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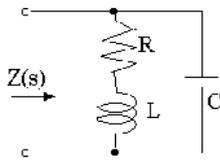
1. If the voltage applied to an iron cored coil is of the form $v(t) = V_m \sin \omega t$, the flux in the core
 - a. is sinusoidal and leads the voltage wave by 90°
 - b. is sinusoidal and lags the voltage wave by 90°
 - c. is a constant value with magnitude proportional to the frequency
 - d. is a constant value with magnitude independent of frequency
2. At the exact moment when a 50 Hz ac sine wave is at its positive peak voltage, the instantaneous rate of change in the voltage is
 - a. Small and negative
 - b. Small and positive
 - c. Large and negative
 - d. Zero
3. Ferrati effect on long overhead lines is experienced when it is
 - a. Lightly loaded
 - b. Full load unity power factor
 - c. Half load lagging power factor
 - d. Full load lagging power factor
4. For a transformer if percentage impedance is more it implies
 - a. Leakage flux is more
 - b. Voltage Regulation is good
 - c. Voltage Drop in the transformer is low
 - d. Load power factor is poor.
5. A house served by a 220V supply light, is protected by a 10-A fuse. The maximum number of 100 W bulbs in parallel that can be turned on is
 - a. 11
 - b. 22
 - c. 33
 - d. 244
6. Three equal resistance of magnitude 5 Ohm each are connected in delta. The resistance between any two pair of terminals of the delta will be
 - a. 5 Ohm
 - b. $5/3$ Ohm
 - c. $10/3$ Ohm
 - d. $3/5$ Ohm
7. In a LVDT, the secondary voltages
 - a. Are independent of the core position
 - b. Vary unequally depending on the core position
 - c. Vary equally depending on the core position
 - d. Are always in phase quadrature
8. If a diode is connected in anti-parallel with a SCR, then
 - a. Both turn off power loss and turn off time decrease
 - b. Turn off power loss decreases, but turn off time increases
 - c. Turn off power loss increases, but turn off time decreases
 - d. The arrangement works as a triac.
9. When a non-zero net reactance exists in an ac circuit, the apparent power is

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- a. Zero
 - b. Less than the true power
 - c. Greater than the true power
 - d. Infinite
10. Gauss is a unit of
- a. Electrical charge quantity.
 - b. Electrostatic field strength.
 - c. Magnetic flux density.
 - d. Electromagnetic field intensity.
11. At the surge impedance loading of a transmission line
- a. The power that can be transmitted is maximum
 - b. The voltage profile along the line remains flat
 - c. the shunt capacitor does not play any role
 - d. the load becomes highly lagging
12. Which type of winding is used in 3 phase shell type transformer?
- a. Circular type
 - b. Sandwich type
 - c. Cylindrical type
 - d. Rectangular type
13. If the copper loss in a 3-phase induction motor is 2.0 kW and slip is 2%, the air-gap power is
- a. 5 kW
 - b. 20 kW
 - c. 100 kW
 - d. 200 kw
14. Electric ovens using heating elements of _____ can produce temperature up to 3000°C.
- a. Nickel
 - b. Graphite
 - c. Chromium
 - d. Iron
15. Voltage across various discs in a string of suspension insulators having identical discs is different due to
- a. Leakage current at the surface
 - b. Shunt capacitance to ground
 - c. Series capacitance
 - d. System unbalanced voltage
16. Electric resistance seam welding uses _____ electrodes.
- a. Pointed
 - b. Disc.
 - c. Flat
 - d. Domed
17. A balanced RYB-sequence, Y-connected (Star Connected) source with $V_{RN}=100$ volts is connected to a Δ -connected (Delta connected) balanced load of $(8+j6)$ ohms per phase. Then the phase current and line current values respectively, are
- a. 10 A; 30 A
 - b. 17.32 A; 30A
 - c. 10 A; 10 A

d. 17.32 A; 17.32 A

18. The poles of the impedance $Z(s)$ for the network shown in figure below will be real and coincident if,

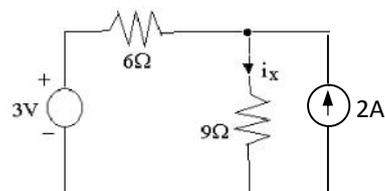


- a. $R = 2\sqrt{L/C}$
 b. $R = 4\sqrt{L/C}$
 c. $R = 2\sqrt{C/L}$
 d. $R = 4\sqrt{C/L}$

19. In a double tuned circuit, consisting of two magnetically coupled, identical high-Q tuned circuits, at the resonance frequency of either circuit, the amplitude response has

- a. a peak, always.
 b. a dip, always.
 c. either a peak or a dip.
 d. neither a peak nor a dip

20. The current i_x in the network is:



- a. 1 A
 b. 0.5 A
 c. 0.667 A
 d. 0.8 A

21. Superposition theorem is applicable only to networks that are:

- a. linear.
 b. nonlinear.
 c. time-invariant.
 d. passive.

22. For a short line if the receiving end voltage magnitude is same as sending end voltage magnitude under loaded condition

- a. The receiving end power factor is unity
 b. The sending end power factor is unity
 c. The sending end power factor is leading
 d. The receiving end power factor is leading.

23. If a network function has zeros only in the left-half of the s-plane, then it is said to be

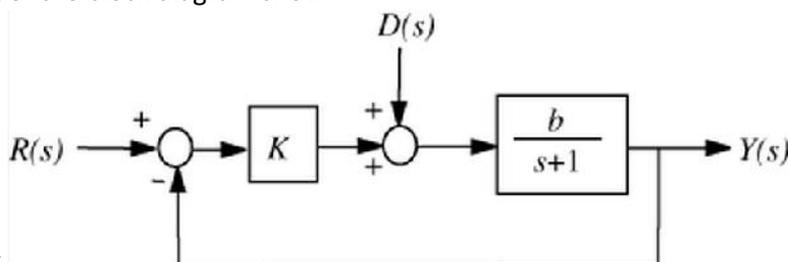
- a. a stable function.
 b. a non-minimum phase function.
 c. a minimum phase function.
 d. an all-pass function.

24. The expression $(s^2 + 2s + 1)(s + 1)$ is,

- a. a Butterworth polynomial.
 b. a Chebyshev polynomial.

- c. neither Butterworth nor Chebyshev polynomial.
 d. not a polynomial at all.
25. The minimum amount of hardware required to make a low pass filter is
 a. a resistance, a capacitance and an opamp.
 b. a resistance, an inductance and an opamp.
 c. a resistance and a capacitance.
 d. a resistance, a capacitance and an inductance.
26. The two-port matrix of an $n:1$ ideal transformer is $\begin{bmatrix} n & 0 \\ 0 & 1/n \end{bmatrix}$. It describes the transformer in terms of its,
 a. z - parameters.
 b. y - parameters.
 c. **ABCD**- parameters.
 d. h - parameters.
27. What kind of control system will detect a change in a controlled variable and reverse the change to restore the variable to its desired value (set point)?
 a. negative feedback control system
 b. cyclic feedback control system
 c. positive feedback control system
 d. monitored feedback control system
28. In an open loop control system
 a. Output is independent of the control input
 b. Output is dependent on control input
 c. Only system parameters have effect on control input
 d. None of these
29. _____ has tendency to oscillate.
 a. Open loop system
 b. Closed loop system
 c. Both (a) and (b)
 d. Neither (a) or (b)
30. The impedance per phase of a 3-phase transmission line on a base of 100 MVA 100 kV is 2pu. The value of this impedance on a base of 400 MVA and 400 kV would be
 a. 2 pu
 b. 1.5 pu
 c. 1 pu
 d. 0.5 pu

31. Consider the block diagram shown



below.

The sensitivity S_b^T is,

- a. $S_b^T = \frac{s+1}{s+Kb+2}$
 b. $S_b^T = \frac{s+1}{s+Kb+1}$

c. $S_b^T = \frac{1}{s+Kb+2}$

d. $S_b^T = \frac{1}{s+Kb+1}$

32. The two windings of a transformer is
- Conductively linked
 - Inductively linked
 - Not linked at all
 - Electrically linked
33. A salient pole synchronous motor is running at no load. Its field current is switched off. The motor will
- come to stop.
 - continue to run at synchronous speed.
 - continue to run at a speed slightly more than the synchronous speed.
 - continue to run at a speed slightly less than the synchronous speed.
34. The d.c. series motor should always be started with load because
- at no load, it will rotate at dangerously high speed.
 - it will fail to start.
 - it will not develop high starting torque.
 - all are true.
35. If a transformer primary is energised from a square wave voltage source, its output current will be
- A square wave.
 - A sine wave.
 - A triangular wave.
 - A pulse wave.
36. In a d.c. machine, the armature mmf is
- stationary w.r.t. armature.
 - rotating w.r.t. field.
 - stationary w.r.t. field.
 - rotating w.r.t. brushes.
37. A ceiling fan uses
- split-phase motor.
 - capacitor start and capacitor run motor.
 - universal motor.
 - capacitor start motor.
38. The burden of a protective relay means
- Volt-amp rating of relay
 - Current rating of relay
 - Voltage rating of relay
 - Wattage rating of relay.
39. A dc shunt generator has a speed of 800 rpm when delivering 20 A to the load at the terminal voltage of 220V. If the same machine is run as a motor it takes a line current of 20A from 220V supply. The speed of the machine as a motor will be
- 800 rpm.
 - more than 800 rpm.
 - less than 800 rpm.
 - both higher or lower than 800 rpm.

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40. A 50 Hz, 3-phase induction motor has a full load speed of 1440 r.p.m. The number of poles of the motor are
- 4
 - 6
 - 8
 - 12
41. Slip of the induction machine is 0.02 and the stator supply frequency is 50 Hz. What will be the frequency of the rotor induced emf?
- 10 Hz.
 - 40 Hz.
 - 1 Hz.
 - 60 Hz.
42. Peak inverse voltage for a diode is the
- maximum voltage that can be applied across the diode in the non-conducting direction
 - voltage corresponding to rated maximum voltage
 - maximum voltage that can be applied across the diode in the conducting direction
 - none of the above.
43. A half-wave rectifier circuit with a capacitive filter is connected to a 200 volts, 50 Hz ac line. The output voltage across the capacitor should be approximately
- 300 volts
 - 280 volts
 - 180 volts
 - 80 volts
44. A d.c. to d.c. chopper operates from a 48 V battery source into a resistive load of 24 Ohm. The frequency of the chopper is set to 250Hz. When chopper on-time is 1 ms the load power is
- 6 W
 - 12 W
 - 24 W
 - 48 W
45. To turn off a SCR, the reverse bias should be applied for a period the turn-off time of the SCR
- Equal to
 - Longer than
 - Less than
 - Irrespective of
46. The cycloconverter require natural or forced commutation as under
- Natural commutation in both step-up and step down cycloconverter
 - Forced commutation in both step-up and step-down cycloconverter
 - Forced commutation in step-up cycloconverter
 - Forced commutation in step-down cycloconverter
47. A drive suitable for mines where explosive gas exist, is
- Diesel engine
 - Steam engine
 - Battery locomotive
 - Any of the above.
48. Low head plants generally use
- Pelton Turbines
 - Francis Turbine
 - Pelton or Francis Turbine
 - Kaplan Turbines Conductively linked

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49. The charging reactance of 50 km length of line is 1500Ω . The charging reactance for 100km length of line will be
- 1500Ω
 - 3000Ω
 - 750Ω
 - 600Ω
50. The line trap unit employed in carrier current relaying:
- offers high impedance to 50 Hz power frequency signal
 - offers high impedance to carrier frequency signal
 - offers low impedance to carrier frequency signal
 - Both (a) & (c)
51. For a line voltage V and regulation of a transmission line R ,
- $R \propto V$
 - $R \propto V^{-1}$
 - $R \propto V^2$
 - $R \propto V^{-2}$
52. For a differential protection of a transformer the boundary of protection is decided by
- The positions of the CTs
 - The windings of the transformer
 - The oil of the transformers
 - The core of the transformer.
53. As the voltage of transmission increases, the volume of conductor
- increases.
 - does not change.
 - decreases.
 - increases proportionately
54. The use of high speed circuit breakers
- Decreases transient stability
 - Increases transient stability
 - Is not desirable in a protection scheme
 - has impact on surge impedance of the line.
55. In a load flow program for a PV bus
- The only unknown variable is Q
 - The only unknown is angle δ
 - The only unknown is magnitude of V
 - The only unknown is P
56. Negative sequence current flows
- In case of fault involved with ground only
 - In case of all unbalanced faults
 - In case of fault not involving with ground
 - In case of symmetrical fault.
57. A differential amplifier is invariably used in the input stage of all op-amps. This is done basically to provide the op-amps with a very high
- CMMR
 - Bandwidth
 - Slew rate
 - Open-loop gain
58. When shunt capacitor is connected across a load in distribution system

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- a. It reduces the peak demand of the substation
- b. It reduces the voltage of the substation
- c. It increases the power factor angle
- d. It increases the current in the connected feeder

59. In N-type semiconductor, the minority carriers are

- a. Electrons
- b. Protons
- c. Positrons
- d. Holes

60. In a microprocessor, the address of the next instruction to be executed, is stored in

- a. Stack Pointer
- b. Address Latch
- c. Program Counter
- d. General Purpose Register

KEY

1	b	16	b	31	b	46	c
2	d	17	b	32	b	47	c
3	a	18	a	33	b	48	a
4	a	19	a	34	a	49	b
5	b	20	a	35	c	50	b
6	c	21	a	36	c	51	b
7	b	22	d	37	b	52	a
8	d	23	c	38	a	53	c
9	c	24	a	39	c	54	b
10	c	25	c	40	a	55	b
11	b	26	c	41	a	56	b
12	b	27	a	42	a	57	c
13	c	28	a	43	b	58	a
14	c	29	b	44	c	59	d
15	b	30	d	45	b	60	c