equivalent to the $0.1CAD_{16}$ is
   (1) $0.0001\ 1101\ 1010\ 1101_2$
   (2) $0.0001\ 1100\ 1011\ 1101_2$
   (3) $0.0001\ 1100\ 1010\ 1100_2$
   (4) $0.0001\ 1100\ 1010\ 1111_2$
   (5) $0.0001\ 1100\ 1010\ 1101_2$

7

43. $1101.1010_2 + 111.010_2$ is equal to binary
 (1) 10101.11100_2
 (2) 100100.1110_2
 (3) 10100.1110_2
 (4) 101100.11100_2
 (5) 101010.1110_2

44. -78 in 2's complement,
 (1) $0100\ 1110_2$
 (2) $0100\ 1111_2$
 (3) $1011\ 0001_2$
 (4) $1011\ 0010_2$
 (5) $1001\ 0010_2$

45. Simplify the following K-map

AB\CD	00	01	11	10
00	1	0	0	1
01	0	1	1	1
11	0	1	1	0
10	1	0	0	1

 (1) B'D'+BC+A'BC
 (2) BC B'D'+BD+ A'BC
 (3) B'D'+BD+ A'BC
 (4) B'D'+CB+ A'BC
 (5) B'D'+CB +A'BC

46. The binary number equivalent to the $0.CAD_{16}$ is
 (1) $0.1101\ 1010\ 1101_2$
 (2) $0.1100\ 1011\ 1101_2$
 (3) $0.1100\ 1010\ 1100_2$
 (4) $0.1100\ 1010\ 1111_2$
 (5) $0.1100\ 1010\ 1101_2$

47. The binary number equivalent to the BAD_{16} is
 (1) $1001\ 1010\ 1101_2$
 (2) $1011\ 1110\ 1101_2$
 (3) $1011\ 1011\ 1101_2$
 (4) $1011\ 1010\ 1001_2$
 (5) $1011\ 1010\ 1101_2$

48. The octal number equivalent to the $BAD.CAD_{16}$ is
 (1) 5655.6355_8
 (2) 5655.6555_8
 (3) 5565.6255_8
 (4) 5565.6655_8
 (5) 5655.6255_8

49. $F(X,Y,Z)=\{0,1,3,4,6\}$ what will be the correct answer after simplifying using the K-map
 (1) X'Y'+X'Z+X'Z'
 (2) X'Y'+X'Z
 (3) X'Z+XZ'
 (4) X'Y'+X'Z'+XZ'
 (5) X'Y'+X'Z+XZ'

50. $123.25_8 + 56.25_8$ is equal to octal
 (1) 301.52_8
 (2) 201.52_8
 (3) 205.52_8
 (4) 301.52_8
 (5) 301.52_8

5. 04. 2016

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Section A Structured Essay   Time :- 1 hour   Total:100 marks

Answer all the questions on the paper itself.

1.

   A. Write 2 differences between Data and information

....

....

....

....

   B. Draw the graph of value of information against the time

   C. What is golden rule of information?

....

....

....

   D. Name 4 components of a computer system

....

....

....

....

   E. What is an operating system

....

....

   F. Give 5 examples of operating systems

....

....

   G. Give two roles(jobs) of an operating system

....

....

....

H. Explain what is utility software and give 2 examples of it

....

....

....

I. What is Kernal software?

....

....

....

J. Give 3 functions of kernel

....

....

....

....

K. What is multithreading

....

....

....

2. Explain the following terms
   A. Fragmentation

....

....

   B. Defragmentation

....

....

   C. Compaction

....

....

   D. Garbage collection

....

....

   E. NTFS

....

....
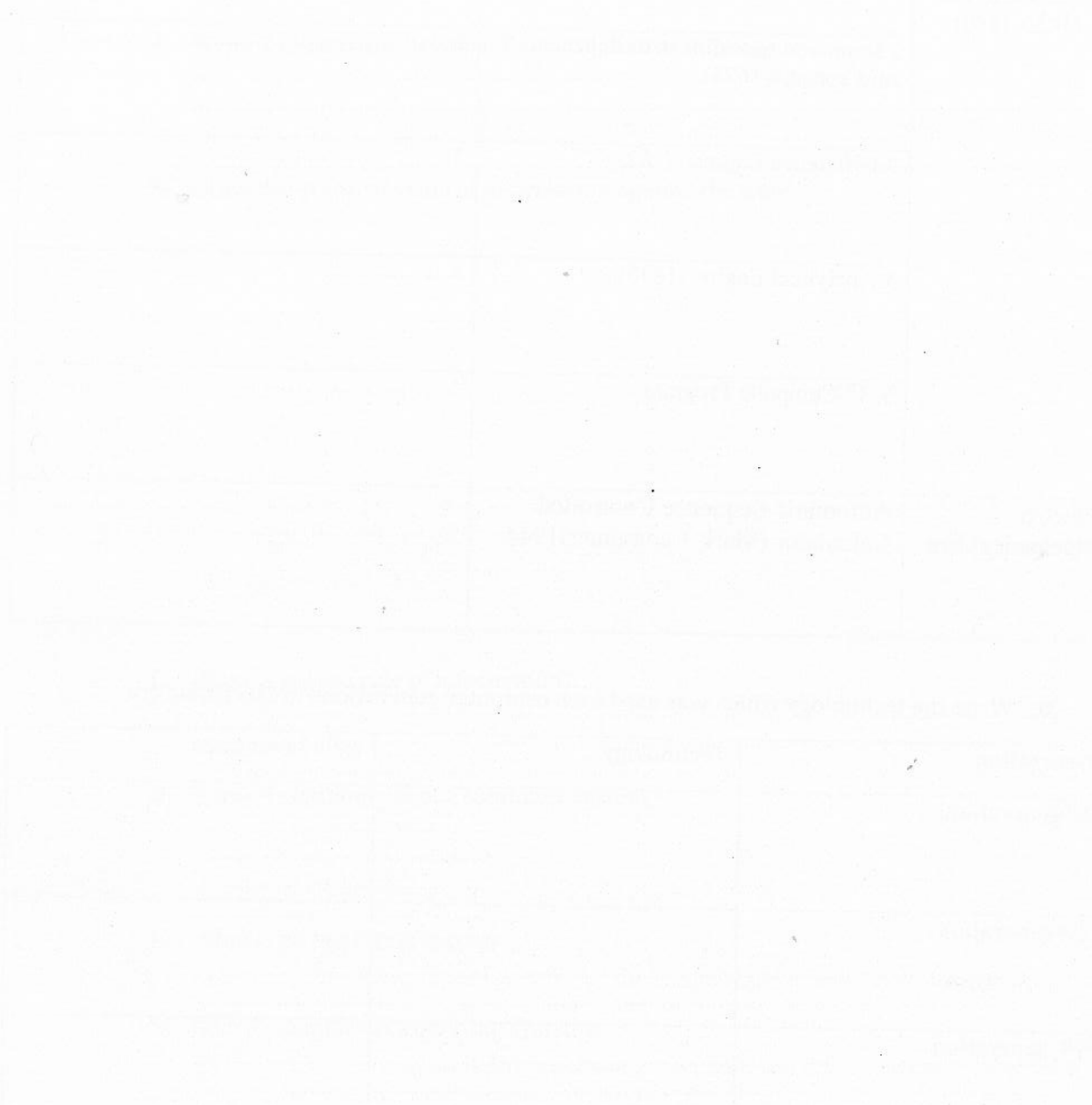
   F. FAT

....

....

   G. Give two differences between FAT and NTFS

....

....

....

3.
A. Draw the data process life cycle

B. Name 3 types of validation Methods
....
....
....

C. Fill the following table with the knowledge of "History of computer"

| Era	New Invention	Invented By
Mechanical Era (1450-1840)	1. Pascaline machine (1642)	1..
	2.Improved pascaline in to Punched card concept(1674)	2..
	3.Difference Engine –(1822)	3..
	4.Analytical Engine -1830)	4..
	5. 1st Computer Program	5..
Electro Mechanical Era	Automatic Sequence Controlled Calculator (Mark 1 computer)1944	6..

D. Write the technology which was used each computer generations in Electronic era

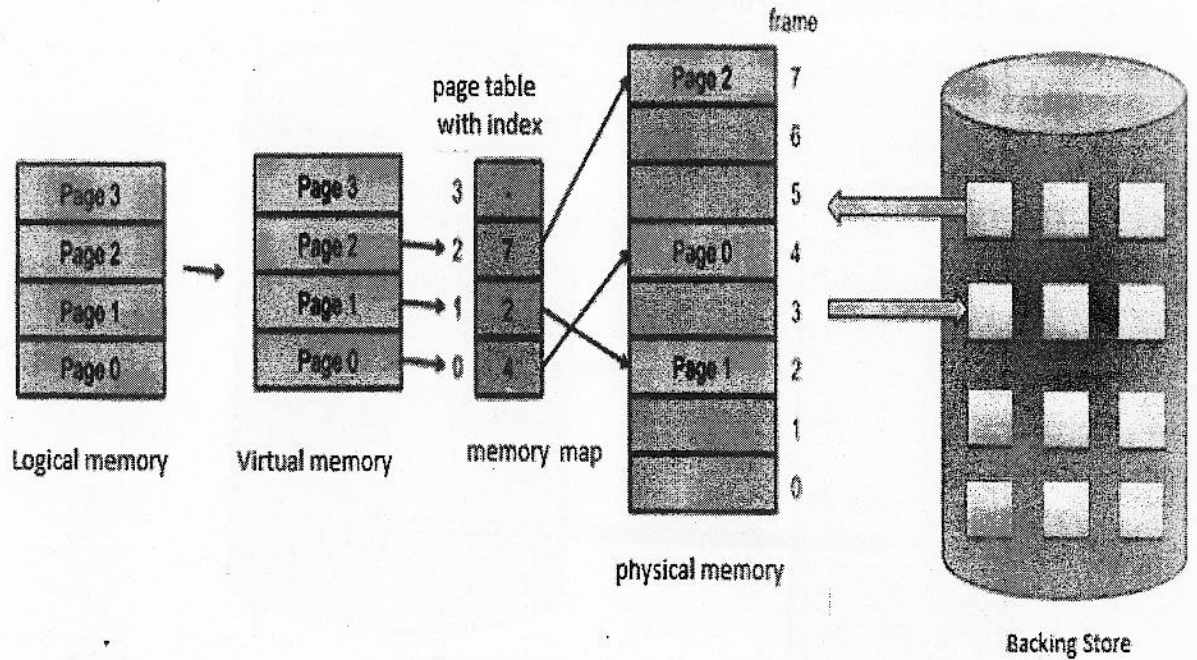| Generation	Technology	New inventions
1st generation		
2nd generation		
3rd generation		
4th generation		

4.
A. Name the following swap diagram(number 1,2,3)

operating
system

① →

process P_1

② ←

process P_2

user
space

③

main memory
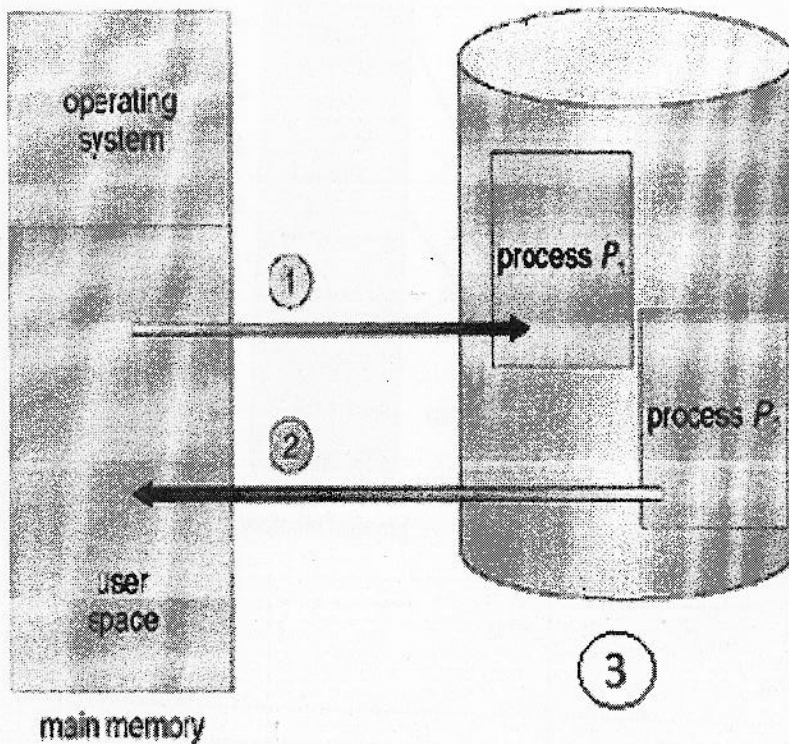
1................................
2................................
3................................

B. Explain what is swapping

....
....
....
....
....

C. Identify the following diagram and answer the question given

Paging & Mapping

a. What is paging

    ....
    ....
    ....

b. What is mapping

    ....
    ....
    ....

c. What is virtual memory

    ....
    ....
    ....

d. What is the purpose of virtual memory

    ....
    ....
    ....

e. Who translates Virtual address in to Physical Address

    ....
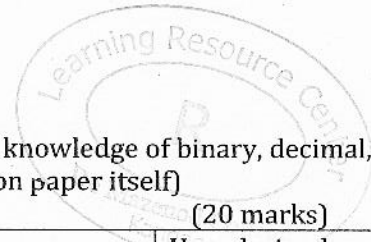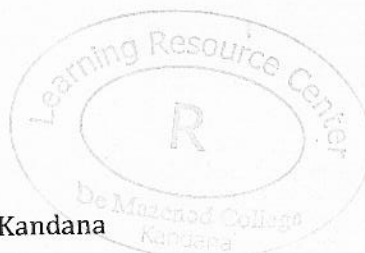
5. Identify the following table and fill in the blanks with knowledge of binary, decimal, octal and hexadecimal conversion   (show all the working on paper itself)

(20 marks)

	Binary	Decimal	Octal	Hexadecimal
1	....	....	0.375_8	....
2	....	111.111_{10}	....	....
3	....	....	7.75_8	....
4	0.11_2	....	....	....
5	....	....	....	0.28_{16}
6	....	....	....	FB
7	....	....	....	14

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Grade 12   2nd Term Test   Information and Communication Technology

SECTION B Essay   Time : 2 hours Total:100 marks

Answer any 4 questions

1.   (20 marks)
A. Draw the process state diagram.
B. Briefly explain the process state diagram.
C. Name 3 types of scheduling
D. Label the 3 types of schedule on the above drawn process state diagram
E. Give one function for each scheduler

2.   (20 marks)
A. Write $[-39_{10}]$ and 18_{10} in to one's complement numbers. Use 8 bits to represent a number.
B. Compute $[-39_{10}]+18_{10}$ by using one's complement .Show the final answer in decimal.
C. Write $[-39_{10}]$ and 18_{10} in to 2's complement numbers. Use 8 bits to represent a number.
D. Compute $[-39_{10}]+18_{10}$ by using 2's complement .Show the final answer in decimal.

3.
A. Verify the following Boolean theorem using truth tables
        $A.(B+C)=A.B+A.C$
B. A diagram of a logical circuit is given below. Answer the parts(i),(ii) and(iii) using it.
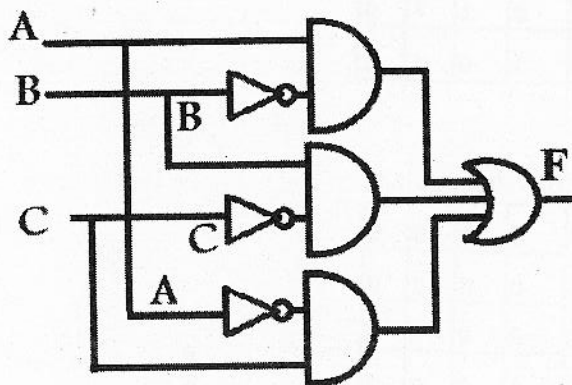
    (i).   Write the output of F in SOP
    (ii).   Draw the truth table for output F
    (iii).   Find the product of sum (POS) with the help of "0" values of the truth table.
C. Solve the following Boolean expression by using " Karnaugh Map"

$F(A,B,C,D)=A'BCD+A'BCD'+AB'CD'+AB'CD+A'B'CD+A'B'CD'+AB'C'D'+AB'C'D+A'B'C'D+A'B'C'D'$

4.

I. Simplify with bitwise operators
- A. 11111_2 BITWISE AND 101_2
- B. 111111_2 BITWISE OR 1101_2
- C. 111111_2 BITWISE XOR 110111_2
- D. $1111_2 \wedge 101_2$
- E. $10101111_2 >> 3$

II. Solve the following.
- A. $110111_2 + 111_2$
- B. $100100_2 - 11_2$
- C. $11011_2 \times 10_2$
- D. $110011_2 / 101_2$
- E. $56712_8 + 123_8$

5.

I. Convert the 0.56_{10} into Binary ,Octal ,Hexadecimal
II. Convert 563_{10} into Binary ,Octal ,Hexadecimal
III. Simplify the following K-maps

a.

AB \ CD	0,0	0,1	1,1	1,0
0,0	1	0	0	1
0,1	1	1	0	0
1,1	0	1	1	0
1,0	1	0	1	1

b.

AB \ CD	0,0	0,1	1,1	1,0
0,0	1	0	0	1
0,1	0	0	1	0
1,1	0	0	1	0
1,0	1	0	0	1

IV. Convert the above final answers of(a and b) into POS.
V. Simplify the Boolean expression using Boolean algebra. Show all the working and algebraic rules used for simplifications
- a. $Z(Y+Z)(X+Y+Z)$
- b. $(XY+XY')((X+Y)(X+Y'))$
- c. $(X+y)(X'+Z)(Y+Z)$