

Information Communication Technology – Grade 12

Second term test - 2020

MCQ

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

Part - A

1 A) 1- Arithmetic and logical Unit 2 – De coding instructions into commands
3 – Execute commands. 4 – Store result in memory (4 marks)

b) i) Check whether the correct data type is input into the system.
ii) Check whether the compulsory date is input in to the system.
iii) Check whether the data is in the allowed range. (3 marks)

C) All the rights of the FOSS are given to the customer and the editable source codes are also included with the software. But regarding the proprietary software, those rights are not given for the customers and also the source codes are not opened. (1 mark)

D) Simultaneous execution of parts of a single program. It enables parallel programming. It enables to get the maximum performance from a single computer. (2 marks)

2. (a)+19= 00010011

-19=11101100

(marks 01)

(b)-19 = 11101100

(1's complement)

+1

11101101

(02 marks)

(c) 28 = 00011100

-19 = 11101101

1 00001001

=00001001

(03 marks)

(d) I. 110000₂

II. 1000011₂

III. 11101₂

IV. 1111₂

(04 marks)

3. (a) Manage the execution of existing process by moving them between the two states until they finished.(02 marks)

(b) process control blocks are used to hold the information which are required for the process management of an operating system. (1 mark)

(c) Process state, Process ID, Program Counter, CPU Registers, Memory management information, IO status information. (For 03 suitable answers 3 marks)

(d) It is the mechanism to store and restore the state or context of a CPU in Process Control Block so that the process execution can be resumed from the same point at a later time using the information of relevant PCB. (02 marks)

$11 \ 4 \times 2^{30} / 16 \times 2^{10} = 2^{18}$ (01 mark)

4. 1. displaying the router and measuring transit delays of packets across an internet protocol network.
 - ii. To verify that a computer can communicate over the network.
 - iii. Displays all current tcp/ip network configuration values. Refresh dhcp/dn
2. Modulation is the technique used to send information by modifying the basic characteristics such as frequency, amplitude and phase, of an electromagnetic signal (modulating signal) by attaching it to a higher frequency signal (carrier signal), producing a modulated signal. The most commonly used method is the Pulse Code Modulation (PCM).
3. MAC addresses are unique addresses assigned each network interface of a communicating device. MAC addresses are 48 bits long and are divided in to 6 blocks separated by colons. Each block is 8 bits long and is further divided in to two 4 bit blocks
4. Wires are often called guided media because they guide the data transfer data from one point to another without altering the frequencies, data impairment are therefore reduced. Examples of guided media include Twisted pair (UTP and STP), Coaxial Cables, Fiber Optic Cables etc.
Free space – (wireless transmission or unguided media): signals are spread in to the atmosphere (air), data can spread to any direction. Examples for wireless communication include radio transmission, satellite transmission etc.
5. Symmetric Key Encryption - The encryption process where same keys are used for encrypting and decrypting the information is known as Symmetric Key Encryption. When using symmetric key encryption users must share a common key prior to exchange of information. Asymmetric Key Encryption - The encryption process where different keys are used for encrypting and decrypting the information is known as Asymmetric Key Encryption.

Part - B

1. 1. (I) Usage or defined - L_1, L_2, L_3 and L (01 mark)

L_1	L_2	L_3	L
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

(04 marks)

(II) $L = L_1L_2'L_3 + L_1L_2L_3' + L_1L_2L_3$ (02 marks)

(III) $L = L_1L_2'L_3 + L_1L_2L_3' + L_1L_2L_3$

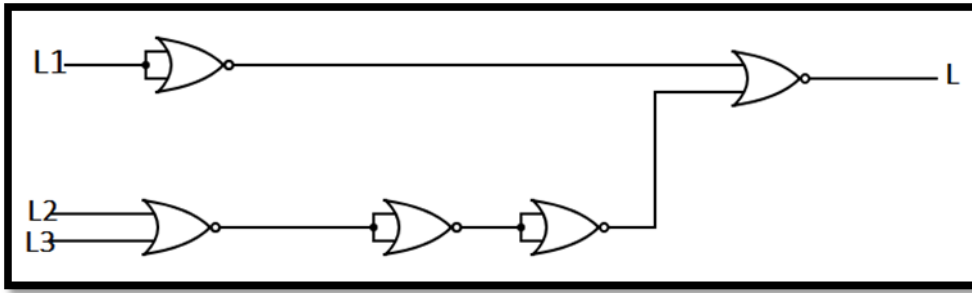
$L = L_1L_2'L_3 + L_1L_2(L_3' + L_3)$ - inverse or complement law (01 mark)

$L = L_1L_2'L_3 + L_1L_2$ (1 mark)

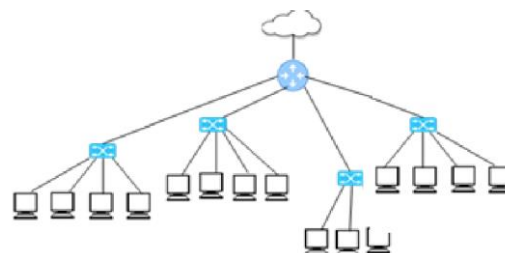
$L = L_1(L_2 + L_2'L_3)$ – Redundancy law (01 mark)

$L = L_1(L_2 + L_3)$ (1 mark)

(IV)



- (4 marks)
2. (I) 101001011000_2 (1 mark)
 51308_8 (1 mark)
- (II) a 22.625_{10} (Step should be included) (1 mark)
 b. 26.5_8 (Step should be included) (2 marks)
- (III) a 101000_2 (2 marks)
 b 10100_2 (2 marks)
- (IV) a. 1011010011_2 (Step should be included) (2 marks)
 b. 1323_8 (Step should be included) (2 marks)
 c. $2D3_{16}$ (Step should be included) (2 marks)
3. a) Hardware, Software, Firmware, Live ware – give marks for suitable explanations (04 marks)
 b) Cache memory, Primary memory, Secondary memory and one correct explanation (04 marks)
 c) Anti-virus software, device drivers. (2 marks)
 d) High cost, high electricity consumption, High space requirement. (or three correct answers 03 marks)
 e) Yes. Write, erase and re- write in DVD – RW whereas data cannot be erased in DVD – RAM (02 marks)
4. I. A computer program in the execution state. (2 marks)
 II. The operating system decides, which process, how long, in which time, it should be provided to the processor in the process scheduling of multi programming environment in process management. Keeping records of tracks of process and process states, allocating the processor for the processes, de allocates processor when a process is no longer required. (02 marks)
- III A- Ready
 B- Running
 C- Blocked
 D- Terminated (4 marks)
- IV Allocating the processor for the processes. (2 marks)
 Short term scheduler, Medium term scheduler, Short term scheduler. (2 marks)
- V a. X- B (Running) (1 mark)
 b. X- B (Running) , Y- A (Ready) (1 mark)
 c. X- C (Blocked), Y- B (Running) (1 mark)
 d. . X- C (Blocked), Y- B (running), Z- A ready) (1 mark)
5. 1. Give marks for a suitable network diagram



2.

Subnet	Net Address	Broadcast Address	IP range
A	192.168.12.0	192.168.12.63	192.168.12.1-192.168.12.62
B	192.168.12.64	192.168.12.127	192.168.12.65-192.168.12.126
C	192.168.12.128	192.168.12.191	192.168.12.129-192.168.12.190
D	192.168.12.192	192.168.12.255	192.168.12.193-192.168.12.254

3. Difficulty of maintenance, Difficulty of assigning IPs, Administration difficulties

6 I. A system that accept data as input, process data, output information and store them is considered as an information system. (02 marks)

II. It helps to select large number of students for different universities within very short period of time. Minimize the selection errors.

Efficient selection method

Cost efficient/minimize (for suitable 3 answers 3 marks)

III

- Applicants must be able to create a user account in the web site of university grant commission.
- Messages must be able to send to the applicants' mobile phone and the e- mail after creating the correct user accounts.
- Application must be able to receive for the registration after logging to the user account.
- The results of GCE O/L and GCE A/L of applicants must be able to view separately from the system itself.
- A list that includes the subject stream followed by the applicants and all the courses which could be applied according to their qualifications must be able to display to the applicants.
- Applicants must be able to select the course order according to their favor and remove the rejected courses from the list.
- The selection order of courses must be able to change until the closing date of application.

(04 suitable answers - 04 marks)

IV

- Accuracy
- Efficiency
- Graphical user Interface should be provided to the system.
- It should be able to run on any operating system/ platform.

(04 suitable answers - 04 marks)

V. e- Banking via bank website

Mobile banking by using mobile banking applications

(02 suitable answers – 02 marks)