

Extra Questions - 1

1. What current will flow in a 20Ω resistor when it is connected to a 50V supply?
 - a) 0.4A
 - b) 1.6A
 - c) 2.5A

2. A current of 500mA flows in a resistance of 12Ω . What power is dissipated by the resistor?
 - a) 3W
 - b) 6W
 - c) 18W

3. Three 12Ω resistors are connected in parallel. What will the resistance of this combination be?
 - a) 3Ω
 - b) 4Ω
 - c) 48Ω

4. A power of 240W appears in a load for a total time of 120 seconds. What energy is used?
 - a) 2J
 - b) 2kJ
 - c) 28.8kJ

5. A charge of 1mC appears in a capacitor of 2uF. What voltage appears across the plates of the capacitor?
 - a) 50V
 - b) 200V
 - c) 500V

6. Capacitors of 1 μ F and 2 μ F are connected in series. What is the capacitance of the series combination?

- a) 0.33 μ F
- b) 0.67 μ F
- c) 3 μ F

6. Four capacitors, each of 100 μ F, are connected in parallel. What is the capacitance of the parallel combination?

- a) 25 μ F
- b) 200 μ F
- c) 400 μ F

7. Capacitors of 2 μ F and 8 μ F are connected in series across a 100V DC supply. What voltage appears across the 8 μ F capacitor?

- a) 20V
- b) 80V
- c) 100V

8. A straight length of wire moves through a uniform magnetic field. The e.m.f. produced across the ends of the wire will be maximum if it moves:

- a) along the lines of magnetic flux
- b) at 45° to the lines of magnetic flux
- c) at 90° to the lines of magnetic flux

9. A conductor of length 2m moves at 4m/s at 30° to a uniform magnetic field of 0.1T. Which one of the following gives the e.m.f. generated?

- a) 0.2V
- b) 0.4V
- c) 0.8V

10. In a shunt-wound generator:

- a) none of the armature current flows through the field
- b) some of the armature current flows through the field
- c) all of the armature current flows through the field

11. A compound-wound generator:

- a) has only a series field winding
- b) has only a shunt field winding
- c) has both a series and a shunt field winding

12. A waveform has a frequency of 50Hz. Which one of the following gives its period?

- a) 20 ms
- b) 50 ms
- c) 100 ms

13. A waveform has a period of 10 ms. Which one of the following gives its frequency?

- a) 10 Hz
- b) 50 Hz
- c) 100 Hz

14. Which one of the following gives the angle between the successive phases of a three phase supply?

- a) 60°
- b) 90°
- c) 120°

15. An aircraft supply has an RMS value of 100V. Which one of the following gives the approximate peak-peak value of the supply voltage?

- a) 50V
- b) 200V
- c) 282V

16. The peak value of current supplied to an aircraft TRU is 14A. Which one of the following gives the approximate value of RMS current supplied?

- a) 7A
- b) 10A
- c) 28A

17. A circuit consisting of a pure capacitance is connected across an AC supply. Which one of the following gives the phase relationship between the voltage and current in this circuit?

- a) The voltage leads the current by 90°
- b) The current leads the voltage by 90°
- c) The current leads the voltage by 180°

18. A circuit consisting of a pure inductance is connected across an AC supply. Which one of the following gives the phase relationship between the voltage and current in this circuit?

- a) The voltage leads the current by 90°
- b) The current leads the voltage by 90°
- c) The current leads the voltage by 180°

19. The core of a transformer is laminated in order to reduce its:

- a) weight
- b) size
- c) eddy current losses

20. An inductor has an inductive reactance of 20Ω and a resistance of 20Ω . Which one of the following gives the phase relationship between the voltage and current in this circuit?

- a) The current leads the current by 45°
- b) The voltage leads the voltage by 45°
- c) The voltage leads the voltage by 90°

21. A capacitor has a capacitive reactance of 500Ω . If the capacitor is connected in series with a resistance of 500Ω which one of the following gives the phase relationship between the voltage and current in this circuit?

- a) The current leads the current by 45°
- b) The voltage leads the voltage by 45°
- c) The voltage leads the voltage by 90°

22. A series circuit consists of a resistance of 6Ω connected in series with a capacitor with a reactance of 8Ω . Which one of the following gives the impedance of the circuit?

- a) 2Ω
- b) 10Ω
- c) 14Ω

23. A capacitor having negligible resistance is connected across a 220V AC supply. If the current flowing in the capacitor is 2A, which one of the following gives its reactance?

- a) 110Ω
- b) 220Ω
- c) 440Ω

24. A pure capacitor having a reactance of 50Ω is connected across a 100V AC supply. Which one of the following gives the power dissipated in the capacitor?

- a) zero
- b) 200W
- c) 500W

25. The power factor in an AC circuit is defined as:

- a) the ratio of true power to apparent power
- b) the ratio of apparent power to true power
- c) the ratio of reactive power to true power

26. The power factor in an AC circuit is the same as:

- a) the sine of the phase angle
- b) the cosine of the phase angle
- c) the tangent of the phase angle

27. The phase angle in an AC circuit is 60 degrees. What is the power factor of the circuit?

- a) 0.5
- b) 0.6
- c) 0.667

28. An AC circuit consists of a resistance of 10Ω connected in series with a reactance of 10Ω . What is the power factor of the circuit?

- a) 0.5
- b) 0.707
- c) 0.667

29. An AC circuit consists of an inductor and a resistor connected in series. If the phase angle is found to be 45° , which one of the following is TRUE?

- a) The resistance will be equal to the inductive reactance
- b) The resistance will be greater than the inductive reactance
- c) The resistance will be less than the inductive reactance

30. An AC circuit consists of an inductor connected in parallel with a capacitor. If both components are considered to be 'perfect', which one of the following statements is TRUE?

- a) At a certain frequency the impedance of the circuit will be zero
- b) At a certain frequency the impedance of the circuit will be infinite
- c) The impedance of the circuit will remain constant at all frequencies

31. An AC circuit consists of an inductor connected in series with a capacitor. If both components are considered to be 'perfect', which one of the following statements is TRUE?

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32. A transformer has 1,200 primary turns and 600 secondary turns. If the primary is supplied from a 220V AC supply which one of the following gives the resulting secondary voltage?

- a) 55V
- b) 110V
- c) 440V

33. A transformer has 2,000 primary turns and 400 secondary turns. Assuming that the transformer is 'loss free', if the primary current is 0.5A which one of the following gives the secondary current?

- a) 0.1A
- b) 0.5A
- c) 2.5A

34. The 'copper loss' in a transformer is due to:

- a) the I^2R power loss in the transformer windings
- b) the power required to magnetise the core of the transformer
- c) eddy currents flowing in the magnetic core of the transformer

35. The 'iron loss' in a transformer is due to:

- a) the I^2R power loss in the transformer windings
- b) the power required to magnetise the core of the transformer
- c) eddy currents flowing in the magnetic core of the transformer