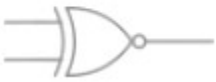
HLS & SCB SBU

Solution – 5

(1) Ans = D

XNOR Gate:

Symbol:



(2) Ans – C

Analysis:

$25_x = 2x + 5$

$15_x = x + 5$

$43_x = 4x + 3$

$25 + 15 = 43$

$\Rightarrow 2x + 5 + x + 5 = 4x + 3$

$\Rightarrow x = 7$

(3) Ans – B

The time period of the clock pulse $= \frac{1}{10\ MHz} = 10^{-7} sec$

Propagation delay of each FF = 15×10^{-9} sec

Number of F.F required $= \frac{t_{clk}}{t_{pd}} = \frac{10^{-7}}{15 \times 10^{-9}} = 6.67$

$\therefore$ Number of FF required = 6

$2^N \geq$ MOD

Modulus of counter = $2^6 = 64$.

(4) Ans – B

(5) Ans – D

Multiplication	Resultant integer part (R)
0.8125 x 2 = 1.625	1
0.625 x 2 = 1.25	1
0.25 x 2 = 0.5	0
0.5 x 2 = 1	1

Now, write these resultant integer parts, this will be 0.1101 which is the equivalent binary fractional number of decimal fractional 0.8125

(6) Ans – D

Each chip capacity = 16 K × 1 bit

Needed memory capacity = 128 K × 1 byte = 128 × 8 bits

Number of chips needed = $\frac{128K \times 8}{16K \times 1} = 64$

Hence the correct answer is *64*.

(7) Ans – D

(8) Ans – B

Direct Coupled Transistor Logic (DCTL) is also called an Integrated injection logic (I2C) circuit. It uses no biasing and loading resistors at all! Resistors require a lot of power and space on an IC chip. Hence, their elimination results in higher density circuits operating at much-reduced power.

(9) Ans – A

(10) Ans – B

The Transistor-Transistor Logic (TTL) is a logic family made up of BJTs (bipolar junction transistors).

It is the fastest saturated logic family.

(11) Ans – D

At 1 the combination is AB

At2 the combination is C

At 3 combination is $\overline{(AB).C}$

At 4 combination is $\overline{(D+E)}$

$$\implies Y = \overline{\overline{(ABC)}.\overline{(D+E)}}$$

Using De Morgan's law,

$$\implies Y = ABC + D + E$$

(12) Ans – D

(13) Ans – D

CMOS has the highest fan out.
Standard TTL has the lowest fan out.

(14) Ans – D

D-Flip Flop is called **transparent b**ecause D-FF has one input and one output.

(15) Ans – D

(16) Ans – C

- From the above table, the binary equivalent of 6 is 110.
- The binary equivalent of 2 is 010.
- The binary equivalent of 7 is 111.

Hence, the binary equivalent of octal number 627 is 110010011.

(17) Ans – B

(18) Ans – B

Dual expression is also used to convert positive logic to negative logic and vice versa.

(19) Ans – B

A binary coded decimal code in which the combination for the complement of a digit is the complement of the combination for that digit.

Binary codes only consists of '0' and '1'.

(20) Ans – A

(21) ANS – C

MS-DOS (Microsoft Disk Operating System) is the **oldest Textual User Interface** (TUI) **operating system** created by **Microsoft Corporation.**

(22) ANS – C

Disk Defragmenter is a utility in Microsoft Windows designed to increase access speed by rearranging files stored on a disk to occupy contiguous storage locations, a technique called defragmentation.

(23) ANS – B

(24) ANS – C

(25) ANS – B

(26) ANS- A

Gray code is employed by K-map for simplification of Boolean expressions. The row and column indices (shown across the top and down the left side of the K-map) are ordered in gray code rather than binary numerical order.

(27) ANS- B

A stack can be implemented using **two queues**. Let stack to be implemented be 'x' and queues used to implement be 'a' and 'b'.

(28) ANS- A

$F(B, C, D) = B.C + \overline{B}.D + \overline{C}.D.$

$F(B, C, D) = B.C\,(D + \overline{D}) + \overline{B}.(C + \overline{C}).D + (B + \overline{B})\overline{C}.D$

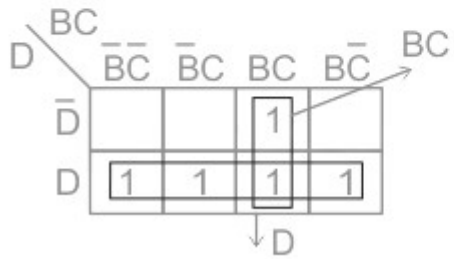
$F(B, C, D) = B.C.D + B.C.\overline{D} + \overline{B}.C.D + \mathbf{\overline{B}.\overline{C}.D} + B.\overline{C}.D + \mathbf{\overline{B}.\overline{C}.D}$

$F(B, C, D) = B.C.D + B.C.\overline{D} + \overline{B}.C.D + \overline{B}.\overline{C}.D + B.\overline{C}.D$

$F(B, C, D) = \overline{B}.\overline{C}.D + \overline{B}.C.D + B.\overline{C}.D + B.C.\overline{D} + B.C.D$

$$F\,(B, C,\ D) = \sum m(1,\ 3,\ 5,\ 6,\ 7)$$

K - Map:



$F(B, C, D) = BC + D$

(29) ANS- C

Deque is a hybrid data structure that uses neither FIFO nor LIFO to insert and remove items.

(30) ANS – B

(31) **ANS- A**

A stack is an ordered list in which insertion and deletion are done at one end, called a top.

(32) **ANS – A**

A stack is a linear data structure. The elements in a stack are added and removed only from one end, which is called the TOP. Hence, a stack is called a LIFO (Last-In-First-Out) data structure, as the element that was inserted last is the first one to be taken out. The push operation is used to insert an element into the stack. The pop operation is used to delete the topmost element from a stack.

(33) **ANS- A**

The **programming language** JavaScript is one of the **foundational elements** of the World Wide Web.

(34) **ANS – B**

It is software that delivers web pages to users.
It uses many protocols such as HTTP, and TCP/IP.

(35) **ANS – C**

Therefore, "Skimming" in e-banking is a method of stealing credit card information.

(36) **ANS – A**

(37) ANS- C

A mesh topology provides a connection from each node to every other node on the network. This provides a fully redundant network and it is the most reliable of all networks. If any link or node in the network fails, then there will be another path that will allow network traffic to continue.

(38) ANS – B

Classful Network Type	Number of bits in network id	Subnet mask
Class A	8	255.0.0.0
Class B	16	255.255.0.0
Class C	24	255.255.255.0

(39) ANS- A

In MS PowerPoint, the working area is known as the slide. The slide holds the picture, videos, text and so on.

(40) ANS – B

The **operating system** acts as an **interface between computer hardware and computer users**.

(41) ANS – B

Attachment feature in Microsoft Access allows us to add one or more files such as **documents, presentations, images**, and so on to the records in your Microsoft Access database.

(42) **ANS – A**
(43) **ANS – D**

RDBMS is used by various systems, including IBM, Oracle, MySQL, Microsoft SQLServer, and PostgreSQL.

(44) **ANS- A**
(45) **ANS – D**

Break Statement is a loop control statement which is used to terminate the loop. As soon as the break statement is encountered from within a loop, the loop iterations stops there, and control returns from the loop immediately to the first statement after the loop.

(46) **ANS – C**
(47) **ANS – D**

Octal Number System: The octal number system has only eight (8) digits from 0 to 7. Every number (value) represents with 0,1,2,3,4,5,6 and 7 in this number system. **The base of the octal number system is 8 because it has only 8 digits.**

(48) **ANS – B**
(49) **ANS – D**

An algorithm is an unambiguous specification of how to solve a class of problems. A flowchart is a type of diagram that represents an algorithm, workflow or process, showing the steps as boxes of various kinds, and their order by connecting them with arrows. This diagrammatic representation illustrates a solution model to a given problem.

(50) **ANS – B**

(51) **ANS – C**

(52) **ANS – A**

Transmission media are located below the physical layer and are directly controlled by it.

(53) **ANS – B**

In **packet-switched networks**, these resources are not reserved, rather Simply in each packet mark the source address and destination and throw them in the network. These packets might not follow the same path.

ARPANET:

The Advanced Research Projects Agency Network was established by the **Advanced Research Projects Agency (ARPA)** of the United States Department of Defense.

(54) **ANS –D**

A twisted pair cable is made of **two plastic insulated copper wires twisted together to form a single media**.

(55) **ANS – A**

(56) ANS - A

Generation	Year	Example
First Generation	**1946-1959**	**Vacuum Tube**
Second Generation	1959-1965	Transistor
Third Generation	1965-1971	Integrated Circuit
Fourth Generation	1971-1980	VLSI Microprocessor
Fifth Generation	1980-onwards	ULSI Microprocessor

(57) ANS – D

An integrated circuit (IC) is an assembly of electronic components in which hundreds to millions of transistors, resistors, and capacitors are interconnected and built up on a thin substrate of semiconductor material (usually silicon) to form a small chip or wafer. Integrated circuits are the building blocks for most electronic devices and equipment.

(58) ANS – C
(59) ANS – D
(60) ANS – D
(61) ANS – B
(62) ANS – B

Super Computer is the **largest, fastest, and costliest computer. Super Computer term** is commonly applied to the **fastest high-performance systems available at any given time.**

(63) ANS – D

(64) ANS – C

The ICL 2900 is not an example of the 4th Generation of Computers.
The ICL 2900 was released in 1966, making it a 3rd Generation Computer.

(65) ANS – B

The abacus is one of the first calculators. The development of computing and calculating devices has a lengthy history.

(66) ANS – D

Data communications refer to the transmission of data between two or more computers and a computer network.
The physical connection between computing devices is established using either cable media or wireless media.

(67) ANS – D
(68) ANS – D

In computer architecture, a bus is a subsystem that transfers data or power between computer components inside a computer or between computers. A bus can logically connect several peripherals over the same set of wires. Each bus defines its set of connectors to physically plug devices, cards or cables together.

(69) ANS – D
(70) ANS – B

Bigger block size implies better spatial locality. Block size doesn't depend on cache tag. Smaller block

size incurs a lower cache miss penalty.

(71) ANS – D

GSM technology is used in **mobile phones**.
The full form of GSM is Global System for Mobile.

(72) ANS – D

(73) ANS – B

In Data wiping, deleted data is not stored in back device by cloud provide
Deleted data is overwritten by series of value to protect previously deleted data

(74) ANS – D

(75) ANS – A
(76) ANS – A

Google Drive is service provided by Google which helps to store files on a remote server and thereby can share and synchronize them. Through Google Drive, we can send documents, photos, presentations, videos etc. to other systems. Google Docs, sheets, slides all form part of Google Drive. Files and documents created through MS-Office can also be saved and shared through Google Drive. This can also be used in android phones.

(77) ANS – C

Modern cell phone has very high computing powers, touch screens, internet and other features in it. It can run mobile-oriented programs called apps, such phones are called smartphones.

(78) ANS – B

(79) ANS – B

Infrastructure as a service (IaaS) is a form of cloud computing that provides virtualized computing resources over the internet.

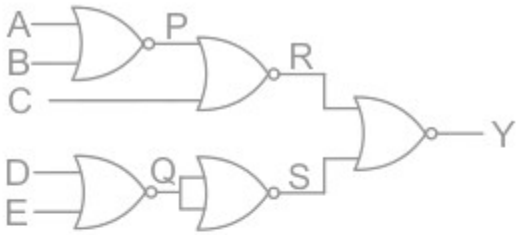
(80) ANS – A

(81) ANS – A

Function Table for D: Flip flop:

D	Q_n	Q_{n+1}
0	0	0
0	1	0
1	0	1
1	1	1

(82) ANS- A



$$P = \overline{A + B}$$

$$Q = \overline{D + E}$$

$$R = \overline{P + C} = \overline{\overline{A + B} + C}$$

$$S = \overline{Q + Q} = \bar{Q} = D + E$$

$$Y = \overline{R + S} = \bar{R}\,\bar{S}$$

$$Y = \left(\overline{A + B} + C\right)\overline{(D + E)}$$

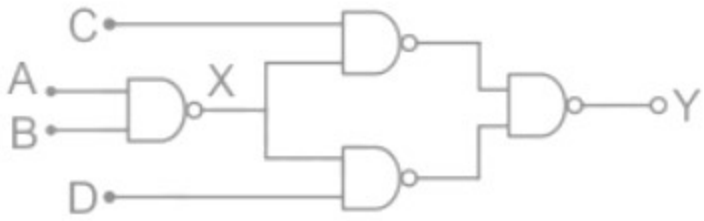
$$Y = \left(\overline{A + B} + C\right)(\bar{D}\,\bar{E}\,)$$

(83) ANS – D

MOD-4 counter followed by MOD-16 it denotes cascading of two counters. Therefore, equivalent counter = MOD (4 × 16) counter = MOD-64 counter

Hence the number of states when a MOD-2 counter is followed by a MOD-5 counter is 10

(84) ANS – A



Hence, 4 NAND gates will be used in all.

(85) ANS – C

Function of logic gate is $\overline{\overline{A} \,.\, B.\, C}$

If A = 0, B = 1, C = 1

then f = 0

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