

ECET

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ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION PAPER-2010

1. When a high resistance is connected in parallel with a low resistance, the combined resistance is ()
 - (a) higher than the lower resistance
 - (b) lower than the higher resistance
 - (c) between the value of high and low resistance
 - (d) less than the lower resistance
2. If a series circuit consists of three resistors and a battery which of the following statement is always true ? ()
 - (a) the voltage drop across each resistor is the same
 - (b) the current through each resistor is the same
 - (c) the power dissipated in each resistor is the same
 - (d) the energy consumption in each resistor is the same
3. Regarding Norton's equivalent, which of the following is not correct ? ()
 - (a) Norton's equivalent is the voltage equivalent of the network
 - (b) Norton's equivalent is the current equivalent of the network
 - (c) Norton's equivalent to resistance is the same as the Thevenin's equivalent resistance
 - (d) The load is connected in parallel to the Norton's equivalent resistance and Norton's equivalent source
4. What is meant by permeability ? ()
 - (a) Strength of a permanent magnet
 - (b) Strength of an electro magnet
 - (c) The repulsion of two similar poles
 - (d) The conductivity of a material for the magnetic flux
5. Time constant for an R-L series circuit is given by ()
 - (a) R/L
 - (b) $1/R.L$
 - (c) $R.L$
 - (d) L/R

6. The direction of induced emf is given by ()
(a) Fleming's right hand rule (b) Fleming's left hand rule
(c) Kirchoff's voltage law (d) Kirchoff's current law
7. If the frequency of pure inductive circuit is halved, then the current of the circuit will be ()
(a) same (b) doubled (c) halved (d) four times
8. The maximum and minimum values of power factor can be ()
(a) 1 and 0 (b) + 1 and - 1 (c) + 1 and - 5 (d) + 5 and - 5
9. Eddy currents in a core can be minimized by ()
(a) decreasing the flux density (b) laminating the core
(c) reducing the core volume (d) decreasing the number of turns
10. In a periodic table, the elements are arranged in order of increasing ()
(a) Atomic weight (b) Molecular weight
(c) Atomic number (d) both 1 and 2
11. The function of a commutator in a d.c. machine is ()
(a) to improve commutation (b) to change a.c. current to d.c. current
(c) to change a.c.voltage to d.c.voltage (d) to provide easy speed control
12. If the number of poles in a lap wound d.c. generator increased by a factor of 2, the generated emf will ()
(a) increase by a factor of 2 (b) decrease by a factor of 2
(c) increase by a factor of 4 (d) remain the same
13. Speed of d.c. shunt motor can be increased by ()
(a) increasing the resistance in the field circuit
(b) increasing the resistance in the armature circuit
(c) decreasing the resistance in the field current
(d) decreasing the resistance in the armature circuit
14. A starter is used in a d.c. motor because ()
(a) it is not self starting
(b) initially back emf is zero and armature current is high
(c) it is necessary to overcome back emf
(d) its resistance is very high
15. If the field winding of a running shunt motor suddenly breaks open ()
(a) its speed slows down
(b) it stops at once
(c) it gives out sparks
(d) its speed becomes dangerously high

16. The direction of rotation of a d.c. motor may be reversed by ()
(a) reversing the supply voltage
(b) adding resistance to the field circuit
(c) reversing armature connection
(d) interchanging the armature and field connection
17. When an electric train moves down a hill, the d.c. motor acts as ()
(a) d.c. series generator (b) d.c. shunt generator
(c) d.c. shunt motor (d) d.c. compound motor
18. Moving coil instrument can be used for measuring at ()
(a) high frequencies (b) low frequencies
(c) only d.c. (d) both d.c. and a.c.
19. Sensitivity of a voltmeter is expressed as ()
(a) Volts/ohm (b) Ohms/volt
(c) Ohms volt (d) Siemen/volt
20. Transducer is a device which ()
(a) converts one form of power into another
(b) converts one form of energy into another
(c) helps in measuring electrical signal
(d) is similar to a transformer
21. The capacitance of a parallel plate capacitor is not influenced by ()
(a) thickness of the conducting plates
(b) area of the conducting plates
(c) distance separating the plates
(d) nature of the dielectric between the plates
22. In a parallel RLC circuit, at resonant frequency ()
(a) line current is maximum
(b) total impedance is minimum
(c) inductive branch current is minimum
(d) total impedance is maximum
23. In the two-wattmeter method of measuring power in a three phase circuit, the two wattmeter will show equal readings when the power factor angle ϕ is equal to ()
(a) 90° (b) 60° (c) 30° (d) 0°
24. In a three phase system, the phase sequence is used to indicate the ()
(a) amplitude of the phase voltages
(b) frequency of the phase voltages
(c) order in which the phase voltages attain their maximum values
(d) phase angle between the phase voltages

25. The bandwidth of a series RLC resonating circuit is represented by ()
- (a) $\frac{R}{2\pi L}$ (b) $\frac{C}{2\pi L}$ (c) $\frac{C}{2\pi R}$ (d) $\frac{L}{2\pi R}$
26. The no load current of a transformer typically forms the following percent of full load current ()
- (a) 1 to 4% (b) 4 to 8% (c) 8 to 12% (d) 12 to 16%
27. As compared to an electric motor, the efficiency of a transformer of the same rating is ()
- (a) much higher (b) slightly higher
(c) slightly smaller (d) much smaller
28. The short circuit test is used in a transformer to determine ()
- (a) copper losses at any load (b) hysteresis loss
(c) iron loss at any load (d) eddy current loss
29. Two transformers operating in parallel share the load depending on their ()
- (a) efficiency (b) rating
(c) leakage reactance (d) per unit impedance
30. In a transformer, the voltage per turn in primary and secondary are ()
- (a) always the same (b) always in the ratio
(c) always different (d) in the ratio $1/k$
31. The following method is best suited for finding the voltage regulation of an alternator ()
- (a) synchronous impedance method (b) Potier triangle method
(c) MMF method (d) Two reaction method
32. Power factor of an alternator driven by constant Prime mover input can be changed by changing its : ()
- (a) speed (b) load (c) field excitation (d) phase sequence
33. A four pole 3-phase winding is placed in a stator that has 48 slots. The number of slots per pole per phase is ()
- (a) 4 (b) 8 (c) 16 (d) 32
34. In an alternator, if X_s is the synchronous reactance, X_c is the leakage reactance, then the reactance X_a due to armature flux is given by ()
- (a) $X_a = X_s + X_c$ (b) $X_a = X_s - X_c$
(c) $X_a = X_c - X_s$ (d) $X_a = (X_s^2 + X_c^2)^{1/2}$
35. A 3-pole, 4-pole, 24 slot alternator has its armature coils short pitched by one slot. The pitch factor becomes ()
- (a) 0.94 (b) 0.9659 (c) 0.98 (d) 1.00

36. If the field of synchronous motor is under excited, the power factor will be ()
(a) leading (b) lagging
(c) won't be effected (d) unity
37. The starting torque of an induction motor is maximum when ()
(a) rotor resistance equals rotor reactance
(b) motor resistance is twice the rotor reactance
(c) rotor resistance is half the rotor reactance
(d) rotor resistance is $\sqrt{2}$ times the rotor reactance ()
38. At zero slip of an induction motor
(a) the motor runs at synchronous speed
(b) motor runs as a generator
(c) motor does not run
(d) slip produced is zero
39. The term crawling implies that the machine is ()
(a) running stably at speed greater than its synchronous speed
(b) running stably at speed as low as one-seventh of its synchronous speed
(c) running at lower speed with a low supply voltage
(d) showing a transient behaviour while running at higher loads
40. Single phase induction motor can be made self starting by ()
(a) adding a series combination of a capacitor and auxiliary winding in parallel with the main winding
(b) adding an auxiliary winding in parallel with the main winding
(c) adding an auxiliary winding in series with a capacitor and the main winding
(d) adding an auxiliary winding in parallel with resistor and the main winding
41. In a semi-conductor, the movement of holes is due to ()
(a) movement of holes in the conduction band
(b) movement of electrons in the conduction band
(c) movement of electrons in the valance band
(d) movement of holes in valence band
42. In a PNP transistor, the saturation current is due to the flow of ()
(a) electrons flow collector to base (b) holes from collector to base
(c) electrons from emitter to base (d) holes from emitter to base
43. An n-type FET is never operated with positive gate voltages with respect to the source because ()
(a) gate to source current is to be avoided
(b) drain current does not increase
(c) drain current does not remain constant
(d) drain current becomes very high

44. The gain of an amplifier will be more affected by change in transistor parameters in case of ()
- (a) positive feed back (b) negative feed back
(c) zero feed back (d) both 1 and 2
45. A Hartley oscillator uses ()
- (a) a tapped inductor (b) a tapped capacitor
(c) both the above (d) an inductor
46. A modulator is a system to ()
- (a) separate two frequencies
(b) impress the information onto a radio frequency carrier
(c) extract information from the carrier
(d) amplify the audio frequency signal
47. In an transmission of signals the frequency which is not transmitted is ()
- (a) upper side frequency (b) lower side frequency
(c) audio frequency (d) carrier frequency
48. A switch tail ring counter is made by using a single D flip-flop. The resulting circuit is a ()
- (a) SR flip flop (b) JK flip flop
(c) D flip flop (d) T flip flop
49. The output of a logic gate is '1' when all its inputs are at logic '0'. The gate is either ()
- (a) a NAND or an EX-OR gate (b) a NOR or an EX-NOR gate
(c) a OR or an EX-NOR gate (d) a AND or an EX-OR gate
50. The binary code of $(21.125)_{10}$ is ()
- (a) 10101.001 (b) 10100.001 (c) 10101.010 (d) 10100.111
51. A free wheeling diode is placed across the d.c. load ()
- (a) To prevent reversal of load voltage
(b) To permit transfer of load current away from the source
(c) Both 1 and 2
(c) To protect the switch
52. In a 3 phase full converter, the six SCRs are fired at intervals of ()
- (a) 30° (b) 60° (c) 90° (d) 120°
53. In a single phase fully controlled converter, the number of SCRs conducting during overlap is ()
- (a) 1 (b) 2 (c) 3 (d) 4

54. A single phase fully controlled converter is a ()
(a) single quadrant converter (b) two quadrant converter
(c) four quadrant converter (d) none of the above
55. Power factor is equal to ()
(a) (displacement factor) . (distortion factor)
(b) (displacement factor)/(distortion factor)
(c) displacement factor
(d) distortion factor
56. While plugging of a separately excited d.c. motor, the supply to the armature is ()
(a) reversed (b) connected to a resistance
(c) connected to a.c. supply (d) none of the above
57. A three phase a.c. voltage controller feeding a three phase induction motor has an output of ()
(a) constant voltage of variable frequency
(b) variable voltage of variable frequency
(c) variable voltage of constant frequency
(d) constant voltage of constant frequency
58. Keyboard/display interface ()
(a) 8255 (b) 8259 (c) 8279 (d) 8251
59. The 8051 micro controller is of _____ pin package and a _____ processor. ()
(a) 30, 1 byte (b) 20, 1 byte (c) 40, 8 bit (d) 40, 8 byte
60. In 8051, which interrupt has priority ? ()
(a) IE1 (b) TFO (c) IEO (d) TFI
61. The maximum demand of a consumers is 2 kW and his daily energy consumption is 20 units. His load factor is ()
(a) 10% (b) 41.6% (c) 50% (d) 100%
62. Mho relay is normally used for the protection of ()
(a) Long transmission lines (b) Medium length lines
(c) Short length lines (d) No length criterion
63. The Buchhottz relay protects a transformer from ()
(a) All types of internal faults (b) A turn to turn fault
(c) Winding to winding faults (d) Line to line faults
64. It is always economical to improve the P.F. of an installation to ()
(a) Zero (b) Unity
(c) A little less than unity lag (d) A little less than unity lead

65. The main criterion for the design of a distributor is ()
(a) the voltage drop (b) Corona loss
(c) Temperature rise (d) Radio interference
66. Auto reclosing is used in case of ()
(a) Lightning Arrestor (b) Air Blast Circuit Breaker
(c) Bulk oil C.B. (d) Minimum oil C.B.
67. The unit protection scheme provides ()
(a) Back up protection (b) Remote protection
(c) Simultaneous protection (d) Primary protection
68. Lightning Arrestors are used in power systems to prevent electrical equipment against ()
(a) direct strokes of lightning
(b) power frequency voltages
(c) over voltages due to indirect lightning strokes
(d) over currents due to lightning strokes
69. A reactor is a coil which has ()
(a) low inductive reactance and high resistance
(b) high inductance and lower resistance
(c) low inductive reactance and resistance
(d) inductive reactance and resistance are same
70. To reduce short circuit currents, _____ are used ()
(a) Resistors
(b) Reactors
(c) Capacitors
(d) Resistor and reactor in series and in parallel with capacitors
71. The EHV is the voltage beyond ()
(a) 66 kV (b) 132 kV (c) 400 kV (d) 220 kV
72. In cables, sheath is used to ()
(a) strengthen the cable conductor
(b) provide insulation
(c) prevent moisture from damaging the cable
(d) provide charging current
73. Unit of inductive reactance of a transmission line is ()
(a) Henry (b) Farads (c) Ohms (d) Volts
74. In the medium transmission line representation, which of the following parameters are included ()
(a) Resistance and Inductance (b) Resistance, Inductance and Capacitance
(c) Inductance and Capacitance (d) Resistance and Capacitance

75. Strain type insulators are used ()
(a) at intermediate anchor towers (b) on straight runs
(c) at dead ends (d) when the voltage is 33 kV
76. The phenomena of rise in receiving end voltage of the open circuited or lightly loaded line is called the ()
(a) Ferranti effect (b) Proximity effect
(c) Skin effect (d) See back effect
77. A uniformly loaded d.c. distributed AB is fed at both ends A and B with equal voltages. The maximum voltage drops occurs at ()
(a) end A (b) end B
(c) at the mid point of the distributor (d) at $\frac{1}{4}$ of the distance from end A
78. The method that can bring the locomotive to stand still is ()
(a) rheostatic braking (b) plugging
(c) regenerative braking (d) mechanical braking
79. In the case of HVDC system, there is ()
(a) Charging current but no skin effect
(b) No charging current but skin effect
(c) Neither charging current nor skin effect
(d) Both charging current and skin effect
80. Corona loss is less when the shape of the conductor is ()
(a) Oval (b) Flat (c) Circular (4) Independent of shape
81. The voltage required to produce arc in arc welding in the range of ()
(a) 20 - 30 V (b) 100 - 200 V (c) 50 - 100 V (4) $\frac{400}{\sqrt{3}}$
82. In case of coreless type furnace, the charge should be in ()
(a) molten state (b) solid state (c) gaseous state (4) either 1 or 2
83. Choke is provided in Fluorescent tube ()
(a) to provide stability to the arc in the tube
(b) to avoid radio interference
(c) to improve power factor
(d) to eliminate corona effect
84. During starting, the train resistance ()
(a) is zero (b) increases linearly with speed
(c) follows an exponential law (d) increases as square of the speed

85. In d.c. series traction motor operating on the linear portion of magnetization curve of core material, speed N and armature current I are related as ()
- (a) $N \propto I$ (b) $N \propto I^2$ (c) $N \propto \frac{1}{I}$ (d) $N \propto \frac{1}{I^2}$
86. In traction system high torque should be produced during ()
- (a) starting period (b) running period
(c) coasting period (d) notching period
87. Shunt motors are not suitable for traction duty because ()
- (a) Torque developed varies linearly as current
(b) Speed Control is not easy
(c) Low efficiency
(d) Produces low tractive effort
88. Area under speed-time curve represents ()
- (a) Average speed (b) Average acceleration
(c) Total distance travelled (d) Free running
89. The friction at the track is proportional to ()
- (a) Speed (b) $(\text{Speed})^2$ (c) $(\text{Speed})^3$ (d) $\frac{1}{(\text{Speed})^2}$
90. The total flux required in any lighting scheme depends inversely on ()
- (a) surface area (b) space height ratio
(c) illumination (d) coefficient of utilization
91. In the stair case lighting arrangements the bulb glows, when the switch positions are ()
- (a) in the same position
(b) in opposite position
(c) first one in ON position and second one in OFF position
(d) first one in OFF position and second one in ON position
92. For long runs, the economical drive used in traction is _____ drive. ()
- (a) Fly wheel (b) Battery (c) Trolley (d) Hybrid
93. In closed loop control systems, with positive value of feedback gain, the overall gain of the system will ()
- (a) Increase (b) Decrease (c) Be unaffected (d) Blast
94. When the feedback signal becomes equal to the reference signal, then the _____ signal will become zero ()
- (a) Reference (b) Input (c) Output (d) Actuating
95. Human system is a multi variable closed loop control system ()
- (a) False (b) True
(c) No, it is an open loop (d) Not a control system

96. A Driver runs a car at a constant speed of 80 kmph. In this case, the feed back element is ()
 (a) Eyes (b) Clutch (c) Steering wheel (d) Needle of the speedometer
97. Which type of motor is used in ceiling fan, refrigerator, compressor and other loads requiring no noise operation ()
 (a) D.C. series motor (b) 3-phase synchronous motor
 (c) 1-phase capacitor start and run induction motor
 (d) Schrage motor
98. In the stair case lighting arrangement the number of switches used are ()
 (a) One (b) Two (c) Three (d) Zero
99. An Electric Drive System consists of ()
 (a) An electric motor (b) An electric generator
 (c) A motor along with speed control system
 (d) Speed control system
100. The speed of a d.c. motor can be varied below the rated speed by ()
 (a) Field weakening method (b) Armature voltage control method
 (c) Both 1 and 2 (d) Four point starter

KEY LIST

1. d	2. a	3. a	4. d	5. d	6. a	7. b	8. a	9. b	10. c
11. c	12. d	13. a	14. b	15. d	16. c	17. a	18. c	19. b	20. b
21. a	22. d	23. d	24. c	25. a	26. a	27. a	28. a	29. d	30. a
31. b	32. c	33. a	34. b	35. b	36. b	37. a	38. a	39. b	40. b
41. b	42. a	43. b	44. a	45. a	46. b	47. b	48. d	49. a	50. a
51. c	52. b	53. d	54. b	55. a	56. a	57. c	58. b	59. c	60. b
61. b	62. a	63. a	64. c	65. a	66. b	67. a	68. a	69. b	70. b
71. d	72. c	73. a	74. b	75. c	76. a	77. c	78. d	79. b	80. c
81. b	82. b	83. a	84. c	85. d	86. a	87. a	88. c	89. b	90. b
91. b	92. a	93. a	94. d	95. b	96. d	97. c	98. b	99. c	100. b