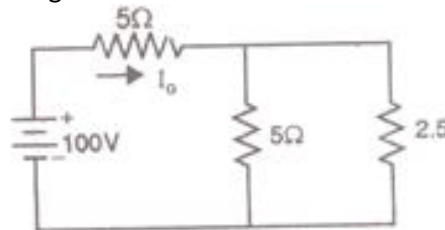


Basic Electrical Engineering

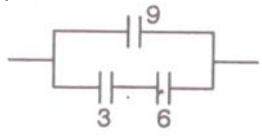
1. An emf of 8V is induced in a coil of inductance 4H. The rate of change of current must be ()
 - (a) 32 A/sec
 - (b) 0.5 A/sec
 - (c) 2A/sec
 - (d) 1 A/sec
2. Two coils have self inductance of 5H and 1H, the mutual inductance being zero. If the two coils are connected in series, the total inductance will be ()
 - (a) 4H
 - (b) 5H
 - (c) 3H
 - (d) 6H
3. Four resistors 5 Ohm, 10 Ohm, 20 Ohm and 40 Ohm are connected in parallel across 20V battery. The highest power will be dissipated in ()
 - (a) 5 Ohm
 - (b) 10 Ohm
 - (c) 20 Ohm
 - (d) 40 Ohm
4. Two inductors carrying current in opposite direction are connected in series. The total inductance is ()
 - (a) $L_1 + L_2 + 2M$
 - (b) $L_1 + L_2 - 2M$
 - (c) $\frac{L_1 L_2 - M^2}{L_1 + L_2 + 2M}$
 - (d) $\frac{L_1 L_2 - M^2}{L_1 + L_2 - 2M}$
5. The current I_0 in the circuit given below will be ()



- (a) 4 A
 - (b) 7.5 A
 - (c) 10 A
 - (d) 15 A
6. A constant current of 5mA charges a 10 μ F capacitor for 1sec. The voltage across the capacitor is ()
 - (a) 50V
 - (b) 250V
 - (c) 500V
 - (d) 1000V
7. The direction of the induced emf is found by ()
 - (a) Fleming's right hand rule

- (b) Lenz's law
 - (c) Fleming's left hand rule
 - (d) Biot-savart law
8. The angular velocity of a sine wave of 50Hz is ()
- (a) 50π
 - (b) 100π
 - (c) $\pi/50$
 - (d) $\pi/150$
9. A 1.2 V , 2400 mAh battery connected to a 10 Ohm resistor will be completely discharged by the end of ()
- (a) 10 hours
 - (b) 1 hour
 - (c) 12 hours
 - (d) 21 hours
10. An alternating current has a peak value of 2A. If its peak factor is $\sqrt{2}$ and its form factor is $\frac{\pi}{2\sqrt{2}}$, its average value is ()
- (a) $\frac{8}{\pi} A$
 - (b) $\frac{4}{\pi} A$
 - (c) $\frac{\pi}{4} A$
 - (d) $\frac{\pi}{2} A$

11. The power factor of a circuit comprising R and X in series is given by ()
- (a) $\frac{k}{\sqrt{R^2+X^2}}$
 - (b) $\frac{X}{R^2+X^2}$
 - (c) $\frac{R}{R^2+X^2}$
 - (d) $\frac{X}{\sqrt{R^2+X^2}}$
12. The equivalent capacitance(in μF) of the circuit shown in figure is ()



- (a) 6
 - (b) 4.5
 - (c) 3
 - (d) 11
13. The X_L offered by an inductance of 1H to a current $I_m \sin 10\pi t$ is ()
- (a) 100Ω
 - (b) 50Ω
 - (c) 31.4Ω
 - (d) 314Ω
14. In a R-L-C circuits, $v(t)=20 \sin(314t+5\pi/6)$ and $i(t)= 10 \sin(314t+2\pi/3)$. The power ()

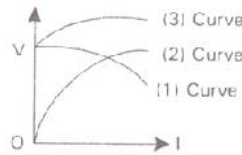
- factor of the circuit is
- 0.5 lead
 - 0.866 lag
 - 0.866 lead
 - 0.5 lag
15. The device which recovers a part of heat from the flue gases is ()
- Condenser
 - Evaporator
 - Draft tube
 - Economiser
16. Steam power plants work closely on ()
- Binary vapour cycle
 - Bragtn cycle
 - Rankine cycle
 - Carnot cycle
17. Ash handling plant is located in between ()
- Boiler & Ash storage
 - Boiler & Chimney
 - Boiler & Super heater
 - Boiler & Coal storage
18. The electrical power developed by an hydro electric plant in kW is given by the expression ()
- $N_s = N \cdot \sqrt{P} / H^{0.75}$
 - $N_s = \sqrt{N} \cdot P / H^{3/2}$
 - $N_s = N \cdot \sqrt{P} / H^{1.25}$
 - $N_s = N \cdot \sqrt{P} / H^{2/3}$
19. If H is the head in meters, w is the specific gravity in Kg/m³, Q is discharge in m³/sec and η is efficiency then power output of Hydro Electric Plant is ()
- $\frac{wQH}{\eta}$
 - $\frac{wQ}{H} \times \eta$
 - $wQH \times \eta$
 - $\frac{QH}{w} \times \eta$
20. Control rods for nuclear reactor are made of ()
- Graphite
 - Cadmium
 - Concrete
 - Lead
21. Which of the following material is used a moderator ()
- Graphite
 - Boron
 - Na k liquid
 - Plutonium
22. The equivalent resistance of a transformer referred to secondary is given by ()
- $r_1 + r_2 \left(\frac{N_1}{N_2}\right)^2$
 - $r_2 + r_1 \left(\frac{N_1}{N_2}\right)^2$

(c) $r_2 + r_1 \left(\frac{N_2}{N_1}\right)^2$

(d) $r_1 + r_2 \left(\frac{N_2}{N_1}\right)^2$

23. The purpose of laminating the transformer core is ()
- (a) To minimize the eddy current loss
 - (b) To increase the cross-sectional area of the core
 - (c) To increase the flux density in the core
 - (d) To increase the weight of the transformer

24. The following figure shows the external (V-I) characteristics of three types of generator having the same rating. Curve 2 represents for _____ generator ()



- (a) Shunt
- (b) Series
- (c) Compound
- (d) None

25. If W_c is the constant loss and R_a is the armature resistance of a dc generator then load current I_L corresponding to maximum efficiency is ()

(a) $I_L = \sqrt{\frac{R_a}{W_c}}$

(b) $I_L = \frac{W_c}{\sqrt{R_a}}$

(c) $I_L = \frac{R_a}{\sqrt{W_c}}$

(d) $I_L = \sqrt{\frac{W_c}{R_a}}$

26. A 6-pole lap wound generator has 300 conductors, the e.m.f induced per conductor being 5V. The generated voltage of the generator is _____ ()

- (a) 60 V
- (b) 1500 V
- (c) 360 V
- (d) 250 V

27. In a DC series motor, if the armature current is reduced by 50%, the torque of the motor will be equal to ()

- (a) 100% of the previous value
- (b) 50% of the previous value
- (c) 25% of the previous value
- (d) 12.5% of the previous value

28. If B_{max} is the maximum flux density, then eddy current loss will vary as ()

- (a) $i_{s,max}$
- (b) $(B_{max})^2$
- (c) $(B_{max})^{1.6}$
- (d) $(B_{max})^{3.2}$

29. A 3-point starter is used to start _____ motor ()

- (a) Shunt
- (b) Series

- (c) Compound
(d) Differential compound
30. Three phase four wire energy meter is used to measure ()
 (a) Three phase balanced energy only
 (b) Three phase unbalanced energy only
 (c) Both (a) and (b)
 (d) Two phase energy
31. To measure insulation resistance of insulators, the instrument required is ()
 (a) Ohm meter
 (b) Meggar
 (c) Ammeter
 (d) Voltmeter
32. If n similar cells, each of e.m.f volts and internal resistance r ohms are connected in series, then the amount of current flow in an external resistance of R ohms will be equal to ()
 (a) $\frac{nE}{R}$
 (b) $\frac{nE}{R+r}$
 (c) $\frac{nE}{R+nr}$
 (d) $\frac{nE}{nr}$
33. Devices used for large soldering are ()
 1. Soldering iron 2. Blow lamp 3. Ladle 4. Pot
 (a) 1
 (b) 2,3,4
 (c) 1,2,3,4
 (d) 2,3
34. In concealed conduit wiring, the switches used are ()
 (a) Flush switches
 (b) Tumbler switches
 (c) Knife switches
 (d) Iron clad switches
35. Lakin Hickey is used to ()
 (a) Cut the metal
 (b) Make holes in wood
 (c) Fixing conduit
 (d) Bending conduit
36. The most economical wiring used in public buildings is ()
 (a) C.T.S wiring
 (b) Conduit wiring
 (c) Casing and capping wiring
 (d) None
37. Fusing factor is given by ()
 (a) Element rating / Minimum fusing current
 (b) Minimum fusing current / Element rating
 (c) Element rating
 (d) None
38. Energy produced by fission reaction is given by ()
 (a) $\frac{1}{2} m^2c$

- (b) $\frac{1}{2} mc^2$
- (c) $\frac{1}{2} cv^2$
- (d) mc^2

39. The function of a dry cell is to convert : ()
- (a) chemical energy to mechanical energy
 - (b) chemical energy to electrical energy
 - (c) electrical energy into mechanical energy
 - (d) electrical energy into magnetic energy
40. Distilled water is used in electrolytes because it : ()
- (a) prevents or slows down local action
 - (b) speeds up electrochemical action
 - (c) improves specific gravity
 - (d) prevents polarization

SR NO	KEY
1	C
2	D
3	A
4	B
5	D
6	C
7	A,B
8	B
9	D
10	B
11	A
12	D
13	C
14	B
15	D
16	C
17	A
18	C
19	C
20	B
21	A
22	C
23	A
24	B
25	D
26	D
27	C
28	B
29	A
30	C
31	B
32	C
33	B
34	A
35	D
36	B
37	B
38	D
39	B
40	A