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यू. आर. राव उपग्रह केंद्र, बेंगलूरु

भारतीय अंतरिक्ष अनुसंधान संगठन  
Indian Space Research Organisation



## 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  $(A+B.C).(A+B^I+C^I)$  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

**Q.2**

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

**Q.3**

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



Q.4

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

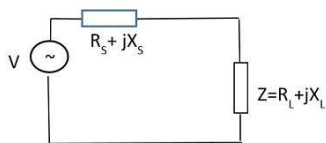
Ans  A. a  
 B. b  
 C. c  
 D. d

Question ID : 1703225074

Status : Answered

Chosen Option : C

Q.5

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.6

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

Q.7

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.8** 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.9** 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 : B



Q.10

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.11

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 : A

Q.12

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.13

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





**Q.14** 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

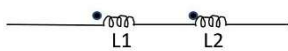
D. d

Question ID : 1703225106

Status : Answered

Chosen Option : D

**Q.15** 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

**Q.16** 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.17** 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.18

Minimum number of bits needed to address 2000 memory location are

- (a) 9
- (b) 10
- (c) 11
- (d) 12

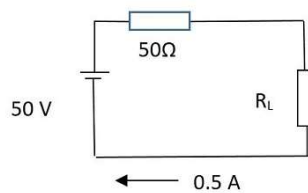
Ans  A. a  
 B. b  
 C. c  
 D. d

Question ID : 1703225118

Status : Answered

Chosen Option : C

Q.19

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

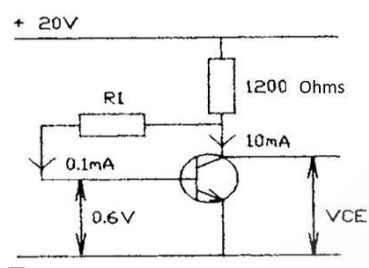
**Q.20** An ideal operational amplifier should have.

- (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

**Q.21** 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

Q.22

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 : C

Q.23

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 : A



**Q.24** 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 : B

**Q.25** 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

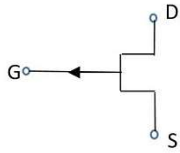
Question ID : 1703225100

Status : Answered

Chosen Option : A



Q.26 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

Q.27 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

**Q.28** The impedance at resonant frequency of a series RLC circuit with  $L=20\text{mH}$ ,  $C=0.02\mu\text{F}$  and

$R=180\Omega$  is

- (a)  $0\Omega$
- (b)  $90\Omega$
- (c)  $20\Omega$
- (d)  $180\Omega$

**Ans**  A. a  
 B. b  
 C. c  
 D. d

Question ID : 1703225093

Status : Answered

Chosen Option : D

**Q.29**

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.30

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.31

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

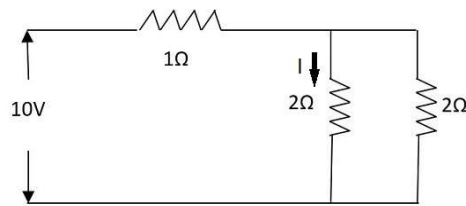
Chosen Option : B



Q.32

Current  $I$  through  $2\Omega$  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.33

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

Q.34 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.35 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.36** 10 pF capacitor is connected to a 50V battery. How much Electrostatic energy is stored in the capacitor?

- (a)  $1.5 \times 10^{-8}$  J
- (b)  $1.25 \times 10^{-8}$  J
- (c)  $1.75 \times 10^{-8}$  J
- (d)  $1.37 \times 10^{-7}$  J

**Ans**  A. a  
 B. b  
 C. c  
 D. d

Question ID : 1703225131  
Status : Answered  
Chosen Option : B

**Q.37** 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.38

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

Q.39

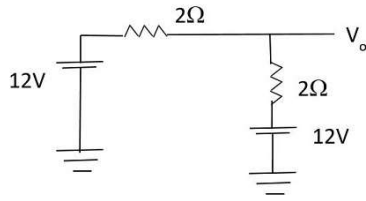
1 Watt is equal to

- (a)  $10 \text{ Js}^{-1}$
- (b) 1Js
- (c)  $1 \text{ Js}^{-1}$
- (d) 10 Js

Ans  A. a  
 B. b  
 C. c  
 D. d

Question ID : 1703225092  
Status : Answered  
Chosen Option : C

Q.40

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

Q.41

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.42** 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.43** 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

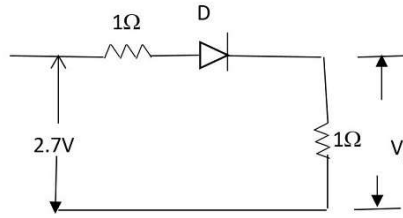
Question ID : 1703225108  
Status : Answered  
Chosen Option : C



Q.44

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.45

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

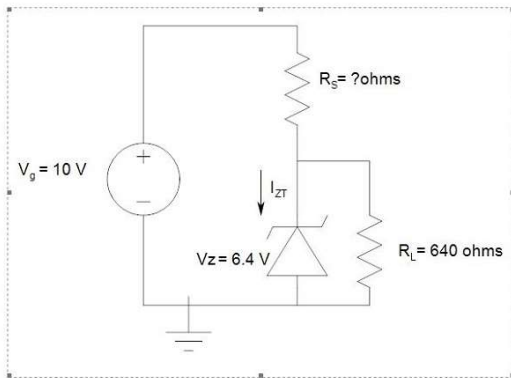
Status : Answered

Chosen Option : D



Q.46

In the Zener diode regulator circuit given below, find the value of series resistor  $R_s$  for providing  $I_{ZT}=10\text{mA}$



- (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

Q.47

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 : A

**Q.48** 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.49** 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.50** 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.51** 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.52** 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.53** The equality  $(A+B+C)^I = A^I \cdot B^I \cdot C^I$  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

**Q.54** 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 : Answered  
Chosen Option : C

**Q.55** 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.56** 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

**Q.57** 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

Q.58

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.59

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



**Q.60** 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 : C



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