தகவல் தொடர்பாடல் தொழினுட்பவியல் ICT	Gr -12 (2025)	20	E	I

PART = 1

1. Who is the main designer of EDVAC?

   (1) Blaise Pascal   (2) Herman Hollerith   (3) Charles Babbage

   (4) Joseph Jacquard   (5) John Von Neumann

2. Analytical engine developed by Charles Babbage is based on ……………………………….. Technology.

   Which of the following is correct to fill the blank in?

   (1) First generation   (2) Second generation   (3) Third generation

   (4) Fourth generation   (5) Mechanical

3. Consider the following statements.

   A – Performing POST (Power on self-test) process

   B – Providing electric power required for mother board

   C – Loading of basic device drivers to the memory

   Which of the above is / are correct about basic input output system (BIOS)?

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

4. Which is the correct statement regarding VON Neumann structure?

   (1) Its execute the instructions parallel

   (2) Separate memory to store data instructions

   (3) It has many processors to execute the instructions

   (4) It has combine graphical processing unit

   (5) Using a shared memory for both data and instruction

5. After having collected the input its confirm and verified weather its an integer, float or character is called ……………………………

   (1) Number check   (2) Range check   (3) Format check

   (4) Type check   (5) Presence check

6. The role of program counter in fetch execute cycle?

   (1) Its saves the output after the arithmetical operation

   (2) Holds the memory address of the next instructions to be fetched

   (3) Performs logical operations on data

   (4) Controls data flow between CPU and memory

   (5) Acts as temporary storage for data being processed

7. Which is the correct decimal equivalent for 1011.011_2?

    (1) 11.30   (2) 11.03   (3) 11.375   (4) 13.375   (5) 13.30

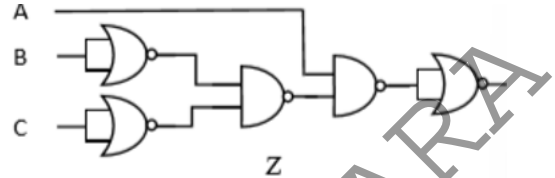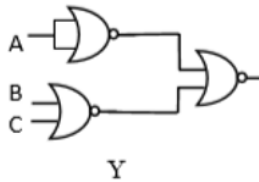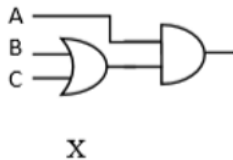8. Which are the equivalent/ equivalents for decimal $15F_{16}$?

    A – 101011111_2 B – 351_8 C – 537_{10}

    (1) A only   (2) B only   (3) AB only   (4) AC only   (5) ABC all

9. Which is/are the equivalents circuits for A(B+C)?

    (1) X   (2) X,Y   (3) X,Z   (4) Y,Z   (5) All X,Y,Z

10. 8 bit first compliment and second compliment of decimal 111 is ………………………

    (1) 01101111 and 01101111   (2) 10010000 and 10010001   (3) 10010001 and 10010000

    (4) 10010000 and 01101111   (5) 10010001 and 01101111

11. Which of following is equivalent to $F = (\overline{A+B}).(\overline{\overline{A}.B})$ after simplifying the following Boolean statement by using De Morgan theorem.

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

12. Consider the following steps.

    A – Fetch next instruction   B – Encode the instruction

    C – Decode the instruction   D – Execute the instruction

    Which of the following steps shows the sequence of the "fetch execution cycle"?

    (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

13. $AB9_{16}$ is equivalent to.

    (1) 7612_8 (2) 7651_8 (3) 5271_8 (4) 5432_8 (5) 4532_8

14. Two's complements of 9_{10} and (-6_{10}) are respectively.

    (1) 00000110_2 , 11110111_2 (2) 10000110_2 , 10010111_2 (3) 11000110_2 , 11100111_2

    (4) 11100110_2 , 11100011_2 (5) 00001001_2 , 11111010_2

15. Amount of Bits used in ASCII, BCD, EBCDIC, Unicode coding system respectively.

    (1) 4,7,8,16   (2) 7,4,8,16   (3) 2,8,16,10   (4) 2,8,16,10   (5) 2,8,10,16

16. The equivalent capacity for 8Gb , 2Gb respectively

    (1) 8192 kb, 2^{20}byte   (2) 8192mb, 2^{11} mb   (3) 8192kb, 2^{11}mb

    (4) 2^{11}mb, 2^{23}byte   (5) 8000mb,2tb

17. Binary equivalent for 13.625_{10}?

(1) 1101.110　　　　(2) 1101.110　　(3) 1101.011　　(4) 1101.101　　(5) 1111.101

18. $X - 67_8$　　　　$Y - 101111_2$　　　　$Z - 3D_{16}$

Descending order of the above numbers xyz?

(1) X,Y,Z　　　　(2)Y,X,Z　　　(3) Z,X,Y　　　　(4) Z,Y,X　　　　(5) Y,Z,X

19. Which is the correct answer for bitwise 15_{16} AND 73_{10}?

(1) 11_{10}　　　(2) 19_{16}　　(3) 000100101　　(4) 11_8　　　(5) 55_{16}

20. Result of this binary operation 11001100 – 01010101

(1) $5f_{16}$　　　(2) 19_{16}　　(3) 57_{10}　　(4) 57_2　　(5) 77_{16}

21. Consider the following statements about operating system.

A – Scheduling processes

B – Allocating and resolving memory required for processes

C – Protecting computer from virus infections

Which of the above is / are the functions of operating system?

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

22. The area containing the addresses of the next instruction to brought in to the central processing unit is called.

(1) Program Counter (PC)　　(2) Arithmetic Logic Unit　　(3) Control Unit

(1) Register　　(5) Main memory

23. Which of the following is a simplified form of $AB + AB\bar{C} + A\bar{B}\bar{C}$

(1) $\bar{A}\,\bar{B} + AB$　　(2)AB+C　　(3) (A+B) C　　(4) $A(B + \bar{C})$　　(5) A(B+C)

24. Which logic gate is suitable for the following circuit?
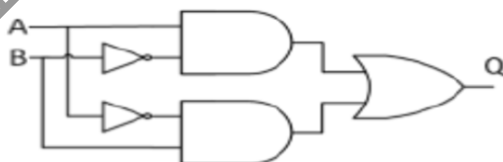
(1) AND　　　　(2) OR　　　　(3) XNOR　　　(4) NAND　　(5) XOR

25. Consider the K map given below

AB

C	00	01	11	01
0				⓪
1	⓪	⓪		⓪

(The 0 in row 1, columns 00 and 01 are grouped. The 0's in column 01 rows 0 and 1 are grouped.)

What is the correct logical expression for this grouping?

(1) $(\bar{A} + C).(\bar{A} + B)$ (2) $(A + \bar{C}) + (\bar{A} + B)$ (3) $(A + \bar{C}) + (A + \bar{B})$

(4) $(A + \bar{C}).(A + \bar{B})$ (5) $(\bar{A} + C) + (\bar{A} + B)$

26. To which of the following states a process can be moved from the running state?

(1) New, Ready, Blocked

(2) Ready, Ready suspend, Terminated

(3) Blocked, Ready, Ready suspend

(4) Ready, Blocked, Terminated

(5) Blocked, New, Ready

27. How it is called, to stop one process running in the OS to start another process

(1) Demand paging   (2) Context switching   (3) Swapping

(4) Interrupting   (5) Long term scheduling

28. Which of the following statements is/are correct regarding the process running in the operating system?

        A – When a program is run, it is called a process

        B – The relationship between a program and its process is always one to many

        C – Kernel is a computer program at the core of the computer operating system it

            Usually   control all the operation in a computer.

(1) A   (2) AB   (3) AC   (4) BC   (5) All ABC

29. On his single Processor computer, a user starts a spreadsheet application and creates a new spreadsheet. To   get some information required for the spreadsheet he opens a large database using his Database Management System (DBMS). After completing his spreadsheet he save it.

Which of the following operating system features has / have being used by the above user?

        A –Context switching

        B –File management

        C - Virtual memory

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

(4) A and C only   (5) All A,B and C

30. $f(x,y) = (\overline{x.y})(\overline{x} + Y)(\overline{y} + y)$ The simple from of the above boolean algbra.

(1) X   (2) Y   (3) 1   (4) $\bar{x}$ (5) 0

31. Which layers of OSI model connect with networking?

   (1) Application layer and Presentation layer

   (2) Session layer and Transport layer

   (3) Transport layer and Network layer

   (4) Network layer and Application layer

   (5) Data link layer and Physical layer

32. A. In Full – duplex data communication always transmission takes place to both direction.

   B. A student responds to teacher after question is asked by the teacher in a class. This is an example of half duplex communication.

   C. Television broadcasting is an example of half duplex communication.

   Which of the above statements/is/are true about communication.

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

   (4) (A) and (B) only   (5) (B) and (C) only

33. What is the main function of a DHCP server?

   (1) Allocating IP addresses.

   (2) Resolving domain names from IP addresses.

   (3) Providing directory services to user.

   (4) Sharing an Internet connection among users.

   (5) Protecting a computer network from virus attacks.

34. Consider the IP address 192.248.87.3 and the subnet mask 255.255.255.224. How many hosts can be directly connected to this network?

   (1) 16   (2) 24   (3) 64   (4) 30   (5) 128

35. Which is/are the valid IP address?

   A – 192.168.0.0.1   B – 10.256.8.100

   C – 8.8.8.8   D – 192.168.100.10

   (1) AB   (2) BC   (3) AC   (4) CD   (5) All ABCD

36. Which of the following is a possible IP address in a network with IP address 172.16.10.5 and subnet mask 255.255.248.0

   (1) 172.16.10.10   (2) 172.16.10.5   (3) 172.16.8.0

   (4) 172.16.10.0   (5) 172.16.10.16

37. Which of the following devices sends data packets only to receiving devices?

    (1) Hub   (2) Switch   (3) Bridge   (4) Repeater   (5) Modem

38. Which one is correct?

    (1) IPV4 address contains 128 bits

    (2) Default subnet mask of C class is 255.0.0.0

    (3) Mac address contains 32 bits

    (4) 255.255.0.0 is a B class IP address

    (5) 256 IP address in 192.200.159.0/24

39. Use of public and private key encryption and decryption process is called

    (1) Asymmetric encryption   (2) Digital encryption   (3) Hybrid encryption

    (4) Private key encryption   (5) Symmetric encryption

40. Which of the followings is the network command that for secure file transfer?

    (1) Ping   (2) Ipconfig   (3) ftp   (4) Telnet   (5) ssh

PART IIA Structure

01.

1) Compare SRAM, DRAM with 2 points ?

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

2) State the technology used from 1st generation to 5th generation?

    ....
    ....

3) State the memory access methods and give examples each?

    ....
    ....

4) Various types of memories are provided here arrange them in ascending order 1-4.(1-low, 4-high)

Memory Type	Classification				
	Physical Size	Access Time	Speed	Capacity	Cost per bit
Register	1				
Cache	2				
Secondary Sto	4				
RAM	3				

02. A)

1) Give +14 , -3 in two's complement from?

    ....
    ....

2) Calculate +14+(-3) in two's complement 8 bit form?

    ....
    ....

B)

1) $f = \bar{A}.\bar{B} + \bar{A}B + A\bar{B}$ Indicate the above Boolean algebra in k-map?

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

2) Give simply answer of the above Boolean algebra?

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

3) Draw SR flip flop using NAND gates?

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

03. A) Explain the flowing related to memory management

1. Process control block(PCB).

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

2. Memory Swapping.

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

B) Indicate the states 1-6 in the diagram given below.

....
....
....
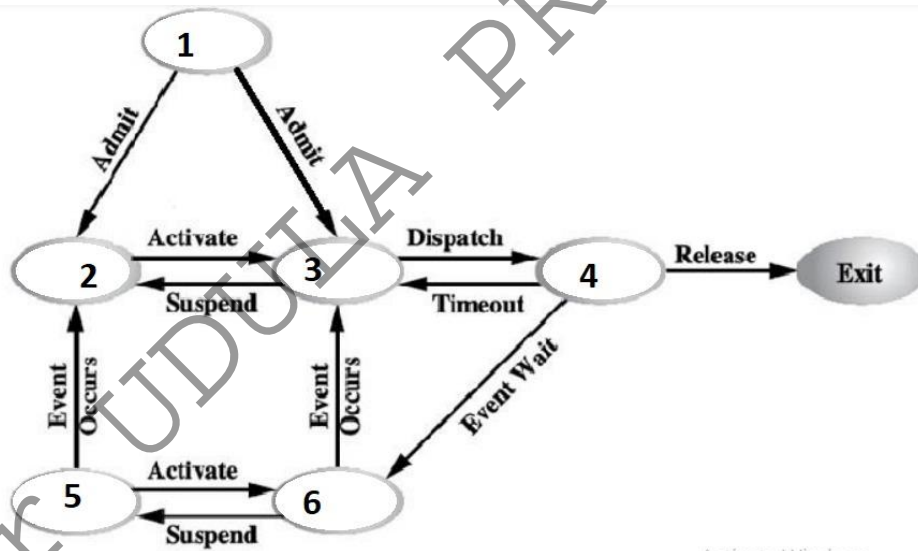
C) State the numbers in the above diagram that states can be found in the secondary memory?

....

04. A)   CMD interface is given below

```
Connection-specific DNS Suffix  . :
Description . . . . . . . . . . . : Realtek RTL8821CE 802.11ac PCIe Adapter
Physical Address. . . . . . . . . : 80-2B-F9-04-40-17
DHCP Enabled. . . . . . . . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv6 Address. . . . . . . . . . . : 2402:d000:a400:eef5:fd4d:cdf4:4dbd:2e1b(Preferred)
Temporary IPv6 Address. . . . . . : 2402:d000:a400:eef5:51d6:a7ab:68ad:26fa(Preferred)
Link-local IPv6 Address . . . . . : fe80::fd4d:cdf4:4dbd:2e1b%7(Preferred)
IPv4 Address. . . . . . . . . . . : 192.168.1.170(Preferred)
Subnet Mask . . . . . . . . . . . : 255.255.255.0
Lease Obtained. . . . . . . . . . : 09 July 2024 17:13:13
Lease Expires . . . . . . . . . . : 10 July 2024 17:13:13
Default Gateway . . . . . . . . . : fe80::e487:cfff:fe14:6a8c%7
                                     192.168.1.1
DHCP Server . . . . . . . . . . . : 192.168.1.1
```

1) Give the Physical address?

   ....

2) Write the logical address?

   ....

3) Explain the function of DNS server?

   ....

   ....

B)

1) Write the layers of OSI model in order?

   ....

   ....

   ....

3)   Name 3 data communication disruptions?

   ....

   ....

   ....

4)   State the use of ping command?

   ....

   ....

   ....

PART IIB Essay
Any 2 questions only

01.

   a.   Use a truth table to find Boolean expression (A+B).(A+C) = A+B.C

   b.   Prove the above Boolean expression (a) using Boolean algebra?

   c.   Give the output of the following logic circuit?
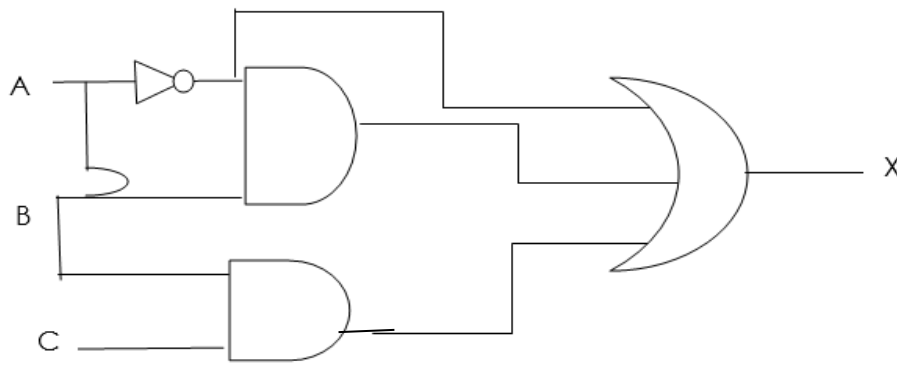
    d. Convert this into SOP format into SSOP format?

$$\bar{A}C + \bar{B}C + A\bar{B}$$

    e. Summarize the Boolean expression obtained in (d) by using k-map?

02. A)
    1) Give the file allocation methods?
    2) What is the function of mid-term scheduler?
    3) Write the 2 scheduling policies?
    4) Define disk fragmentation?

    B) The physical memory capacity of a computer is 4gb. The virtual memory capacity is of the mentioned computer is 8gb. The frame size is 4kb
    1) Find out the number of frames in the physical memory?
    2) What is the page size?
    3) What is the total number of pages?

03.
    a. What are the basic components of data communication?
    b. Draw the diagrams for the following network topologies and state 2 major differences bet ween them.
        1. Star topology   2. Ring topology

    c. Consider the IP address 160.100.200.10 and subnet mask 255.255.224.0 in a network

    (1) How many subnets can be created?
    (2) How many hosts can be connected in this network?
    (3) What is the network address for this given IP?
    (4) What is the broadcast address for the given IP?
    (5) Give the usable IP address range for the given address?