



- Q-1 Two resistances, each of $10\ \Omega$ and $20\ \Omega$, are connected in parallel across a dc voltage source. The current through the $10\ \Omega$ resistance is
- A equal to the current supplied by the voltage source
- B equal to the current through the $20\ \Omega$ resistance
- C 50% of the current through the $20\ \Omega$ resistance
- D 200% of the current through the $20\ \Omega$ resistance**

Correct Answer : D

- Q-2 The voltage phasor of a circuit is $10\angle 15^\circ\text{V}$ and the current phasor is $2\angle -45^\circ$. The active and reactive powers in the circuit are

- A 10W and 17.32 VAR**
- B 5 W and 8.66 VAR
- C 20W and 60 VAR
- D 28.28W and 14.14 VAR

Correct Answer : A

- Q-3 Which of the following is an essential system of measuring instrument working on the principles of magnetic and electromagnetic induction?

- A moving mechanism
- B controlling system
- C damping system
- D all of these**

Correct Answer : D

- Q-4 The system with the following characteristic equation $(s + 1)(s + 2)(s - 3) = 0$ is

- A unstable**
- B stable
- C marginally stable
- D not necessarily stable

Correct Answer : A

- Q-5 Which of the following systems provides good performance if off-set is to be eliminated?

- A proportional action
- B proportional plus integral action**
- C proportional plus differential action
- D none of these

Correct Answer : B

- Q-6 The state variable description of a linear system is $\dot{X} = AX$ where X is state vector and $A = \begin{bmatrix} 0 & 2 \\ -2 & 0 \end{bmatrix}$. The poles of the system are located at

- A -2 and +2
- B -2 and -2
- C +2 and +2
- D +2j and -2j**

Q-14 When a UJT is used for triggering an SCR, the waveshape of the voltage obtained from UJT circuit is a

- A Sine wave
B **Saw-tooth wave**
C Trapezoidal wave
D Square wave

Correct Answer : B

Q-15 The 2's complement representation in 8-bit format is 11001110. The equivalent hexadecimal representation is

- A **-32**
B +32
C -52
D +52

Correct Answer : A

Q-16 The output of a logic gate is '1' when all its inputs are at logic '0'. Then the gate is either

- A a NAND or an exclusive-OR gate
B **a NOR or an exclusive-NOR gate**
C an OR or an exclusive-NOR gate
D an AND or an exclusive-OR gate

Correct Answer : B

Q-17 Complement of data can be obtained from

- A NOR gate by controlling the input by either setting LOW or having same to data.
B NAND gate by controlling the input by either setting HIGH or having same to data.
C EX-NOR gate by controlling the input by either setting LOW to data.
D **All above**

Correct Answer : D

Q-18 Which of the following codes exhibit even parity?

- A 10011000
B **01111000**
C 11111110
D 10001001

Correct Answer : B

Q-19 Binary subtraction using one's complements method considers result in one's complement form if

- A carry is 1
B **carry is 0**
C carry 0 after adding it to result
D All above

Correct Answer : B

Q-20 What is the size of decoder circuit needed to design 16-to-1 line multiplexer?

- A 2-to-4 lines decoder
B 3-to-8 lines decoder
C **4-to-16 lines decoder**
D 5-to-32 lines decoder

Correct Answer : C

Q-21 How many 1-to-4 lines Demultiplexers are needed to design 1-to-256 lines Demultiplexer?

- A 64
B **85**
C 128
D 256

Correct Answer : B

Q-22 32 number of 512×1-bit RAM IC are arranged in 4 rows and 8 columns to get memory of

Q-36 A digital voltmeter has a read-out range from 0 to 9999 counts. The resolution of the instrument in volt when full scale reading is 9.999V is

- A 10 mV
B **1 mV**
C 0.1 mV
D 0.01 mV

Correct Answer : B

Q-37 The advantage of Hay's bridge over Maxwell's Inductance capacitance bridge is because

- A It's equation for balance do not contain any frequency term.
B **It can be used for measurement of inductance of high Q coils.**
C It can be used for measurement of inductance of low Q coils.
D All the above

Correct Answer : B

Q-38 The period of signal $x(t) = 8 \sin(0.8\pi t + \pi/4)$ is

- A 0.4π seconds
B 0.8π seconds
C **2.5 seconds**
D 1.25 seconds

Correct Answer : C

Q-39 Which of the following is used to measure the leakage resistance of a capacitance?

- A Megger
B **Schering bridge**
C Potentiometer
D Wagner's earthing device

Correct Answer : B

Q-40 A d' Arsonal movement has a sensitivity of 40000 ohm/volt and its internal resistance is 4000 ohm. The resistance of multiplier to convert it to 1 Volt voltmeter is

- A 44000 ohm
B **36000 ohm**
C 3600 ohm
D 4400 ohm

Correct Answer : B

Q-41 There are two PMMC voltmeters. Meter A has a range of 0-10V and a multiplier resistance of 18 kilo ohm. Meter B has a range of 0-300V and a multiplier resistance of 298 kilo ohm. Both the meter movements have a resistance of 2 kilo ohm. Out of the above two meters mentioned, the meter having greater sensitivity is

- A **Meter A**
B Meter B
C Both are equally sensitive
D can't be determined

Correct Answer : A

Q-42 Thermocouple instruments can be used for a frequency range

- A upto 100 Hz
B upto 5 kHz
C upto 1 MHz
D **upto 50 MHz and above**

Correct Answer : D

Q-43 Electrostatic type instruments are primarily used as

- A Ammeters
B **Voltmeters**
C Wattmeters
D Ohmmeters

Q-44 Three types of temperature transducers are compared as regard to their sensitivity. The order in which they exhibit their sensitivities (highest to lowest) is

- A Thermistors, RTDs, and Thermocouples** B Thermocouples, RTDs, and Thermistors
 C RTDs, Thermistors, and Thermocouples D RTDs, Thermocouples, and Thermistors

Correct Answer : A

Q-45 Rotameter is used for measuring

- A viscosity B specific gravity
C flow rate D none of these

Correct Answer : C

Q-46 In transformers, which of the following statements is valid?

- A In an open-circuit test, copper losses are obtained while in short-circuit test, core losses are obtained. **B In an open-circuit-test, current is drawn at low power factor.**
 C In an open-circuit-test, current is drawn at high power factor. D In a short-circuit test, current is drawn at zero power factor.

Correct Answer : B

Q-47 A transfer function has two zeros at infinity. Then the relation between the numerator degree (N) and the denominator (M) of transfer function is

- A $N=M + 2$ **B $N=M - 2$**
 C $N=M + 1$ D $N=M - 1$

Correct Answer : B

Q-48 If the open loop transfer function of negative feedback control system is

$$G(s)H(s) = \frac{K}{(s + 1)^3}$$

then the gain K for a closed loop pole to be at

$$\left(-\frac{1}{2} + j\frac{\sqrt{3}}{2}\right) \text{ is}$$

- A 1** B 2
 C 3 D 4

Correct Answer : A

Q-49 As compared to closed loop system, an open loop system is

- A more stable but less accurate **B less stable as well as less accurate**
 C more stable as well as more accurate D less stable but more accurate

Correct Answer : B

Q-50 How can the steady-state error in a system be reduced?

- A By decreasing the type of system
B **By increasing system gain**
C By decreasing the static error constant
D By increasing the input

Correct Answer : B

Q-51 An amount is invested at 10% per annum compound interest for 2 years, and the interest earned is Rs. 840. What is the principal amount?

- A Rs. 3500
B Rs. 4500
C **Rs. 4000**
D Rs. 5000

Correct Answer : C

Q-52 In covering a distance of 30 km, A takes 2 hours more than B. If A doubles his speed, then he would take 1 hour less than B. A's speed is:

- A **5 km/h**
B 7 km/h
C 9 km/h
D 10 km/h

Correct Answer : A

Q-53 Fill the blank in the middle of the following series.
SCD, TEF, UGH, _____, WKL

- A CMN
B UJI
C **VIJ**
D IJT

Correct Answer : C

Q-54 The Chandrayaan 3 mission's rover is known as

- A PSLV
B **Pragyaan**
C Dhruv
D Vikram

Correct Answer : B

Q-55 We were very tired, So we _____ early.

- A Leave
B Leaving
C **Left**
D Lost

Correct Answer : C

Q-56 Consider the system of linear equations

$$x+2y-3z=-2,$$

$$3x-y+4z=3,$$

$$6x+5y+\lambda z=-3$$

where x, y, z are the variables and λ is a constant.

Then which one of the following is true ?

- A If $\lambda=5$, then system has unique solution
B **If $\lambda=5$, then system has infinitely many solutions**
C If $\lambda=5$, then system has no solution
D System is inconsistency for any value of λ

Correct Answer : B

Q-57 Evaluate double integral $\int_0^{\infty} \int_x^{\infty} \frac{e^{-y}}{y} dy dx$.

- A 0
C -2
- B 1
D 2

Correct Answer : B

Q-58 Using Newton's iterative method with initial approximation $x_0 = 2$, the root of the equation $x^3 - 2x - 8 = 0$ after one iteration is

- A 2.40
C 2.12
- B 2.33
D 2.50

Correct Answer : A

Q-59 Find the directional derivative of $F(x, y, z) = x^2yz + 4xz^2$ at $(1, -2, -1)$ in the direction of vector $2\hat{i} - \hat{j} - 2\hat{k}$.

- A 31/3
C 37/3
- B 35/3
D 38/3

Correct Answer : C

Q-60 The general solution of the first order differential equation $\frac{dy}{dx} + 2y \tan x = \sin x$ is

- A $y = \sin x + k \cos^2 x$
- B $y = \sin x + k \sin^2 x$
- C $y = \cos x + k \sin^2 x$
- D $y = \cos x + k \cos^2 x$

Correct Answer : D