IAT-1 EEM 2020

For A and B sections

The respondent's email address (**udch19ee@cmrit.ac.in**) was recorded on submission of this form.

To increase the Q factor of a coil, the wire should be * 1 point

- long
- thin
- thick
- long and thin

USN *

1CR19EE086

Name(IN CAPITAL LETTERS)

UDAY KIRAN CHINTALA

Assertion (A): De sauty's bridge is suitable only for a pure capacitor.Reason (R): Capacitors are mostly perfect. * 1 point

- ( ) Both A and R are true and R is correct explanation of A
- ( ) Both A and R are true but R is not correct explanation of A
- (•) A is true R is false
- ( ) A is false R is true

In the simplest form, an AC bridge consists of _____ * 1 point

- (•) a) arms, source and a detector
- ( ) b) arms and source
- ( ) c) source and detector
- ( ) d) arms and detector

At high frequency, source consists of _____ * 1 point

- ( ) a) amplifiers
- ( ) b) regulators
- (•) c) oscillators
- ( ) d) op amps

Commonly used balance detectors for AC bridges are headphones, tuned amplifiers, and vibration galvanometers. * 1 point

- [x] a) True
- [ ] b) False

AC bridge is an outcome of _____ * 1 point

- [ ] a) Kelvin bridge
- [ ] b) Megger
- [ ] c) De Sauty bridge
- [x] d) Wheatstone bridge

When the bridge is balanced, what is the current flowing through the galvanometer? * 1 point

- [ ] a) 0
- [x] b) depends on the ratio arms R1 and R2
- [ ] c) varies by a factor of 2
- [ ] d) depends on the type of null detector used

Amount of deflection of the galvanometer depends on _____ * 1 point

- a) resistance of the ratio arms
- b) sensitivity
- c) current flowing through the bridge
- d) emf across the circuit

Sensitivity is defined as _____ * 1 point

- a) amount of voltage per unit current
- b) amount of power per unit voltage
- c) amount of resistance per unit voltage
- d) amount of deflection per unit current

Sensitivity is expressed in _____ * 1 point

- a) cm/A
- b) m/mA
- c) mm/μA
- d) inch/nA

What is the relation between the sensitivity and deflection for a galvanometer? * 1 point

- (●) a) directly proportional
- ( ) b) inversely proportional
- ( ) c) independant of each other
- ( ) d) depends on the type of galvanometer used

The voltage sensitivity of a galvanometer is given by _____ * 1 point

- ( ) a) Sv = e/θ
- (●) b) Sv = θ/e
- ( ) c) Sv = ¹/e
- ( ) d) Sv = ¹/θ

Unit of voltage sensitivity is _____ * 1 point

- (●) a) volts per degrees
- ( ) b) amps per ohms
- ( ) c) degrees per volts
- ( ) d) watts per amps

Bridge sensitivity is defined as _____ * 1 point

- a) SB=θ/R
- b) SB=θ/ΔR
- c) SB=1/(ΔR/R)
- d) SB=θ/(ΔR/R)

High resistances are of the order of _____ * 1 point

- a) 0.1 MΩ
- b) 10 mΩ
- c) 1 kΩ
- d) 10 GΩ

Megger is a _____ * 1 point

- a) source of e.m.f
- b) source to measure high resistance
- c) type of a null detector
- d) current carrier

Megger is also used for _____ * 1 point

- a) providing additional e.m.f
- b) bridge balance
- c) testing insulation resistance
- d) controlling the temperature

Megger works on the principle of _____ * 1 point

- a) kirchhoff's current laws
- b) ohm's law
- c) gauss's law
- d) electromagnetic induction

Kelvin's bridge consists of _____ * 1 point

- a) double bridge
- b) single bridge
- c) half bridge
- d) three fourth bridge

What is the balance equation of the Kelvin bridge? * 1 point

- [x] a) Rx = R2R3/R1
- [ ] b) Rx = R1R2/R3
- [ ] c) Rx = R1/R2
- [ ] d) Rx = R1R3/R2

What is the effect of load and contact resistance in the Kelvin bridge? * 1 point

- [x] a) independent
- [ ] b) fully dependent
- [ ] c) partially dependent
- [ ] d) depends on the resistance value

The relation between the ratio of resistance arms and the ratio of resistance arms of the second bridge is _____ * 1 point

- [ ] a) unequal
- [x] b) equal
- [ ] c) twice
- [ ] d) one forth

Why Kelvin bridge is used for measurement of low resistance? * 1 point

- a) due to e.m.f source used
- b) due to a large current flow
- c) due to contact and lead resistance
- d) due to power dissipation across the circuit

Why can't a Kelvin bridge be used for the measurement of low-Quality factor value? * 1 point

- a) due to thermoelectric effect
- b) due to balance problem
- c) due to the dull detector used
- d) due to temperature

How is the condition of an earth electrode measured? * 1 point

- a) by measuring the voltage
- b) by measuring the current
- c) by measuring the power
- d) by measuring resistance

After earthing, the different parts of an electrical machinery are at _____ * 1 point

- a) infinite potential
- b) intermediate potential
- c) zero potential
- d) undefined potential

Connection of the various parts of a circuit to earth has a _____ * 1 point

- a) medium resistance
- b) high resistance
- c) very high resistance
- d) very low resistance

What is an earth electrode? * 1 point

- a) electrode that is connected to earth
- b) material used for earthing
- c) electrode connected to the circuit
- d) electrode which is connected to the mains

At very low frequencies in a AC bridge, the source is _____ * 1 point

- [x] a) power line
- [ ] b) e.m.f
- [ ] c) galvanometer
- [ ] d) tuned circuit

At high frequencies in an AC bridge, the source is _____ * 1 point

- [ ] a) tuned amplifiers
- [x] b) oscillators
- [ ] c) vibration galvanometer
- [ ] d) high voltage source

How many coils are required in the megger? * 1 point

- [ ] a) One
- [ ] b) four
- [x] c) Two
- [ ] d) Five

What will be the reading of megger if the measuring terminals are open-circuited? * 1 point

- [x] a) Infinity
- [ ] b) 500 ohms
- [ ] c) Zero
- [ ] d) 10,000 ohms

The bridge by which inductance is measured in terms of capacitance and resistance is called * 1 point

- [ ] a) Maxwell-Wein bridge
- [ ] b) Wein bridge
- [x] c) Anderson bridge
- [ ] d) Schering bridge

Which of the following instrument can be used in ac bridges for lesser frequencies up to 200 Hz only? * 1 point

- [ ] Headphone
- [ ] Tunable amplifier detector
- [x] Vibration galvanometer
- [ ] All of the above

Maxwell bridge is used to measure * 1 point

- Resistance
- Inductance
- Capacitance
- Frequency

..... bridge is used for measuring an unknown inductance in terms of a known capacitance and resistance. * 1 point

- (a) Maxwell's L/C
- (b) Hay's
- (c) Owen
- (d) Anderson

Hay's bridge is particularly useful for measuring * 1 point

- (a) inductive impedance with large phase angle
- (b) mutual inductance
- (c) self inductance
- (d) capacitance and dielectric loss

The most useful ac bridge for comparing capacitances of two air capacitors is ..... bridge. * 1 point

- (a) Schering
- (b) De Sauty
- (c) Wien series
- (d) Wien parallel

Wheatstone bridge is used to find unknown * 1 point

- (a) resistance
- (b) reactance
- (c) inductance
- (d) capacitance

In an ac bridge, the null detector is usually * 1 point

- (a) a galvanometer
- (b) an ammeter
- (c) a head phone
- (d) a voltmeter

The capacitive reactance of a capacitor (XC) is given by the following equation * 1 point

- (a) XC = 1/fC
- (b) XC =1/(2πfC)
- (c) XC = 2π/fC
- (d) XC = 2πf/C

Hay bridge is suitable for the coils having a Quality factor * 1 point

- (a) Q > 10
- (b) Q < 10
- (c) Q = 10
- (d) Q < 1

Kelvin double bridge uses Standard resistance = 100 milliohms, Inner ratio arms = 15 Ohm and 30 Ohm, Outer ratio arms = 40 W and 60 W .If the resistance of the connecting leads from standard to unknown resistance is 800 mOhms. Calculate the unknown resistance under this condition. * 2 points

- 100.6 milli-ohms
- 151.28 milli-ohms
- 100.6 micro-ohms
- 151.28 micro-ohms

The four impedances of an ac bridge are Z1 = 500 < 40° ohm,Z2 = 100 < −90° ohm, Z3 = 45 < 20° ohm, Z4 = 30 < 30° ohm. Find out the bridge is balance condition. * 2 points

- ○ Phase condition satisfied,magnitude condition satisfied and Bridge balance
- ◉ Phase condition unsatisfied,magnitude condition satisfied and Bridge balance
- ○ Phase condition satisfied,magnitude condition unsatisfied and Bridge unbalance
- ○ Phase condition satisfied,magnitude condition satisfied and Bridge unbalance

The arms of a four-arm bridge a, b, c, and d supplied with sinusoidal voltage have the following values. arm ab: A resistance of 800 ohms in parallel with a capacitance of 2 micro-Farad, bc: 400 ohms resistance, arm cd: 1 kilo-ohm resistance, arm da: A resistance R2 in series with 2 micro-Farad capacitance. Determine the value of R2 and frequency at which the bridge will balance. * 2 points

- ○ R2=1.6Kohms and Frequency= 86.6 Hz
- ○ R2=1.2Kohms and Frequency= 72.6 Hz
- ◉ R2=1.2ohms and Frequency= 50 Hz
- ○ R2=1.2 ohms and Frequency= 72.6 Hz

In Maxwell's capacitance bridge for calculating unknown inductance, the various values at balance are, R1 = 300 Ω, R2 = 700 Ω, R3 = 1500 Ω, C4 = 0.8 μF. Calculate R1, L1, and Q factor, if the frequency is 1100 Hz. * 2 points

- ○ a) 240 Ω, 0.12 H, 3.14
- ◉ b) 140 Ω, 0.168 H, 8.29
- ○ c) 140 Ω, 0.12 H, 5.92
- ○ d) 240 Ω, 0.36 H, 8.29