

UPSSSC-JE PRACTICE PAPER

BY RAMAN SIR

1. What is the atomic number of copper?

- (a) 24 (b) 25 (c) 29 (d) 31

2. The value of permittivity in free space will be

- (a) $8.854 \times 10^{-11} H / m$
(b) $8.854 \times 10^{-12} F / m$
(c) $8.854 \times 10^{-10} H / m$
(d) $8.854 \times 10^{-14} F / m$

ANS-b

3. What is the unit of thermodynamic temperature?

- (a) mol (b) centigrade
(c) Kelvin (d) Farnahite

4. Permanent magnet is made by

- (a) Aluminium Nickle Silver
(b) Aluminium Silver Cobalt
(c) Aluminium Nickle Cobalt
(d) All of the above

5. Unit of voltage will be

- (a) $\frac{Joule}{Coloumb}$ (b) $\frac{Coloumb}{Joule}$
(c) *Ampere* (d) *Tesla*

ANS-c

6. Initially a capacitor works as

- (a) Open circuit
(b) Short circuit
(c) Open/Short
(d) None of the above

7. What is the relation between magnetic flux density and magnetic flux intensity

- (a) $B = \mu H$ (b) $H = \mu B$
 (c) $B = \epsilon H$ (d) $H = \epsilon E$

8. The rating of battery expressed in

- (a) Watt-hour (b) **Ampere-hour**
 (c) Joule (d) Joule/sec

9. In a magnetic circuit if flux is 10 wb and mmf is 20 AT find the reluctance

- (a) $2 \frac{AT}{wb}$ (b) $2 \frac{wb}{AT}$
 (c) $20 \frac{AT}{wb}$ (d) $3 \frac{AT}{wb}$

ANS-a

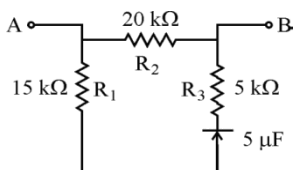
10. If a 220 V heater is used on 110 V supply, the heat produced by it will be nearly

- (a) one half (b) twice
 (c) **one-fourth** (d) four times

11. The reactance offered by a capacitor to an alternating current of frequency 50 Hz is 10 ohm. If frequency is increased to 100 Hz, the reactance will be

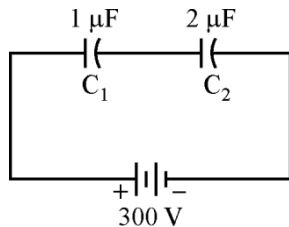
- (a) 2.5 ohm (b) **5.0 ohm**
 (c) 20.0 ohm (d) 40.0 ohm

12. In the following figure, the resistance measured across A and B will be



- (a) 5 k Ω (b) 10 k Ω
(c) 15k Ω (d) 20 k Ω

13. In the following figure, the voltage across C_1 will be



- (a) 100 V (b) 200 V
(c) 150 V (d) 300 V

14. The unit of relative permeability

- (a) No unit (b) H/m (c) F/m (d) Henery

15. Mutual inductance between two magnetically coupled coils depends

- (a) number of terms only
(b) permeability of the term only
(c) cross-sectional area of their common core only
(d) all of the above

16. For an RLC series AC circuit, the current at series resonance is

- (a) maximum at lagging power factor
(b) maximum at leading power factor
(c) maximum at unity power factor

(d) minimum at unity power factor

17. One coulomb is equal to

- (a) 3×10^{12} electrons
- (b) 3×10^{10} electrons
- (c) 3×10^{15} electrons
- (d) 6.28×10^{18} electrons

18. What will be the capacity of four capacitors of equal capacity 'C', when connected in series

- (a) 4C
- (b) C/4
- (c) C
- (d) 3/4C

19. The electric flux and field intensity inside a conducting sphere is

- (a) zero
- (b) maximum
- (c) uniform
- (d) minimum

20. Dielectric strength of a medium is usually expressed in

- (a) kV/mm
- (b) Coulombs/mm
- (c) Newton's/mm
- (d) Joules/sq.m.

21. The direction of the magnetic lines of forces is

- (a) from + to - charges
- (b) from south to north pole

(c) from one end of the magnet to the other

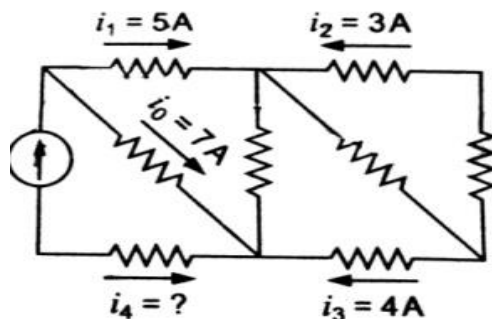
(d) from north to south pole

22. If the area of hysteresis loop of a material is large, the hysteresis loss in this material will be

(a) small (b) large

(c) zero (d) none of these

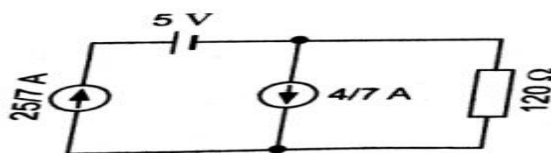
23. The current i_4 in the circuit of the figure is equal to



(a) 12A (b) -12A

(c) 4 A (d) None of these

24. The current through 120 ohm resistor in the circuit shown in the figure is

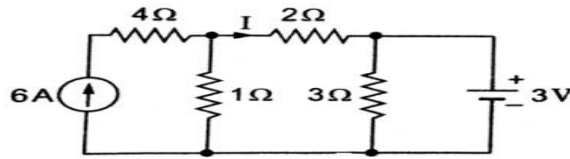


(a) 1 A (b) 2 A (c) 3 A (d) 4 A

25. In a BJT which layer is highly doped

(a) Emitter (b) Base (c) Collector (d) None of these

26. For the circuit shown in the figure, I is



- (a) 0 A (b) 1A (c) 2 A (d) 3 A

27. The superposition theorem is essentially based on the concept of

- (a) reciprocity (b) linearity
(c) duality (d) non-linearity

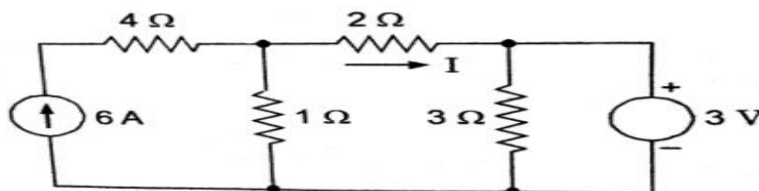
28. Superposition theorem is not applicable for

- (a) voltage calculations
(b) bilateral elements
(c) power calculations
(d) passive elements

29. Superposition theorem is applicable for:

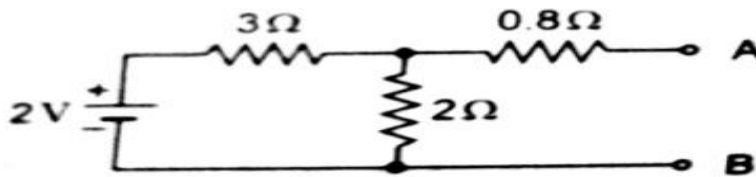
- (a) Linear circuits only
(b) Non-linear circuits only
(c) Linear and non-linear circuits both
(d) None of these

30. For the circuit shown in the given figure the current I is given by



- (a) 3 A (b) 2 A (c) 1 A (d) zero

31. The Norton equivalent between A and B for the circuit is



- (a) 2 A and 2.5 Ω (b) 0.5 A and 1 Ω
 (c) 1 A and 2 Ω (d) 0.4 A and 2 Ω

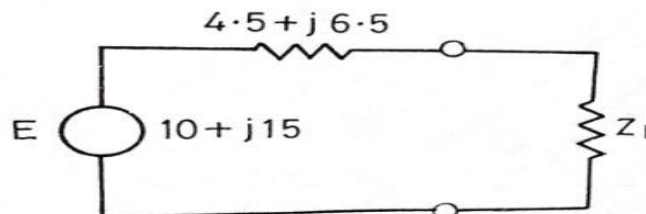
32. The rms value of the voltage $u(t) = 3 + 4\cos(3t)$ is

- (a) $\sqrt{17}$ V (b) 5 V
 (c) 7 V (d) $(3 + 2\sqrt{2})$ V

33. A circuit component that opposes the change in circuit voltage is

- (a) resistance (b) capacitance
 (c) inductance (d) all of the above

34. In the circuit shown, maximum power will be transferred when



- (a) $Z_L = (4.5 + j6.5)\Omega$
 (b) $Z_L = (4.5 - j6.5)\Omega$
 (c) $Z_L = (6.5 + j4.5)\Omega$
 (d) $Z_L = (6.5 - j4.5)\Omega$

ANS-B

35. The value of current at resonance in a series RLC circuit is affected by the value of

- (a) **R** (b) **C** (c) **L** (d) All of these

36. Unit of reactive power is

- (a) VA (b) watt
(c) **VAR** (d) ohm

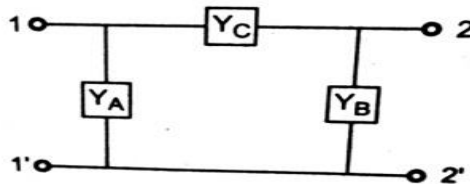
37. Which of the following will act as open circuit at $t=0^+$ with zero initial conditions?

- (a) Resistor (b) Capacitor
(c) **Inductor** (d) None of these

38. A component that opposes the change in circuit current is

- (a) resistance (b) capacitance
(c) **inductance** (d) conductance

39. For the two-port network as shown below, Y_{12} is equal to



- (a) $Y_A + Y_B$ (b) $Y_C + \left(\frac{Y_A Y_B}{Y_A + Y_B} \right)$
(c) **$-Y_C$** (d) Y_C

40. Laplace transform of a unit step function is

- (a) 1 (b) **$1/s$** (c) s (d) $1/s^2$

41. Consider the following:

Energy storage capability of basic passive elements is due to the fact that

1. resistance dissipates energy
2. capacitance stores energy

3. inductance dissipates energy

Which of the above is/are correct?

- (a) 1, 2 and 3 (b) 1 and 3
(c) 3 alone (d) 1 and 2

42. For a voltage source

- (a) terminal voltage is equal to the source emf
(b) terminal voltage cannot exceed source emf
(c) terminal voltage is always lower than source emf
(d) terminal voltage is higher than the source emf

43. The dual of a parallel R-C circuit is a

- (a) series R-C circuit
(b) series R-L circuit
(c) parallel R-C circuit
(d) parallel R-L circuit

44. The number of independent loops for a network with n nodes and b branches is

- (a) $n - 1$
(b) $b - n$
(c) $b - n + 1$
(d) independent of the number of nodes

45. A network has 7 nodes and 5 independent loops. The number of branches in the network is

- (a) 13 (b) 12 (c) 11 (d) 10

46. Milliman's theory yields equivalent

- (a) impedance or resistance
(b) current source

(c) voltage source

(d) voltage or current source

47. The rms value of a sine wave is 100A. Its peak value is

- (a) 70.7 A (b) 141 A
(c) 150 A (d) 282.8 A

48. The rms value of a half-wave rectified symmetrical square wave current of 2A is

- (a) $\sqrt{2}A$ (b) 1A
(c) $\frac{1}{\sqrt{2}}A$ (d) $\sqrt{3}A$

49. The rms value of the resultant current in a wire which carries a dc current of 10 A and a sinusoidal current of peak value 20 A is

- (a) 14.1 A (b) 17.3 A
(c) 22.4 A (d) 300 A

50. The power consumed in an pure inductive circuit will be

- (a) $VI \cos \phi$ (b) $VI \sin \phi$
(c) $V I$ (d) none of these

51. When a sinusoidal voltage is applied across R-L series circuit having $R = X_L$, the phase angle will be

- (a) 90° (b) 45° lag
(c) 45° lead (d) 90° leading

52. The power factor of an ac circuit lies between

- (a) 0 and 1 (b) -1 and 1
(c) 0 and -1 (d) none of these

