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9/8/19

# ST. LAWRENCE HIGH SCHOOL

**PRE TEST – 2019**
**CLASS – 12**

**SUBJECT – COMPUTER SCIENCE_SOLUTION**
**DURATION – 3 HOURS 15 MINUTES**

**F.M. :70**
**DATE -8.8.2019**

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**PART – A**
**(MARKS: 35)**

**A) Answer the following questions in short** **7X5 = 35**

**i) (a) State any four differences between co-axial and fibre optic cables.**

**A:**

| Co-axial cable | Optical fiber |
|---|---|
| 1. Transmission of signals takes place in the electrical form over the inner conductor of the cable. | 1. Signal transmission takes place in an optical forms over a glass fiber. |
| 2. Coaxial having higher noise immunity than twisted pair cable. | 2. Optical fiber has highest noise immunity as the light rays are unaffected by the electrical noise. |
| 3. Coaxial cable is less affected due to external magnetic field. | 3. Not affected by the external magnetic field. |
| 4. Moderate Expensive. | 4. Expensive |
| 5. Moderately high bandwidth. | 5. Very high bandwidth |
| 6. Attenuation is low. | 6. Attenuation is very low. |
| 7. Installation is fairly easy. | 7. Installation is difficult. |

**(b)State any two function of a NIC.**

**A:** A network card functions as a middleman between your computer and the data network. For example, when you log in to a website, the PC passes the site information to the network card, which converts the address into electrical impulses. Network cables carry these impulses to a Web server somewhere on the Internet, which responds by sending a Web page back to you, once again in the form of electronic signals. The card receives these signals and turns them into data that your PC displays.

**(c)Write the name of any wireless medium used in network communication.**

**A:** Radio waves, satellite communication, Infrared

**4+2+1**

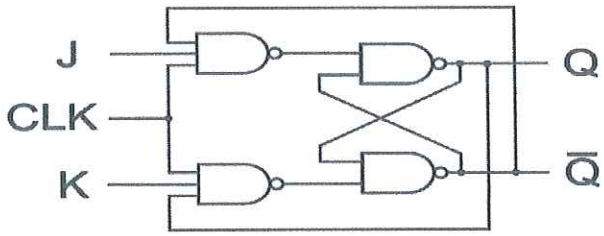
**ii) (a) What are the different types of communication modes?**

**A:** Simplex, half duplex & Full Duplex

(b) Discuss about any two of them. 3+(2+2)

iii) (a) Draw the circuit diagram of a JK flip-flop.

A:




(b) Draw its state table.

A:

| Inputs | | Outputs | |
|---|---|---|---|
| J | K | $Q_n$ | $Q_{n+1}$ |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 0 |

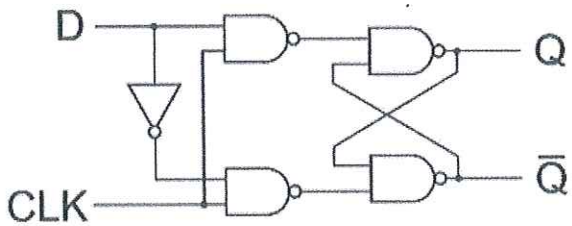
(c) How can you convert a JK flip-flop to a T flip-flop?

**A:** T-type flip-flop can be constructed from a JK flip-flop (or D-type flip-flop) by connecting the J input with the K input and both to logic level "1". **4+2+1**

**OR**

(a) Draw the circuit diagram of D flip-flop.

A:



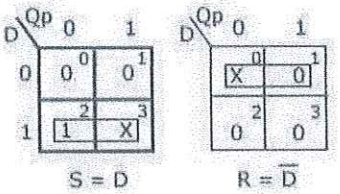

(b) Derive D flip-flop from RS flip-flop. **2+5**

A:

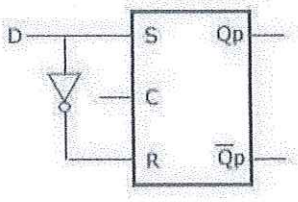
Conversion Table

| D Input | Outputs | | S-R Inputs | |
|---|---|---|---|---|
| | Qp | Qp+1 | S | R |
| 0 | 0 | 0 | 0 | X |
| 0 | 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 | 0 |
| 1 | 1 | 1 | X | 0 |

K-maps




Logic Diagram



**iv) (a) Write the HTML code to create a table with proper column headings that stores the Name and Age of 2 persons in two different rows.**

**A:**

```
<table border=2>
 <tr>
  <th>Name</th>
  <th>Age</th>
 </tr>
 <tr>
  <td>Julian</td>
  <td>50</td>
 </tr>
 <tr>
  <td>Jimmy</td>
  <td>35</td>
 </tr>
</table>
```

**(c) How can you display text as a sub-script or a super-script in HTML?**

**A:** <sup> and <sub> tags are used

**(d) Write the names of any two attributes of the body tag.**

**A:**

| | |
|---|---|
| background | Image to be used a background |
| bgcolor | Background color |

**4+2+1**

**v) (a) What are the 2 parts of IP address?**

**A:** An IP address consists of two parts, one identifying the network and one identifying the node, or host.

**(e) What is Class B address?**

**A:** Class B network addresses range from 128.0.0.0 to 191.255.255.255. The first 2 bits in a class B address are always 10 (128).

**(f) What are the advantages of using FTP?**

**A:**

- Allows you to transfer multiple files as well as directories.
- The ability to resume a transfer if the connection is lost.
- The ability to add items to a "queue" to be uploaded/downloaded.
- Many FTP clients have the ability to schedule transfers.

**1+3+3**

PART – B
(MARKS: 35)

B) Select the correct answer from the alternatives : 1X21=21

i) Which of the following domain's nature is used to denote any educational institution? :
(a) .net (b).org (c).gov (d).edu

ii) ISP stands for :
(a)Internet Switch Protocol (b) Intranet service Protocol
(c)Internet Service Protocol (d) Internet Service Provider

iii) Which of the following signals is carried out by the fibre optic cable?
(a) Light (b)Electric (c) Magnetic (d) None of these

iv) The forbidden state of the Asynchronous NOR latch is :
(a) S = 1, R = 1 (b) S = 1, R = 0 (c) S = 0, R = 0 (d) S = 0, R = 0

v) The main advantage of using D flip-flop is :
(a) has 2 inputs (b)has 2 outputs
(c)does not have a forbidden state (d) has toggle state

vi) Which of the following networking solution is suitable for networking in a building?
(a) WAN (b) MAN (c) LAN (d) VAN

vii) NOR SR flip-flop retains the previous output when:
(a) Both inputs are 0 (b) Both inputs are 1
(c) One input is 1 (d) None of these

viii) Which of the following network device is used to give direction to any data packet to reach its destination?
(a) Router (b) Repeater (c) HUB (d) Bridge

ix) Which of the following is not a guided media?
(a) Optical fibre (b) Microwave (c) Coaxial cable (d) None of these

x) A 3-bit counter can produce a maximum of how many output states?:
(a)6 (b) 8 (c)16 (d) 32

xi) In J-K flip-flop, when both inputs are 1, then output q(t+1) will be

(a) $\overline{Q(t)}$ (b) $Q(t)$ (c) 1 (d) 0

xii) Which of the following communication modes supports two way traffic, but in only one direction at a time?

(a) Simplex (b) Half Duplex (c) Asynchronous (d) Full Duplex

xiii) Which of the following is a guided media?

(a) Air (b) Light (c) Co-axial cable (d) Satellite

xiv) The most popular LAN protocol is:

(a) TCP/IP (b) Token Ring (c) PPP (d)Ethernet

xv) A JK flip-flop::

(a) Does not have a forbidden state (b) Does not have a reset state

(c) Does not have a latch state (d) Does not have a set state

xvi) In asynchronous counters all the flip-flops are:

(a) Triggered by the same trigger clock (b) Not triggered by the same trigger clock

(c) Attached to the master trigger (d) None of these

xvii) The TCP/IP protocol model is considered to be made up of how many layers?

(a) 2 (b) 3 (c) 4 (d) 5

xviii) Which of the following devices is used to amplify signal while it travels across a network?

(a) Bridge (b)Switch (c) Router (d) Repeater

xix) The default extension of HTML is :

(a) .NET (b) .HTML (c) .HTM (d) both (b) & (c)

xx) The network topology in which devices are not linked to each other & where hub acts as a central controller is:

(a) Star (b) Ring(c) Mesh (d) Tree

xxi) A peer to peer network usually does not have a special computer called a :

(a) Host (b) Hub (c) Client (d) Server

C) **Answer the following questions in short(Alternatives are to be noted):** **1X14 = 14**

i) **Write down the full form of CSMA/CD.**

**A:** Carrier Sense Multiple Access / Collision Detection

**OR**

**Write the full form of TCP/IP.**

**A:** Transmission Control Protocol/Internet Protocol

ii) **Write the advantage of Star topology over Mesh topology**

**A:** Cost less, less complex

**OR**

**Define Baud Rate.**

**A:** The baud rate is the rate at which information is transferred in a communication channel

iii) **Define Sequential circuit.**

**A:** In digital circuit theory, sequential logic is a type of logic circuitwhose output depends not only on the present value of its input signals but on the sequence of past inputs, the input history as well.

iv) **Write the truth table of D flip-flop.**

**A:**

| Q | D | Q(t+1) |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

v) **What is the difference between <ul> and <ol> tags in HTML?**

**A:** The basic difference is that <ul> is used to create Unordered List whereas <ol> is for Ordered List of items

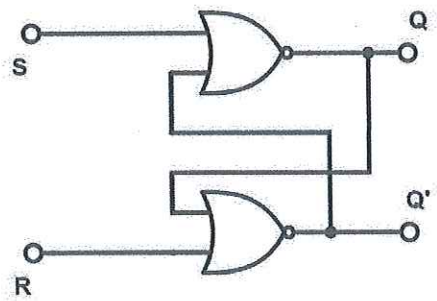
**OR**

**Write one disadvantage of Ring topology.**

**A:** The entire network will be impacted if one workstation shuts down

vi) **Draw a circuit diagram of a basic flip-flop using NOR gate.**

**A:**



vii) **Why D flip - flop is called Delay flip-flop?**

**A:** It is called the Delay flip-flop, since the output takes the value of the D input or Data input, and Delays it by one clock count.

viii) **Write a difference between peer to peer and client server network.**

**A:**

| | Peer to Peer Network | Client/Server network |
|---|---|---|
| **Hardware Cost** | It needs no high-end server as the resources are distributed over all clients which reduce cost. | A dedicated computer server (hardware) that distributes resources is needed. |
| **Easy Setup** | It is easy to setup mainly if the computers are less than fifty (50). | It is difficult to setup. |
| **Network Operating system** | There is no required network operating. | Network operating system is required. |
| **Failure** | It can accommodate failure i.e. if one or more Computers (clients) fail the others can still be up. | It cannot accommodate failure if the server fails. |
| **Security** | It has security deficiency as clients' administration is not guaranteed. | Very secure because server administration is guaranteed. |
| **Performance** | It performs less | Performs very good |
| **Backup** | It has decentralized backup that is difficult to access. | It has a centralized data backup with ease of access. |

**OR**

**State one function of Network Interface Card.**

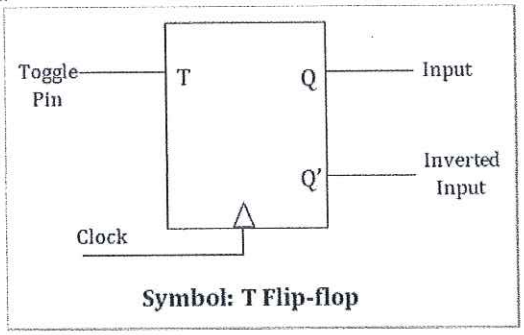
**A:** A NIC controls the wired and wireless connections of a computer to exchange information with other computers and the Internet.

ix) **Which HTML tag is used to hyperlink two HTML pages?**

**A:** To insert a link, use the <a> tag with the href attribute

x) **Draw the block diagram of T flip-flop.**

**A:**




**Symbol: T Flip-flop**

**OR**

**Write down the truth table of T flip-flop.**

**A:**

| $T$ | $Q_n$ | $Q_{n+1}$ |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

**xi) Write the syntax to insert a picture named 'Picture1.jpg' in a webpage.**

**A:** <img src = "Picture1.jpg">

**xii) On which condition, a J-K flip-flop works as a T flip-flop?**

**A:** T-type flip-flop can be constructed from a JK flip-flop (or D-type flip-flop) by connecting the J input with the K input and both to logic level "1".

**OR**

**When does a race condition occur in a NAND based S-R flip - flop?**

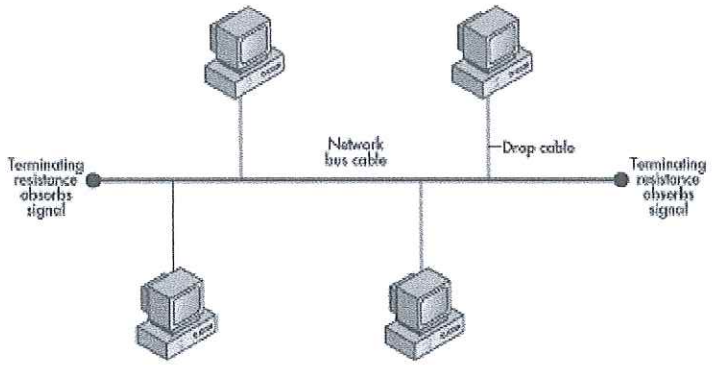
**A:** If S'=0 & R'=0

**xiii) What do you mean by positive edge triggering?**

**A:** positive-edge-triggered (not comparable) (electronics) Describing a circuit or component that changes its state only when an input signal becomes high.

**xiv) Draw a simple diagram of Physical Bus Topology.**

**A:**




**OR**

**Write two characteristics of Twisted Pair cable.**

**A:** 1. It can be used to carry both analog and digital data.

2. It is relatively easy to implement and terminate.

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