



தேசிய வெளிக்கள நிலையம், தொண்டைமானாறு நடாத்தும்

மூன்றாம் தவணைப் பரீட்சை – மார்ச் 2023

Third Term Examination – March 2023

Conducted by

National Field Work Centre, Thondaimanaru.

தகவல் தொடர்பாடல் தொழிநுட்பம் - I
Information Communication Technology - I

Three Hours and
10 minutes

20

E

I

Gr -12 (2023)

Part I

❖ Answer all questions

01) Which of the following are Phases of data life cycle

- A – Removal of obsolete data
- B – Data processing
- C – Data management
- D – Data creation

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

02) Which of the following device blocks is used for automatic data collection

- 1) Sensors, Mouse, Bar code reader
- 2) Magnetic ink character reader, Keyboard, Optical character reader
- 3) Magnetic ink character reader, Sensors, Optical character reader
- 4) Sensors, Keyboard, Bar code reader
- 5) Magnetic ink character reader, Mouse, Optical character reader

03) **Incorrect** statement of regarding Level 1 cache Memory

- 1) Located within CPU
- 2) It have frequency access data
- 3) Increase the efficiency of CPU
- 4) Located in between CPU and RAM
- 5) Influence the cost of CPU

04) Example of control the office light system software

- A - Office lighting control software
- B - Virus
- C - Instruction in read only memory
- D - Software embedded in washing machine
- E - Compiler

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

05) **Not** a the technique of big data analytics

- 1) Sentiment analysis
- 2) Process
- 3) Genetic algorithm
- 4) Social media feedback
- 5) Machine learning

06)

Labels	Sectors	Devices
A	Education	Simulations
B	Health	Radio frequency identification devices
C	Agriculture	Robotic machine
D	Engineering	Computer Aided Designer (CAD)

Which of the label(s) in the above table show appropriate example of sectors?

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

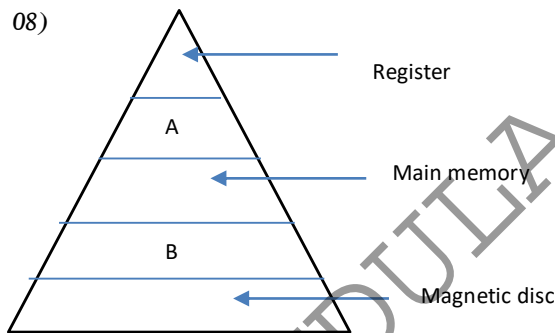
07) Consider the following storage devices

- A. CMOS memory
B. Cache memory
C. Flash memory
D. Random access memory
E. Register

Which of the above are **non – volatile** memories

- 1) A, B, only 2) B, C only 3) A, D only
4) A, C only 5) B, E only

08)



Suitable memories devices of A, B in figure respectively

- 1) Cache memory, Solid state devices
2) Cache memory, Optical disk
3) Solid state devices, Cache memory
4) Solid state devices, Magnetic tape
5) Cache memory, Magnetic tape

09) No need to consider while choosing suitable mother board for CPU

- 1) Socket
2) Chipset
3) Basic input output system
4) Voltage
5) Speed of CPU

10) $274_8 + CD_{16}$ is equal to?

- 1) 393 2) 363 3) 341
4) 963 5) 431

11) Two's complement of -37, 45 respectively

- 1) 00100101, 00101101 2) 11011011, 00101101 3) 11011011, 00101101
4) 11011011, 11010011 5) 00100101, 11010010

- 12) $110011 \dots 101010 = 011001$, Which operator come in the blank of this equation
 1) AND 2) NOT 3) OR 4) XOR 5) XNOR

- 13) Which is/are true of following statement

A – $125_{10} = 178_8$

B – $A_{16} = 1010110_2$

C – $25_{10} + 47_8 = 1100_8$

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

- 14) Equal Hexadecimal number of octal number 65.4_8 ?

- 1) 41.8_{16} 2) 35.8_{16} 3) 35.4_{16} 4) 53.5_{16} 5) 53.8_{16}

- 15) Which is/are equivalent Boolean expression of $(\overline{A} + B\overline{C})$ in following statements?

A – $\overline{A}\overline{B} + AC$

B – $\overline{A}\overline{B} + BC$

C – $\overline{A}BC$

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

- 16) Which is equivalent to the abstract form of Boolean expression obtained by following K-map?

1) $A + \overline{B}$

2) $\overline{A}\overline{B}$

3) $B + \overline{C}$

4) $BC + \overline{B}\overline{C}$

5) $\overline{A} + \overline{C}$

		AB			
		00	01	11	10
C	0	1	1	1	1
	1	0	1	1	0

- 17) Consider the following statements.

A – Only normal additions (Single bit) can be made

B – It has three input and two outputs

C – Using Carry bit

Which of the following is/are **wrong** statement(s) regarding **half adder**?

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

- 18) Which of the following allows automatic installation when installing new hardware device to a computer

- 1) Easy Installer 2) Add remove hardware 3) Add Hardware utility
 4) Fetch and store 5) Plug and play

- 19) Which of the following is a suitable operating system for tsunamni warning system?

- 1) Single user single task operating systems (OS)
 2) Single user multi task OS
 3) Multi user multi task OS
 4) Real time OS
 5) Multi-processing OS

- 20) Which of the following statements is correct regarding software?
- (1) Utility software is usually store in ROM.
 - (2) Embedded in devices are utility software.
 - (3) System software is used to inter communication between external devices.
 - (4) Utility software is stored in ROM.
 - (5) Firmware is manage the devices.
- 21) Advantages having more than one partition on a hard drive
- (1) It can be distinguish between program file and operating system
 - (2) Ability to recover the file as efficiency
 - (3) Easy to create directories and sub directories
 - (4) Getting multi task work easy to done
 - (5) Easy to backup
- 22) Which of the follwing is/are measured by same unit?
- A- Amplitude and Wave length
B- Amplitude and Frequency
C- Frequency Band width
D- Wave length and Band width
- 1) A only
 - 2) A, C only
 - 3) A, C, D only
 - 4) B, C only
 - 5) A,B,D only
- 23) The number system and number of bits used to present MAC address
- 1) Hexa, 48
 - 2) Hexa, 64
 - 3) Hexa, 32
 - 4) Binary, 48
 - 5) Binary, 32
- 24) Which of the following statement(s) is/are incorrect regarding star topology?
- A- Centralize control is seen
B- Host comports are interconnected
C- Each host are connected with nearest host
D- Here used is Hub/Switch.
- 1) A, B only
 - 2) B, C only
 - 3) C, D only
 - 4) A, D only
 - 5) B, D only
- 25) IP address of a computer in a computer network is 150.200.45.7/23. Maximum number of Host connected in this network?
- 1) 64
 - 2) 126
 - 3) 1022
 - 4) 510
 - 5) 254
- 26) Which of the following is invalid Subnet mask
- 1) 255.255.255.248
 - 2) 255.255.255.245
 - 3) 255.255.128.0
 - 4) 255.255.0.0
 - 5) 255.192.0.0
- 27) Which of the following is a command used by different computer user in computer network to confirm the connectivity of themselves
- 1) Sch
 - 2) Ipconfig
 - 3) telnet
 - 4) ping
 - 5) IP tool

28) IP address and subnet mask of two computer P, Q are in two different network respectively

P → 192.168.16.63, 255.255.255.192

Q → 192.168.16.200, 255.255.255.192.

A – P, Q are same network.

B - Both are different network

C – IP address of P is not valid.

D – IP address of Q is not valid.

Which is/are true above statement(s)?

(1) A only

2) B only

3) A, C only

4) C, D only

5) B, C only

29) Which of the following is change by the frequency modulation technique

(1) Amplitude and frequency only

(2) Amplitude, frequency and phase

(3) Amplitude and phase only

(4) Frequency only

(5) Amplitude only

30) Which of the following protocol used to download the software from internet?

(1) POP3

(2) HTTP

(3) FTP

(4) SMTP

(5) Telnet

31) A router is used to connect the different networks to form a wider network. More than this, it is use one

(1) Find the suitable path

(2) Create the frame

(3) Blocks the malware

(4) Performs encryption

(5) Follow the TCP and UDP

32) Integration testing comes second step of system testing sequence. Which of the step comes acceptance testing?

1) 1st Step

2) 3rd Step

3) 1st or 3rd Step

4) 1st or 2nd Step

5) 4th Step

33) Which of the following refers to non-functional requirement(s)?

A – Compare the request and balance amount in ATM machine

B – Requiring to remove the card before received the cash in ATM machine

C – The system should fulfill 99%

1) A only

2) A, B only

3) B, C only

4) A, C only

5) A, B, C all

34) It's a good example of closed system when it is create naturally

1) Human blood circulation system

2) Human respiratory system

3) Photosynthesis System

4) Human digestive system

5) ATM machine

- 35) This method allows us to get user feedback early in the development process and understand their needs more easily. Which of the following represents the above advantage
- 1) Spiral 2) Proto typing 3) Water full
4) Agile 5) None of the above
- 36) Consider the following phases of system implementation
- A – Direct B – Phase C - Parallel
- What is/are the method(s) that allow time for user to understand the system better?
- 1) A only 2) B only 3) C only
4) A, B only 5) A, B, C all
- 37) Which of the following characteristics is the diagram created during the system design phase
- Provides a top level view of system performance
 - Diagrams the flow of data between the main components of the system
 - Being in harmony with the Context Diagram
- 1) Document flow diagram
2) Level 1 data flow diagram
3) Logical data model
4) Low level data flow diagram
5) Level 2 data flow diagram
- 38) Consider the following statements regarding software packages that can be purchased in market
- A- They are designed to meet the needs of world common uses
B- Compare the Customized software, not all user always use all their feature.
C- They are relatively less expensive than customized software
- Which of the following is/are correct?
- 1) A only 2) B only 3) C only
4) B, C only 5) A, B, C all
- 39) The following system are always based on artificial intelligence
- A – Expert System
B – Enterprise resource planning system
C – Multi agent system
D- Geographical information system
- 1) A, B only 2) A,C only 3) A, D only
4) B, D only 5) C, D only
- 40) Which of the following have content of Process Control Block (PCB)?
- 1) Process ID, File extension , Program counter
2) File extension, Process State, Process ID
3) File size, Registers, Memory limit
4) Process ID, Memory limit, Process state
5) File size, File extension, Process ID



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Information Communication Technology - II

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II

Gr -12 (2023)

பகுதி – II A

❖ Answer all question

01. a)

i. Fill in blank related memory calculations

0.5 GB

= 2^{\dots} MB

= 2^{32}

ii. What is the Parallel Computing?

.....

.....

.....

iii. Write the four different between SRAM and DRAM

.....

.....

.....

.....

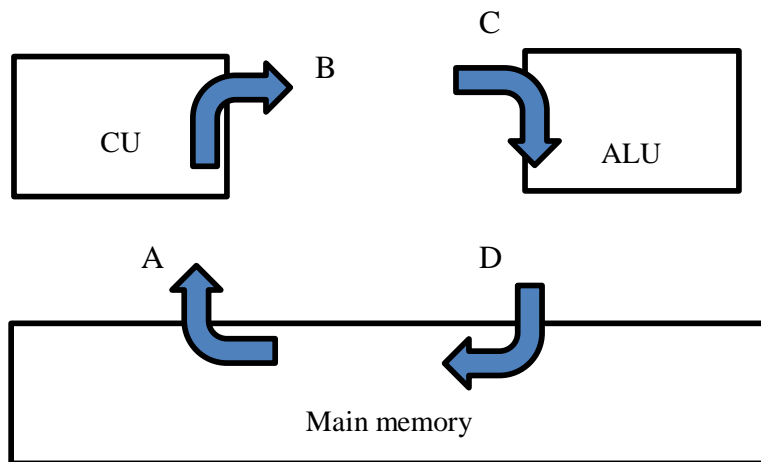
b) i. Give the three services of Cloud Computing.

.....

.....

.....

ii. Fetch Execute Cycle diagram given below. Write suitable action for labels B, C, D?



A : Fetch instruction from main memory

B :

C :

D :

iii. Give three type of Read Only Memory.

.....

.....

.....

02

a) i. Complete the following calculation.

$$\begin{aligned}
 &2D_{16} + 73_8 \\
 &=_8 + 73_8 \\
 &=_8 \\
 &=_{10}
 \end{aligned}$$

ii. 77 , -41 , Give two's complement format (using 8 bits)

.....

.....

.....

.....

b) i. Draw the logical diagram for Full Adder.

ii. Simplify this Boolean equation using the given below k-map

$$F = \bar{A}\bar{B} + A\bar{B} + ABC$$

=

=

		AB			
		00	01	11	10
C	0				
	1				

iii. Draw the logical diagram for above simplified equation using only NOR gate

03.

a) i. What is the Process?

.....

.....

.....

ii. Give the three type of scheduler and brief function of that

.....

.....

.....

iii. Give two advantages of Virtual Memory

.....

.....

b) i. What you mean about Index Allocation?

.....

.....

ii. Give an advantage of Index Allocation.

.....

.....

c) In a certain computer, physical memory has a total capacity 4GB. The size of memory frame is 4 KB.

Compute the total number of the frame in the physical memory,

.....

.....

.....

04.

a) i. Write the two advantages of mesh topology.

.....
.....

ii. Give the two different between hub and switch.

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

b) Write the suitable term get from bracket in blanks of following table..

{DNS server, DHCP server, Web server, Proxy server, FTP server}

Definition	Servers
Provide the internet facility to all use in network
Convert to URL to IP address
Provide the IP address to all host in a network as automatic
Use for communicate the Large size file

c)

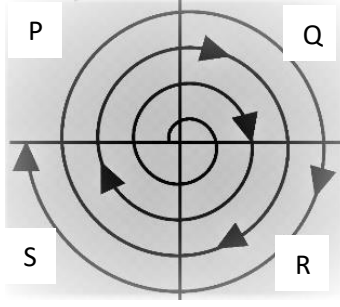
i. Write the two advantages of public switch telephone network (PSTN)

.....
.....

ii. Give the one uses of Telnet Protocol?

.....
.....

d) Spiral model of SDLC given below . Write the suitable functions of labels Q, R, S



P : Planning

Q :

R :

S :



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II

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பகுதி – II B

❖ Answer any two questions only.

01)

- a) i) Explain different between combinational circuits and sequential circuits using with diagram.
ii) Give the three types of flip flop and two usage of that.
- b) A student made the truth table for simple logical diagram given below.

A	B	C	D	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	1
1	1	1	1	0

- i) Write the Boolean equation of output F in sum-of – product format from above truth table.
- ii) Simplify the equation using Boolean laws (Rules should be clearly stated).
- iii) “When the student shows the summary form of the truth table and Boolean expression to the teacher, he suggests making minor corrections in the inputs”
Explain the reason for this suggestion.

02)

- a) i. Give the four functions of Transport layer in OSI model
ii. Give the two types of Encryption methods for data security
- b) You have been appointed as the manager of a computer network development project of a department of education. Instructions and device details provided there are as follows

Instructions

- Internet facility should be provided to all users.
- Provide protection against virus spread and cyber thieves.
- All devices mentioned in the device list should be included in the network.
- The network will be controlled by the ICT unit.
- The building for the sports unit is 350 m apart and the other units are on different floors of the same building.

Device's Details

Units	Computer	Other device
Admin	12	1 Network Printer
Accounting	32	5 Printers
Sports	5	1 Network Printer
ICT	20	3 Printers

- i. Provide all required to complete this network
- ii. Draw a suitable diagram for this network
- iii. If you have been given IP packet 192.168.100.0 then copy and complete the following table in your answer sheet.

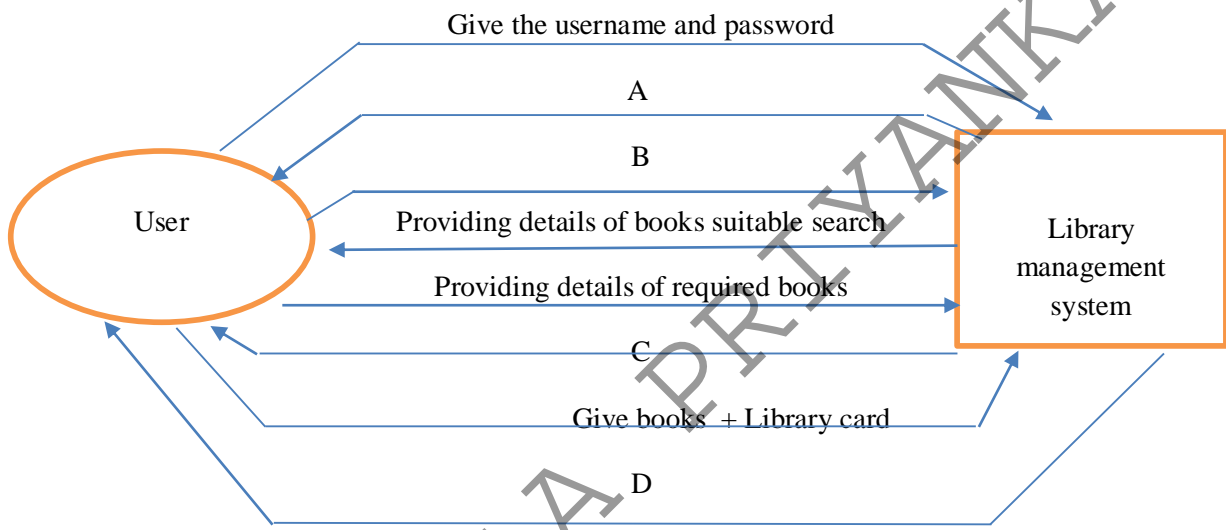
Units	Subnet mask	Network ID	Usable Range
Admin	255.255.255.240	192.168.100.1 to
Accounting	192.168.100.0 to 192.168.100. 62
Sports	255.255.255.248	192.168.100.0 to
ICT to

03.

- a) i. Draw a diagram of waterfall model and give two advantages and one disadvantage
ii. Explain the difference between black box and white box testing

b) Involved in the development of School Library Automated Information System

- i. Give four methods of collecting it during requirement analysis phase
ii. Give the three functional and non-functional requirements for this information system.
iii. Context diagram given below. Select the suitable function from brackets for labels A, B, C, D



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