

EEE-101

ELECTRICAL ENGINEERING

SECTION A

OBJECTIVE QUESTIONS (PREPARED BY ANUSHWETA)

- Q1) Three resistances each of $R \Omega$ are connected to form a triangle. The resistance between any two terminals will be
a) $R \Omega$ b) $\frac{3}{2} R \Omega$ c) $3R \Omega$ d) $\frac{2}{3} R \Omega$
- Q2) A battery of emf 4V has an internal resistance of 0.2Ω . When a load resistance of 1.8Ω is connected across it, the potential difference across its terminals will be
a) 4V b) 3.6V c) 0 d) 2V
- Q3) The instantaneous value of current in ac circuit is represented by $150 \sin(2\pi \times 30t)$ the amplitude and frequency of the ac wave is equal to
a) $150\sqrt{2}$; 30 b) 150; 60 c) 150; 30 d) $150\sqrt{2}$; 60
- Q4) A sinusoidal current wave of amplitude 100A is passed successively through i) moving iron ammeter ii) moving coil ammeter, their readings will be
a) 100A; 70.7A b) 100A; 0A c) 70.7A; 0A d) 0A; 70.7A
- Q5) Two current waves $i_1 = I_{m1} \sin \omega t$; $i_2 = I_{m2} \sin(\omega t + 30^\circ)$. The current wave i_1 is
a) lagging the current i_2 by 30° b) leading the wave current i_2 by 30° c) in phase with current wave i_2 d) none of these
- Q6) The impedance of a series circuit is given by $(10 + j60) \Omega$. If the voltage applied across the circuit is 230V, 50Hz, the current flowing in the circuit is given by,
a) $(0.62 - j3.73) A$ b) 3.73A c) $(0.69 - j3.52) A$ d) $0.162 + j3.73$
- Q7) The average power in purely inductive circuit for one complete cycle is
a) $\frac{1}{2} E_m I_m$ b) EI c) zero d) $E_m I_m$

Q8) A resistance of $5\ \Omega$ is connected in series with a capacitance of $795.4\ \mu\text{F}$. The circuit is connected across a supply of $230\text{V}, 50\text{Hz}$. The power factor of this circuit is
a) 0.78 lagging b) 0.67 leading c) 0.78 leading d) 0.82 leading

Q9) The apparent power and active power drawn are equal for an ac circuit of
a) inductive type b) capacitive type c) resistive type
d) none of these

Q10) In RLC series circuit, the voltage across the inductance at resonant frequency with current I flowing in the circuit is given by

a) $V_L = I\sqrt{\frac{L}{C}}$ b) $V_L = I\frac{L}{C}$ c) $V_L = I\sqrt{\frac{C}{L}}$ d) none of these

Q11) In RLC series circuit is operating at electrical resonance, the phasor relationship between the current flowing in the circuit and the applied voltage is

a) current lags the applied voltage b) current leads the applied voltage
c) current is in phase with the applied voltage d) none of these

12) The bandwidth of a series resonant ac circuit is equal to
a) $\frac{L}{2\pi R}$ b) $\frac{1}{\pi\omega C}$ c) $\frac{1}{\pi RLC}$ d) $\frac{R}{2\pi L}$

13) The admittance of an electrical circuit is represented by $(10 - j12)$, implies the circuit is

a) inductive b) capacitive c) purely inductive d) none of these

14) In an RLC circuit, the power factor at resonance is
a) zero b) unity c) 0.5 d) 0.8

15) In a 3 phase system having the phase sequence RYB, the voltage of R phase is zero at a particular instant, magnitude of voltage of Y & B phase at the same

- instant will be

- a) zero b) maximum c) 50% of maximum d) 86.6% of Maximum

16) In a balanced 3 phase delta connected system, the relationship between the rms values of line currents & the phase current is given by

- a) $I_L = I_{ph}$ b) $I_L = \sqrt{3} I_{ph}$ c) $I_{ph} = \sqrt{3} I_L$ d) $I_L = \sqrt{2} I_{ph}$

17) For a 3 phase star connected balanced circuit having inductive load, the angle between the line currents and the corresponding line voltages is equal to

- a) 30° b) $30^\circ - \phi$ c) $30^\circ + \phi$ d) ϕ

18) In a 3 phase symmetrical balanced system, the sum of the instantaneous values of currents flowing in the three phases is given by

- a) $i_R + i_Y + i_B$ b) $i_R - i_Y - i_B$ c) $i_R - i_Y + i_B$ d) always zero

19) Power drawn by a 3 phase balanced load is given by

- a) $P = V_L I_L \cos \phi$ b) $P = \sqrt{3} V_L I_L$ c) $P = \sqrt{3} V_L I_L \cos \phi$ d) $P = \sqrt{3} V_p I_p \cos \phi$

20) The fixed coil of a wattmeter is normally called

- a) current coil b) pressure coil c) shunt coil

21) The scale in case of moving iron instruments is

- a) uniformly divided b) crowded at both ends c) crowded at its lower end and somewhat compressed at its higher end d) none of these

22) Among various types of measuring meters, the cheapest is

- a) moving coil b) moving iron c) induction d) thermal

23) ~~Induction~~ Cores and Yokes of the transformer are laminated to

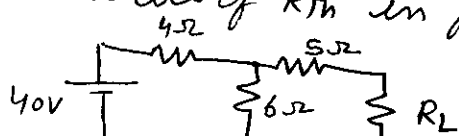
- a) reduce eddy current loss b) reduce hysteresis loss c) reduce both of the above d) reduce copper loss

- 24) Transformers basically work on
 a) mutual induction b) self induction c) dynamic induction
 d) none of these
- 25) A transformer is connected to the normal supply, however the load on the same is negligible. The losses occurring under this condition are
 a) eddy current loss b) hysteresis loss c) copper loss
 d) eddy current & hysteresis loss (iron loss)
- 26) The losses measured in a transformer, when it is operating at no load are 150W. Iron losses of this transformer at full load operation are
 a) 150W b) 180W c) 120W d) none of these
- 27) Rating of transformer is expressed in
 a) KVA b) KW c) HP d) Amperes
- 28) Copper losses at full load operation are 1600W. If the load on the transformer is reduced to 75% of full load, the copper loss will be
 a) 1600W b) 1200W c) 900W d) 800W
- 29) Power factor of a transformer is
 a) always lagging b) always leading c) about 0.9 lag
 d) depends on the power factor of load
- 30) Efficiency of ~~an~~ medium rating transformer is about
 a) 99.3% b) 89.9% c) 98% d) 95%
- 31) A particular transformer will operate at maximum efficiency when
 a) hysteresis loss = eddy current loss b) iron loss = copper loss
 c) hysteresis loss = iron loss d) none of these

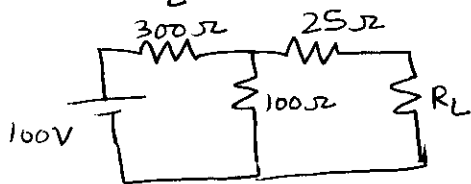
- 32) In a d.c machine, iron losses occur in
 a) pole b) armature c) yoke d) commutator
- 33) The emf generated by a given dc generator depends upon
 a) flux only b) speed only c) flux & speed
 d) terminal voltage & speed only
- 34) For a given dc motor, the speed depends upon
 a) flux only b) back emf c) applied voltage alone
 only
 d) back emf & flux
- 35) Direction of induced emf in d.c generator is given by
 a) Fleming's left hand rule b) Fleming's right hand rule
 c) Lenz's law d) none of these
- 36) For a d.c shunt motor the armature torque is proportional to
 a) I_a b) I_a^2 c) ϕI_a^2 d) ϕI_a
- 37) The stator of an alternator has 4 poles, the speed of the prime mover of this alternator should be
 a) 1500 rpm b) 3000 rpm c) 1000 rpm d) 750 rpm
- 38) In modern alternators rotating part is
 a) field system b) armature c) armature as well as field
- 39) A 3-phase induction motor is running at 1425 rpm, while supplying full load, its slip is given by
 a) 5% b) 4% c) 6.5% d) 4.5%
- 40) A 3 phase, 400V, 50Hz, 4 pole induction motor runs at a slip of 5%. The relative speed between the

rotor and stator magnetic fields is

- a) 1425 rpm b) zero c) 75 rpm d) 1500 rpm
- 41) If the full load slip of a 3 phase induction motor is 5%. The frequency of the rotor induced emf is
a) 2.5 Hz b) 50 Hz c) 5 Hz d) 25 Hz.
- 42) For high starting torque, the most suited 3 ϕ Induction motor is
a) squirrel cage b) slip ring c) any of the two
- 43) Torque developed by the rotor of a 3 phase induction motor at zero slip is
a) maximum b) 30% of full load c) 50% of full load
d) none of these
- 44) The starting torque of a single phase induction motor is
a) high b) low c) zero d) very low
- 45) An active element in a circuit is one which
a) receives energy b) supplies energy c) both receives & supplies energy d) none of the above
- 46) A linear circuit is one whose parameters
a) change with change b) change with change in voltage
c) do not change with voltage & current d) none of the above
- 47) The superposition theorem is used when the circuit contains
a) single voltage source b) number of voltage source
c) passive elements only d) none of the above
- 48) The value of R_{Th} in fig given is _____ Ω .



- 49) Find the value of R_L in following figure to max'm power in R_L



- 50) The B-H curve for _____ will be a straight line passing through the origin
- a) air b) soft iron c) hardened steel d) silicon steel
- 51) Hysteresis is the phenomenon of _____ in a magnetic circuit
- a) lagging of B behind H b) lagging of H behind B
c) setting up constant flux d) none of the above
- 52) Out of the following materials, the area of hysteresis loop will be least for
- a) wrought iron b) hard steel c) silicon steel d) soft iron
- 53) mmf in a magnetic circuit corresponds to _____ in an electric circuit
- a) voltage drop b) potential difference c) electric intensity
d) e.m.f
- 54) Mostly ~~used~~ _____ kV is adopted voltage for generation
- a) 3.3 kV, b) 6.6 kV, c) 11 kV, d) 33 kV
- 55) Secondary transmission is usually carried at _____ or 66 kV
- 56) 750 kV falls under the category of _____ voltage.