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Indian Space Research Organisation

सत्यमेव जयते

U.R. RAO SATELLITE CENTRE
Bengaluru

Participant ID	
Participant Name	
Test Center Name	
Test Date	03/11/2022
Test Time	3:30 PM - 6:30 PM
Subject	TECHNICAL ASSISTANT (ELECTRONICS) Post Code 015

Section : **TECHNICAL ASSISTANT (ELECTRONICS) Post Code 015**

Q.1 The impedance at resonant frequency of a series RLC circuit with L=20mH, C=0.02μF and R=180Ω is

(a) 0Ω

(b) 90Ω

(c) 20Ω

(d) 180Ω

Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225093**
Status : **Answered**
Chosen Option : **D**

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Q.2

If power factor of a circuit is unity, its reactive power is

(a) Maximum

(b) Equal to Zero

(c) Equal to one

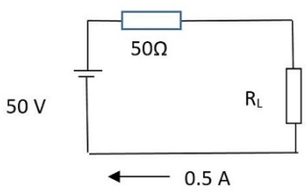
(d) Equal to half

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225124**
Status : **Answered**
Chosen Option : **B**

Q.3

Power dissipated in R_L is



(a) 1W

(b) 50W

(c) 0.5W

(d) 12.5W

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225115**
Status : **Answered**
Chosen Option : **D**

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Q.4

2's complimentary representation of value -50 is

(a) 10111111

(b) 11011111

(c) 11001110

(d) 00110011

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225119**
Status : **Answered**
Chosen Option : **C**

Q.5

The equality $(A+B+C)^I = A^I.B^I.C^I$ is better known as _____

(a) Involution law

(b) Absorption law

(c) Complementation law

(d) DeMorgan's law

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225087**
Status : **Answered**
Chosen Option : **D**

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Q.6 Two vectors have magnitude 15 units and 10 units the magnitude of the resultant vector of these two vectors can never be,

(a) 3 units

(b) 5 units

(c) 8 units

(d) 12 units

Ans

✔ A. a

✘ B. b

✘ C. c

✘ D. d

Question ID : **1703225106**
Status : **Not Answered**
Chosen Option : **--**

Q.7 An ideal operational amplifier should have.

(a) Low input impedance.

(b) High open loop gain.

(c) High output impedance.

(d) All the above.

Ans

✘ A. a

✔ B. b

✘ C. c

✘ D. d

Question ID : **1703225090**
Status : **Answered**
Chosen Option : **B**

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Q.8 A certain inverting amplifier has closed loop gain of 50. The op-amp of the amplifier has open loop gain of 100000. If another op-amp of 200000 is substituted in the configuration, the closed loop gain_____

(a) Doubles to 100

(b) Is halved to 25

(c) Increase by a factor of 100000

(d) Remains the same at 50

Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225081**
Status : **Answered**
Chosen Option : **D**

Q.9 A J-K flip-flop with J = 1 and K = 1 has a 40 kHz clock input. The Q output is _____

(a) Constantly LOW

(b) Constantly HIGH

(c) A 20 kHz square wave

(d) A 40 kHz square wave

Ans

✗ A. a

✗ B. b

✓ C. c

✗ D. d

Question ID : **1703225089**
Status : **Answered**
Chosen Option : **A**

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Q.10 Propagation delay of logic gate

(a) Increases the power dissipation

(b) Limit the maximum speed at which circuit can operate

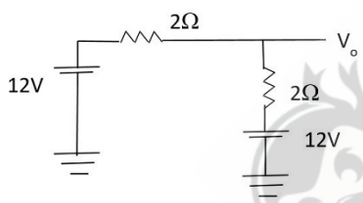
(c) Increases the logic level for high state

(d) None of the above

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225130**
Status : **Answered**
Chosen Option : **B**

Q.11 The value of V_o is



(a) 1 V

(b) 12 V

(c) 6 V

(d) 24 V

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225123**
Status : **Answered**
Chosen Option : **B**

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Q.12 Which statement below is NOT correct?

(a) Geostationary orbits typically have a rotation time of 90 min.

(b) Communication satellites typically use geostationary orbits.

(c) Geostationary orbits rotate at the same speed as the earth.

(d) Polar orbits typically have a speed of 8 km/s.

Ans
✔ A. a
✘ B. b
✘ C. c
✘ D. d

Question ID : **1703225102**
Status : **Answered**
Chosen Option : **A**

Q.13 Positive feedback is used in

(a) Oscillators

(b) Low gain amplifiers

(c) High gain amplifier

(d) Rectifiers

Ans
✔ A. a
✘ B. b
✘ C. c
✘ D. d

Question ID : **1703225104**
Status : **Answered**
Chosen Option : **A**

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Q.14

ECL (Emitter Coupled logic) logic family known for

(a) Low speed operations

(b) High speed operation

(c) High voltage swing

(d) It is a saturated logic

Ans

✗ A. a

✓ B. b

✗ C. c

✗ D. d

Question ID : **1703225127**
Status : **Answered**
Chosen Option : **B**

Q.15

The ability of a differential amplifier to reject a common mode signal is expressed by its

(a) CMRR

(b) Differential gain

(c) Common mode gain

(d) Supply voltage rejection ratio

Ans

✓ A. a

✗ B. b

✗ C. c

✗ D. d

Question ID : **1703225109**
Status : **Answered**
Chosen Option : **A**

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Q.16 All the circuit components and interconnections are formed on a single thin wafer in

(a) Thick Film IC

(b) Thin Film IC

(c) Hybrid IC

(d) Monolithic IC

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225096**
Status : **Answered**
Chosen Option : **D**

Q.17 The output voltage of a cell changes when a current is drawn from the cell, due to,

(a) Internal resistance

(b) Decrease in load resistance

(c) Inductance of the connected load

(d) Depth of discharge of the cell

Ans
✓ A. a
✗ B. b
✗ C. c
✗ D. d

Question ID : **1703225105**
Status : **Answered**
Chosen Option : **A**

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Q.18 We get percentage ripple if multiply _____ with 100.

(a) Ratio of the input resistance and input voltage.

(b) Product of AC current and DC current.

(c) Ratio of AC rms voltage to DC voltage.

(d) Addition of the AC and DC component of given signal.

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225091**
Status : **Answered**
Chosen Option : **C**

Q.19 The range of values that can be represented with 8 bit in 2's complement form is

(a) 0 to +128

(b) +256 to -256

(c) -128 to +128

(d) +127 to -128

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225116**
Status : **Answered**
Chosen Option : **D**

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Q.20 Input offset voltage is the voltage that must be applied between two input terminals of an operational amplifier to

(a) Square the output

(b) Null the output

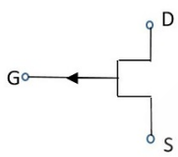
(c) To make the output voltage negative

(d) To invert the output voltage

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225128**
Status : **Answered**
Chosen Option : **B**

Q.21 The Symbol shown below is



(a) P channel JFET

(b) N channel JFET

(c) P channel depletion MOSFET

(d) N channel depletion MOSFET

Ans
✓ A. a
✗ B. b
✗ C. c
✗ D. d

Question ID : **1703225110**
Status : **Answered**
Chosen Option : **A**

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Q.22

Electrostatic effect is used in the measurement of

(a) Current

(b) Voltage

(c) inductance

(d) Resistance

Ans

✗ A. a

✓ B. b

✗ C. c

✗ D. d

Question ID : **1703225126**
Status : **Answered**
Chosen Option : **B**

Q.23

For a full Adder

(a) Sum = $XY \oplus YZ \oplus ZX$

Carry = X.Y.Z

(b) Sum = X.Y.Z

Carry = $X \oplus Y \oplus Z$

(c) Sum = $X \oplus Y \oplus Z$

Carry = X.Y.Z

(d) Sum = $X \oplus Y \oplus Z$

Carry = XY + YZ + ZX

Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225117**
Status : **Answered**
Chosen Option : **D**

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Q.24 The _____ layer is the lowest layer in the OSI Model

(a) Application

(b) Session

(c) Transport

(d) Physical

Ans

✗ A. a

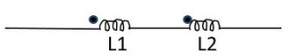
✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225097**
Status : **Answered**
Chosen Option : **D**

Q.25 If 'M' is the mutual inductance between two coils connected in series cumulatively coupled, the equivalent inductance is



(a) Leq = L1 + L2 + 2M

(b) Leq = L1 – L2 – 2M

(c) Leq = L1 + L2 – 2M

(d) None of the above

Ans

✓ A. a

✗ B. b

✗ C. c

✗ D. d

Question ID : **1703225112**
Status : **Answered**
Chosen Option : **A**

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Q.26 Which of the following are themselves a collection of different data types?

(a) String

(b) Char

(c) Structure

(d) All the above

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225108**
Status : **Answered**
Chosen Option : **C**

Q.27 Which of the following diode exhibits negative resistance in its I-V characteristics?

(a) Schottky diode

(b) PIN diode

(c) Voltage variable capacitor diode

(d) Tunnel diode

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225086**
Status : **Answered**
Chosen Option : **D**

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Q.28

Encryption is for

(a) Security of data

(b) Correctness of data

(c) Saving bandwidth

(d) Faster decoding

Ans

✔ A. a

✘ B. b

✘ C. c

✘ D. d

Question ID : **1703225100**
Status : **Answered**
Chosen Option : **A**

Q.29

The colour of light emitted by a LED depends on

(a) Its forward bias voltage

(b) Its reverse bias voltage

(c) Value of series resistance in the circuit

(d) Type of semiconductor material

Ans

✘ A. a

✘ B. b

✘ C. c

✔ D. d

Question ID : **1703225075**
Status : **Answered**
Chosen Option : **D**

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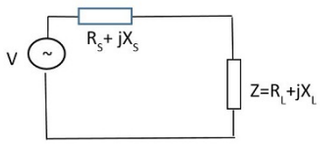
Q.30 For the circuit given below maximum power P_{max} transferred to Load Z when



(a) $R_s = R_L^2$

(b) $R_s = X_L$ and $X_L = -R_L$

(c) $R_s = 2R_L$

(d) $R_s = R_L$ and $X_L = -X_S$

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225113**
Status : **Answered**
Chosen Option : **D**

Q.31 When the EB junction of a transistor is reverse biased then collector current

(a) Zero

(b) very high

(c) equal to saturation current

(d) Reversed

Ans
✓ A. a
✗ B. b
✗ C. c
✗ D. d

Question ID : **1703225076**
Status : **Answered**
Chosen Option : **D**

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Q.32

A metastable state occurs when

(a) Rise time is less than fall time

(b) Propagation time is more

(c) Setup/hold time requirement for flip- flop is violated

(d) Operating temperature is high

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225120**
Status : **Answered**
Chosen Option : **C**

Q.33

The centre of gravity of a solid right circular cone of height 'h' lies in its axis at a distance of _____ from its base:

(a) h

(b) h/2

(c) h/3

(d) h/4

Ans
✗ A. a
✗ B. b
✗ C. c
✓ D. d

Question ID : **1703225088**
Status : **Not Answered**
Chosen Option : **--**

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Q.34 A JFET has disadvantage of

(a) very high power consumption

(b) Possessing positive temperature coefficient

(c) Having small gain bandwidth product

(d) Having low input impedances

Ans
- ✗ A. a
- ✗ B. b
- ✓ C. c
- ✗ D. d

Question ID : **1703225078**
Status : **Answered**
Chosen Option : **C**

Q.35 Satellite power generation is through

(a) Solar cells

(b) Dry cells

(c) Nickel cadmium cells

(d) Lead acid batteries

Ans
- ✓ A. a
- ✗ B. b
- ✗ C. c
- ✗ D. d

Question ID : **1703225107**
Status : **Answered**
Chosen Option : **D**

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Q.36 In an N-type semiconductor, there are

(a) No minority carrier

(b) Immobile negative ion

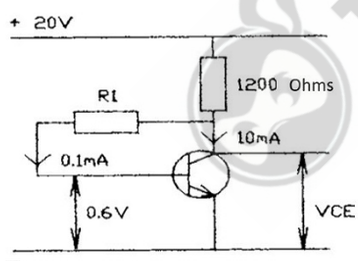
(c) Immobile positive ion

(d) Holes as majority carrier

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225072**
Status : **Answered**
Chosen Option : **C**

Q.37 The diagram shows a transistor amplifier with an alternative biasing arrangement. The voltage V_{CE} is



(a) 6.95 V

(b) 7.88 V

(c) 8.64 V

(d) 9.38 V

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225094**
Status : **Answered**
Chosen Option : **B**

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Q.38

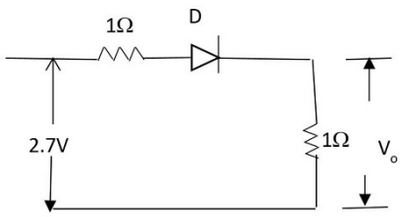
If D is a silicon diode, V_o is

(a) 0V

(b) 2V

(c) 0.7V

(d) 1V



Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225111**
Status : **Answered**
Chosen Option : **D**

Q.39

10 pF capacitor is connected to a 50V battery. How much Electrostatic energy is stored in the capacitor?

(a) $1.5*10^{-08}$ J

(b) $1.25*10^{-08}$ J

(c) $1.75*10^{-08}$ J

(d) $1.37*10^{-7}$ J

Ans

✗ A. a

✓ B. b

✗ C. c

✗ D. d

Question ID : **1703225131**
Status : **Answered**
Chosen Option : **B**

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Q.40 State the octal equivalent of hexa decimal number $(B35)_{16}$?

(a) $(6454)_8$

(b) $(4564)_8$

(c) $(5465)_8$

(d) $(5645)_8$

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225095**
Status : **Answered**
Chosen Option : **C**

Q.41

The unit of resistivity

(a) Ohm

(b) Ohm-meter

(c) Impedance

(d) Farad

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225122**
Status : **Answered**
Chosen Option : **B**

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Q.42

1 Watt is equal to

(a) $10\ Js^{-1}$

(b) 1Js

(c) $1Js^{-1}$

(d) 10 Js

Ans

✗ A. a

✗ B. b

✓ C. c

✗ D. d

Question ID : **1703225092**
Status : **Answered**
Chosen Option : **C**

Q.43

A transmission line can be represented as

(a) a circuit which contains R & L in series and G & C in shunt.

(b) a circuit which contains R & G in series and L & C in shunt.

(c) a circuit which contains R & C in series and G & L in shunt.

(d) None of these

Ans

✓ A. a

✗ B. b

✗ C. c

✗ D. d

Question ID : **1703225085**
Status : **Answered**
Chosen Option : **A**

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Q.44 Two's complement of a certain binary number is 11100101. The binary number is _____

(a) 00011011

(b) 00011010

(c) 11100110

(d) Indeterminate from given data

Ans ✔ A. a

✘ B. b

✘ C. c

✘ D. d

Question ID : **1703225079**
Status : **Answered**
Chosen Option : **A**

Q.45 Of the logic families mentioned below, the one which consumes the least power is_____.

(a) Low power TTL

(b) Low power Schottky TTL

(c) CMOS

(d) ECL

Ans ✘ A. a

✘ B. b

✔ C. c

✘ D. d

Question ID : **1703225083**
Status : **Answered**
Chosen Option : **C**

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Q.46

Main use of emitter follower is as

(a) Power amplifier

(b) Impedance matching device

(c) Low-input impedance circuit

(d) High voltage gain

Ans

✗ A. a

✓ B. b

✗ C. c

✗ D. d

Question ID : **1703225077**
Status : **Answered**
Chosen Option : **B**

Q.47

Different starting methods of three phase synchronous motors.

(a) By using an Induction (Pony) motor

(b) By using a DC Machine / Source

(c) By using Damper windings

(d) All of the above

Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225101**
Status : **Answered**
Chosen Option : **D**

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Q.48

Avalanche break down is primarily dependant on the phenomenon of

(a) Collision

(b) Doping

(c) Re-combination

(d) None of the above

Ans
✔ A. a
✘ B. b
✘ C. c
✘ D. d

Question ID : **1703225073**
Status : **Answered**
Chosen Option : **A**

Q.49

Minimum number of bits needed to address 2000 memory location are

(a) 9

(b) 10

(c) 11

(d) 12

Ans
✘ A. a
✘ B. b
✔ C. c
✘ D. d

Question ID : **1703225118**
Status : **Answered**
Chosen Option : **C**

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Q.50

Purpose of wait state is used to interface microprocessor with

(a) Interrupt

(b) Increase the speed of operation

(c) Slow devices

(d) None of the above

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225121**
Status : **Answered**
Chosen Option : **C**

Q.51

A series resonance circuit has a bandwidth of 2kHz. If the existing coil is replaced with one having higher Q, the bandwidth will_____.

(a) Increase

(b) Decrease

(c) Remain unaffected

(d) None of the above

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225084**
Status : **Answered**
Chosen Option : **B**

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Q.52

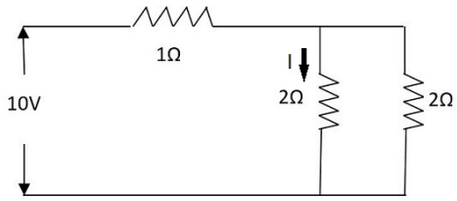
Current I through 2Ω resistor is

(a) 10A

(b) 2A

(c) 5A

(d) 2.5A



Ans

✗ A. a

✗ B. b

✗ C. c

✓ D. d

Question ID : **1703225114**
Status : **Answered**
Chosen Option : **D**

Q.53

The value of zener current is

(a) Determined by zener voltage

(b) Independent of temperature

(c) Limited by external circuit resistance

(d) Independent of circuit resistance

Ans

✗ A. a

✗ B. b

✓ C. c

✗ D. d

Question ID : **1703225074**
Status : **Answered**
Chosen Option : **C**

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Q.54 Lissajous figures are used for measuring

(a) Current

(b) Frequency

(c) Voltage

(d) Resistance

Ans

✗ A. a

✓ B. b

✗ C. c

✗ D. d

Question ID : **1703225098**
Status : **Answered**
Chosen Option : **B**

Q.55 An SCR is turned off by

(a) Reducing anode voltage to zero

(b) Removing gate signal

(c) Reverse biasing the gate

(d) All the above

Ans

✓ A. a

✗ B. b

✗ C. c

✗ D. d

Question ID : **1703225103**
Status : **Answered**
Chosen Option : **D**

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Q.56 A function f(t) said possess even symmetry if

(a) $f(-t) = -f(t)$

(b) $f(t) = f(-t)$

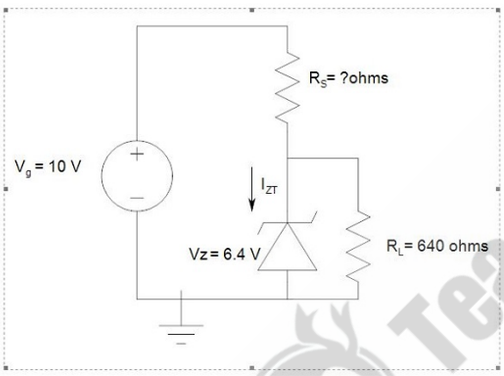
(c) $f(t) = 2f(-t)$

(d) $f(t) = f(-t)^2$

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225125**
Status : **Answered**
Chosen Option : **B**

Q.57 In the Zener diode regulator circuit given below, find the value of series resistor Rs for providing I_{ZT}=10mA



(a) 1000 ohms

(b) 1800 ohms

(c) 180 ohms

(d) 100 ohms

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225082**
Status : **Answered**
Chosen Option : **C**

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Q.58 Mod-12 counter needs

(a) 3 flip flops

(b) 4 flip flops

(c) 12 flip flops

(d) 11 flip flops

Ans
✗ A. a
✓ B. b
✗ C. c
✗ D. d

Question ID : **1703225129**
Status : **Answered**
Chosen Option : **B**

Q.59 BiCMOS technology is integration of

(a) CMOS and FET

(b) MOSFET and CMOS

(c) BJT and CMOS

(d) BJT and MOSFET

Ans
✗ A. a
✗ B. b
✓ C. c
✗ D. d

Question ID : **1703225099**
Status : **Answered**
Chosen Option : **C**

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Q.60

(A+B.C).(A+B^{I}+C^{I}) would simplify to _____

(a) A

(b) A+B^{I}+C^{I}

(c) A+B.C

(d) A.B.C

Ans

✔ A. a

✘ B. b

✘ C. c

✘ D. d

Question ID : **1703225080**
Status : **Answered**
Chosen Option : **A**

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