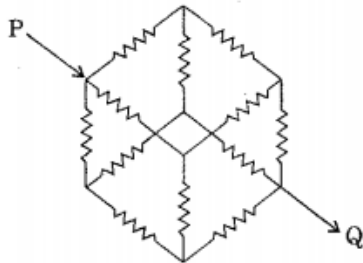


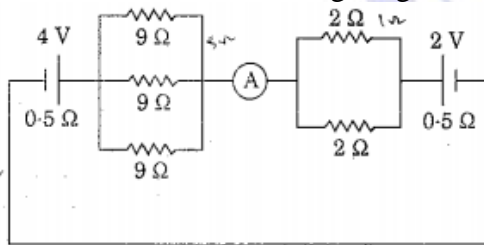
**Previous Question Paper for Government Polytechnic Lecturers exam (EEE)  
held on 06-01- 2013**

01. Twelve wires of same length and same cross-section are connected in the form of a cube as shown in figure below. If the resistance of each wire is  $R$ , then the effective resistance between  $P$  and  $Q$  will be



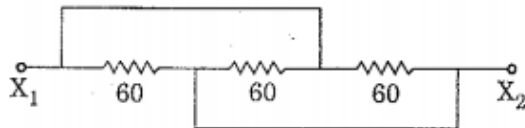
- (1)  $R$                       (2)  $5/6R$                       (3)  $3/4R$                       (4)  $4/3R$

02. For the circuit shown in figure given below, the reading in the ammeter  $A$  will be



- (1) 2 A                      (2) 0.5 A                      (3) 0.4 A                      (4) 0.2 A

03. Three resistances of 6 ohm each are connected as shown in Figure given below. The equivalent resistance between  $X_1$  and  $X_2$  is



- (a) 20 ohm                      (2) 40 ohm                      (3) 80 ohm                      (4) 12 ohm

04. Which of the following theorems can be applied to any network – linear or non-linear active or passive, time variant or time-invariant?

- (1) Thevenin theorem                      (2) Norton theorem  
(3) Tellegen theorem                      (4) Superposition theorem

05. The ratio of readings of wattmeters connected to measure power in a balanced 3-phase load is 5.3 and the load is inductive. The power factor of the load is

- (1) 0.917 lead                      (2) 0.917 lag                      (3) 0.6 lead                      (4) 0.6 lag

06. Lamps of 40W, 100W, 200W ratings are connected in different phases of a 3-phase four wire supply. If the neutral wire breaks, then the lamp likely to fuse first will be

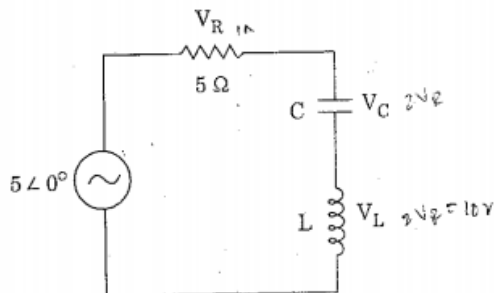
- (1) 200 W                      (2) 100 W                      (3) 40 W                      (4) all lamps

07. The power delivered to a 3-phase load can be measured by the use of 2 wattmeters only when the

- (1) load is balanced                      (2) load is unbalanced

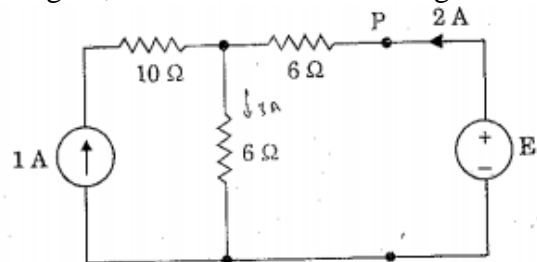
- (3) 3-phase load is connected to the source through 3-wires
- (4) 3-phase load is connected to the source through 4-wires

08. A network has 10 nodes and 17 branches. The number of different node pair voltage would be  
 (1) 7 (2) 9 (3) 45 (4) 10
09. Superposition theorem is not applicable for  
 (1) voltage calculations (2) bilateral elements  
 (3) power calculations (4) passive elements
10. A series RC circuit is suddenly connected to a dc voltage of V volts. The current in the series circuit just after the switch is closed is equal to  
 (1) zero (2)  $V/RC$  (3)  $VC/R$  (4)  $V/R$
11. The peak factor is the ratio of  
 (1) average value to rms value (2) rms to average value  
 (3) peak value to rms value (4) peak value to average value
12. The ratio of effective value of average value is called the \_\_\_\_\_ factor.  
 (1) form (2) peak (3) average (4) Q
13. The bandwidth of a resonant circuit is given by  
 (1)  $R/2\pi L$  Hz (2)  $f_r/Q$  Hz (3)  $2\pi R/L$  Hz (4) both (1) and (2)
14. The RMS value of voltage  $U(t) = 3 + 4 \cos(3t)$  is  
 (1)  $(17)^{1/2}V$  (2) 5 V (3) 7 V (4)  $(3 + 2\sqrt{2}) V$
15. In the figure shown, the magnitudes of  $V_L$  and  $V_C$  are twice that of  $V_R$ . Given that  $f = 50$  Hz, the inductance of the coil is



- (1) 2.14 mH (2) 5.30 H (3) 31.8 mH (4) 1.32 H

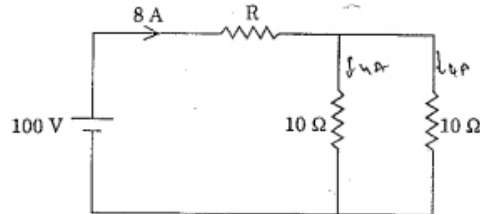
16. In figure, the value of source voltage is



- (1) 12 V (2) 24 V (3) 30 V (4) 44 V

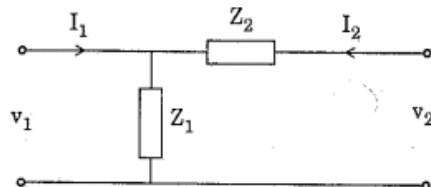
17. The Z matrix of a two-part network is given by  $\begin{bmatrix} 0.9 & 0.2 \\ 0.2 & 0.6 \end{bmatrix}$ . The element  $Y_{22}$  of the corresponding Y matrix of the same network is given by  
 (1) 1.2 (2) 0.4 (3) -0.4 (4) 1.8

18. In the figure given below, the value of R is



- (1) 2.5 Ω (2) 5.0 Ω (3) 7.5 Ω (4) 10 Ω
19. Two resistors  $R_1$  and  $R_2$  given combined resistance of 4.5 Ω when in series and 1 Ω when in parallel. The resistances are  
 (1) 2 Ω and 2.5Ω (2) 1 Ω and 3.5 Ω  
 (3) 1.5 Ω and 3 Ω (4) 4 Ω and 0.5 Ω

20. For the two-port network shown in the figure, then Z matrix is given by



- (1)  $\begin{bmatrix} Z_1 & Z_1 + Z_2 \\ Z_1 + Z_2 & Z_2 \end{bmatrix}$  (2)  $\begin{bmatrix} Z_1 & Z_1 \\ Z_1 + Z_2 & Z_2 \end{bmatrix}$   
 (3)  $\begin{bmatrix} Z_1 & Z_2 \\ Z_2 & Z_1 + Z_2 \end{bmatrix}$  (4)  $\begin{bmatrix} Z_1 & Z_1 \\ Z_1 & Z_1 + Z_2 \end{bmatrix}$
21. Coulomb's law states that the force F between two point charges  $Q_1$  and  $Q_2$  is  
 (1) Along the line joining them  
 (2) Directly proportional to the product of  $Q_1Q_2$  of the charges  
 (3) Inversely proportional to the square of the distance between them  
 (4) All the above
22. The total electric flux through any closed surface is equal to the total charge enclosed by that surface is  
 (a) Gauss's law (2) Coulomb's law  
 (3) Uniqueness theorem (4) Biot-Savart's law
23. Electric flux density is also called  
 (1) Electric displacement (2) Electric Potential  
 (3) Conduction current density (4) None of the above
24. Line integral of the tangential component of H around a closed path is the same as the net around a closed path is the same as the net current enclosed by the path. This law is referred to as  
 (1) Ampere's circuit law (2) Maxwell's equation  
 (3) Both (1) and (2) (4) None of the above

25. In a travelling electromagnetic wave, E and H vector fields are  
(1) Parallel in space (2) Perpendicular in space  
(3) E is in the direction of wave travel (3) None of the above
26. Skin depth is proportional to  
(1) Frequency (2) Permeability  
(3) Square-root( $\sigma$ ) (3) 1/square-root( $\sigma$ )
27. A 25 cm long rod with a uniform circular section of 10 cm is uniformly magnetized and has a pole strength of 120 amp/metre. Determine the suitable value of current required for a magnetically equivalent at core solenoid of the same size and wound with 1000 turns of wire.  
(a) 30 amps (b) 45 amps (3) 20 amps (4) None of the above
28. Hysteresis in an instrument means  
(1) the change in same reading when input is first increased and then reduced  
(2) the reliability of the instrument  
(3) the repeatability of the instrument  
(4) the inaccuracy due to change in temperature
29. Torque/weight ratio of an instrument indicates  
(1) selectivity (b) accuracy (3) fidelity (4) sensitivity
30. To measure 5 volts, if one selects a 0 – 100 V range voltmeter which is accurate within  $\pm 1\%$ , then the error in this measurement may be upto  
(1)  $\pm 1.5\%$  (b)  $\pm 2.5\%$  (3)  $\pm 7.5\%$  (4) 20%
31. Sensitivity of a voltmeter is given as  
(1)  $\Omega/V$  (2) reciprocal of full-scale deflection current  
(3) Both (1) and (2) (4) None of the above
32. The response of a galvanometer is independent of its  
(1) Controlling torque (2) number of turns  
(3) circuit resistance (4) None of the above
33. The moving iron instruments  
(1) indicate the same values of measured for both ascending and descending values  
(2) indicate higher value of measured for descending values  
(3) indicate lower value of measured for ascending values  
(4) may indicate any of the higher or lower value of measurand for ascending or descending values
34. An advantage of a PMMC instrument is that it is  
(1) free from friction error  
(2) has high (torque/weight of the moving parts) ratio  
(3) has low (torque/weight of the moving parts) ratio  
(4) can be used on both ac and dc
35. Moving iron and PMMC instruments can be distinguished from each other by looking at  
(1) pointer (2) terminal size (3) scale (4) scale range

36. A multimeter is used for the measurement of the following:  
I. Both ac and dc voltages  
II. Both ac and dc current  
III. Resistance  
IV. Frequency  
V. Power  
Select the correct answer using the codes given  
(1) I, II and IV      (2) I, II and V      (3) I, III and V      (4) I, II and III
37. The coils having self-inductance of 10 mH and 15 mH and effective inductance of 40 mH, when connected in series aiding. What will be the equivalent inductance if we connect them in series opposing ?  
(1) 20 mH      (2) 10 mH      (3) 5 mH      (4) zero
38. The materials having low retentivity are suitable for making \_\_\_\_\_ magnets  
(1) permanent      (2) temporary      (3) weak      (4) strong
39. The band width of a control system can be increased by using \_\_\_\_\_ compensator.  
(1) phase lead      (2) phase lag      (3) phase lag-lead      (4) None of these
40. Feedback control systems are  
(1) band-pass filter      (2) low-pass filter      (3) high-pass filter      (4) None of the above
41. A unity feedback system with forward TF  $G(s) = k/s(s + 4)(s + 5)$  has a breakaway point at  
(1) - 1.4725      (2) - 4.5275      (3) - 6.5275      (4) - 4
42. Which of the following is the best method for the determination of stability and transient response?  
(1) Bode plot      (2) Root locus      (3) Nyquist plot      (4) None of the above
43. If the gain of the open loop control system is halved, the gain margin will \_\_\_\_\_ of the original value.  
(1) become four times      (2) become half  
(3) become double      (4) become one-fourth
44. Concept of a phase margin and gain margin is applicable to \_\_\_\_\_ system only.  
(1) open loop unstable      (2) open loop stable  
(3) closed loop      (4) closed loop stable
45. Bandwidth is used as a means for specifying the performance of a control system related to the  
(1) speed of response      (2) constant gain  
(3) relative stability      (4) All the above
46. Gain margin is the factor by which the system can be increased to drive it to the verge of  
(1) instability      (2) stability      (3) critical damping      (4) oscillation
47. The negative real axis of Nyquist plot corresponds to  
(1) a positive 180 degree phase line of Bode plot  
(2) a negative 180 degree phase line of Bode plot



- (3) 0 dB line of Bode plot  
(4) None of the above
48. For Nyquist plot we use  
(1) open loop transfer function  
(2) closed loop transfer function  
(3) characteristic equation  
(4) None of the above
49. In control systems, excessive bandwidth is not employed because  
(1) noise is proportional to bandwidth  
(2) it leads to low relative stability  
(3) it leads to slower response  
(4) noise is proportional to square of bandwidth
50. Root locus diagram is used to determine  
(a) absolute stability  
(2) relative stability  
(3) conditional stability  
(4) None of the above
51. Root loci terminates at  
(1) open loop poles  
(2) closed loop poles  
(3) open loop zeros  
(4) closed loop zeros
52. Feedback increases system  
(1) gain  
(2) sensitivity  
(3) stability  
(4) All of these
53. In root locus plot, different roots have same  
(1) phase  
(2) gain  
(3) both phase and gain  
(4) None of the above
54. For a second order differential equation, if the damping ratio is unity then the poles are  
(1) imaginary and complex  
(2) equal, negative and real  
(3) equal, positive and real  
(4) None of the above
55. The maximum overshoot of a second order system can be increased by  
(1) reducing damping frequency  
(2) increasing damping frequency  
(3) increasing damping factor  
(4) None of the above
56. An example of solid state device is  
(1) Zener diode  
(2) Triode  
(3) Pentode  
(4) Thyatron
57. Which of the following statements is correct?  
(1) Oxide coated emitters are used in X-ray tubes  
(2) Secondary emission does not affect the operation of vacuum tubes having more than two electrodes  
(3) Photo-electric emission is used in photo-tubes forming the basis of TV and sound films  
(4) The force, which prevents the electrons from leaving surface is called the work function of the metal
58. A thyatron is a  
(1) Gas filled diode  
(2) Gas filled triode  
(3) Gas filled tetrode  
(4) None of the above

59. Which of the following statements is correct?  
 (1) Copper has partially filled conduction band  
 (2) Diamond has a completely filled conduction band but an empty valence band  
 (3) Silicon has a partially filled conduction band and an empty valence band  
 (4) Energy gap between conduction and valence bands in diamond is smaller than in silicon.
60. In a P-N junction without biasing, the P side is  
 (1) Negatively charged (2) Uncharged  
 (3) Not necessarily charged (4) None of the above
61. If  $\alpha = 0.98$ ,  $I_{CO} = 6 \mu\text{A}$  and  $I_B = 100 \mu\text{A}$  for a transistor, then the value of  $I_C$  is  
 (1) 2.3 mA (2) 3.1 mA (3) 5.2 mA (d) None of the above
62. The polarity of  $V_{GS}$  for E-MOSFET is  
 (1) Zero (2) Negative  
 (3) Positive (4) Depends on whether the channel is P or N channel
63. Which of the following parameter(s) is used for distinguishing between a small signal and a large signal amplifier?  
 (1) Voltage gain (2) Frequency response  
 (3) Harmonic distortion (4) Input/Output impedances
64. An amplifier has gain without feedback as 10. To make it oscillate,  $\beta$  must be  
 (1) 0.2 (2) 0.1 (3) 1 (4) 10
65. A stable multivibrator has  
 (1) A stable state (2) Two quasi stable states  
 (3) An oscillator (4) None of the above
66. In a Wein bridge oscillator with  $R = 5 \text{ K}\Omega$  and  $C = 0.01 \mu\text{F}$ , the frequency of oscillation will be  
 (1) 7.8 KHz (2) 3.2 KHz (3) 2.5 KHz (4) 780 KHz
67. The ideal value of common mode rejection ratio is  
 (1) 1 (2) 0 (3) Infinity (4) None of the above
68. The main advantage in using a three OP-AMP instrumentation amplifier over a single OP-AMP differential amplifier lies in  
 (1) Higher values of CMRR (2) Lower noise figure  
 (3) Elimination of the need for accurate matching of resistors (4) None of the above
69. An operation amplifier is  
 (1) Direct coupled high gain amplifier (2) Device to perform linear operations  
 (3) Device to perform non-linear operations (4) All the above
70. Match List I with List II and select the correct answer using the codes given below the lists:
- | List I              | List II         |
|---------------------|-----------------|
| <u>(BJT region)</u> | <u>(Width)</u>  |
| A. Emitter          | i. very thin    |
| B. Base             | ii. Large       |
| C. Collector        | iii. Very large |

**Codes:**

- |     | A                 | B  | C   |
|-----|-------------------|----|-----|
| (1) | i                 | ii | iii |
| (2) | iii               | i  | ii  |
| (3) | ii                | i  | iii |
| (4) | None of the above |    |     |

71. Equation bar is necessary for parallel operation of \_\_\_\_\_ dc generators  
(1) series (2) Over compound  
(3) under compound (4) series and compound
72. Dynamic braking is very effective if the dc motor is  
(1) series excited (2) shunt excited  
(3) separately excited (4) cumulative compound excited
73. A homopolar generator usually has  
(1) high voltage low current (2) high voltage high current  
(3) low voltage low current (4) low voltage high current
74. In a dc motor, the windage loss is proportional to  
(1) supply voltage (2) square of supply voltage  
(3) square of flux density (4) square of armature speed
75. The number of interpole in a two-pole cross field generator will be  
(1) 2 (2) 4 (3) 6 (4) 8
76. DC shunt motors are used in driving  
(1) electric traction (2) centrifugal pumps (3) lifts (4) All the above
77. Wave winding is composed of  
(1) any odd number of conductors  
(2) any even number of conductors  
(3) that even number which is exact multiple of poles  $\pm 2$   
(4) that even number which is exact multiple of poles
78. The commutator segments of a dc machines are made of  
(1) carbon (2) stainless steel (3) hard drawn copper (4) tungsten
79. The yoke of a dc machine is  
(1) laminated (2) not laminated  
(3) may or may not be laminated (4) sometimes laminated
80. The direction of emf generated in dc generator can be found out by considering  
(1) Fleming's left hand rule (2) Fleming's right hand rule  
(3) Lenz's law (4) Kirchhoff's law
81. The overall efficiency of a well-designed dc machines may be expected to be around  
(1) 97% (2) 92% (3) 75% (4) 60%



82. A 6-pole machine is rotating at a speed of 1200 rpm. This speed in mechanical rad/sec and electrical radians per sec is respectively  
(1)  $40\pi$ ,  $40/3\pi$       (2)  $120\pi$ ,  $40\pi$       (3)  $20\pi$ ,  $60\pi$       (4)  $40\pi$ ,  $120\pi$
83. A 4-pole dc generator runs at 1500 rpm. The frequency of current in the armature winding is  
(1) 25 Hz      (2) 50 Hz      (3) zero Hz      (4) 100 Hz
84. If all the stator coils of an induction motor are connected for the same magnetic polarity, there will be formed an equal number of  
(1) Rotor poles with same polarity      (2) Rotor poles with opposite polarity  
(3) Consequent poles with opposite polarity      (4) Consequent poles with same polarity
85. In a 3-phase slip ring induction motor, the rotor winding terminals are brought out through slip-rings to  
(1) Connect extra resistance across them during starting  
(2) Connect them either in star or in delta as per need  
(3) Connect to 3-phase ac supply  
(4) close the rotor circuit internally
86. The value of air gap flux density in an induction motor is in the range of  
(1) 9.35 – 0.6 T      (2) 0.8 to 1.0 T      (3) 0.1 to 0.25 T      (4) 2.5 to 3.5 T
87. Stator flux induces emf in the rotor bars  
(1) Rotating at synchronous speed around stator      (2) Constant in magnitude  
(3) magnitude depending upon the load on the motor      (4) None of the above
88. The no-load current in an induction motor is approximately \_\_\_\_\_ percent of full-load current.  
(1) 2      (2) 10      (3) 30      (4) 6
89. The power factor at which single phase induction motors usually operate is  
(1) 0.7 lag      (2) 0.8 lag      (3) 0.7 lead      (4) Unity
90. Under which of the following starting methods, an induction motors draws largest starting current?  
(1) Star-delta starting      (2) Auto-transformer starting  
(3) Direct-on-line-starting      (4) Reduced voltage starting
91. The direction of rotor current produced in an induction motor can be determined by  
(1) Lenz's law      (2) Induction law  
(3) Fleming's right hand rule      (4) Fleming's left hand rule
92. In a synchronous machine, if the field flux axis is ahead of the armature field flux axis in the direction of rotation, the machine operating is  
(1) Synchronous motor      (2) Synchronous generator  
(3) Asynchronous motor      (4) Asynchronous generator
93. Skew of rotor bars eliminates  
(1) The effect of space harmonics      (2) The entire effect of crawling  
(3) Magnetic noise      (4) Vibration due to unequal force developed on rotor

94. Two mechanically couple alternators deliver power at 50 Hz and 60 Hz respectively. The highest speed of alternator is  
(1) 3600 rpm (2) 300 rpm (3) 600 rpm (4) 500 rpm
95. In 36-slot, 4-pole, 3-phase alternator, the winding pitch is 7. The electrical angle by which the winding is chorded is equal to  
(1) 40 deg (2) 30 deg (3) 60 deg (4) 15 deg
96. The slip for max torque is independent of  
(1) voltage (2)  $R_2$  (3)  $X_2$  (4)  $R_2/X_2$
97. The function of a commutator in a dc machine is  
(1) To improve commutations (2) To change ac current and dc current  
(3) To change ac voltage and dc voltage (4) To provide easy speed control
98. The frequency of the current induced in the running rotor of an induction motor is  
(1) Equal to the supply frequency is (2) Greater than the supply frequency  
(3) Less than the supply frequency (4) Two thirds of the supply frequency
99. A 3-phase, 6-pole synchronous motor runs at a speed of 900 rpm. The supply frequency is  
(1) 50 Hz (2) 45 Hz (3) 30 Hz (4) 33.3 Hz
100. An increase in the resistance of an R.L.C. series circuit decreases the \_\_\_\_\_ of a circuit  
(1) Quality factor (2) Impedance (3) Power factor (4) None of these
101. The desirable properties of transformer core material are \_\_\_\_  
(1) Low permeability and Low hysteresis loss  
(2) High permeability and High hysteresis loss  
(3) High permeability and Low hysteresis loss  
(4) Low permeability and High hysteresis loss
102. If  $r_2$  and  $x_2$  are the resistance and reactance/phase of the rotor at stand still, the condition for starting torque is equal to full load torque is  
(1)  $r_2 = x_2$  (2)  $r_2 = 2x_2$  (3)  $r_2 = x_2/2$  (4)  $r_2 = 3x_2$
103. Which DC motor is preferred for elevators:  
(1) Series motor (2) Shunt motor  
(3) Differential compound motor (4) Cumulative compound motor
104. In a differential compound generator, the series field turns are provided on  
(1) Armature (2) Commutator (3) Inter poles (4) Main pole
105. In single phase core type transformers, LV and HV windings are arranged as under  
(1) LV on one core limb, HV on the other core limb  
(2) Half HV near the core and half LV outside the HV on each limb  
(3) LV and HV windings sections are sandwiched  
(4) Half LV near the core and half HV outside the LV on each limb

106. Transformer action requires a/an  
(1) Constant magnetic flux (2) Increasing magnetic flux  
(3) Alternating magnetic flux (4) Alternating electric flux
107. The primary (220 side) of a 220/6 V, 50 Hz transformer is connected to 110 V, 60 Hz source. The secondary output voltage will be  
(1) 3.6 V (2) 3.0 V (3) 2.5 V (4) 1.667 V
108. Possible three to three phase transformer connection for parallel operation is  
(1)  $\Delta - Y$  to  $\Delta - Y$  (2)  $\Delta - \Delta$  to  $\Delta - Y$   
(3)  $Y - Y$  to  $\Delta - Y$  (4)  $\Delta - Y$  to  $Y - \Delta$
109. A 500 KVA transformer has constant loss of 500 W and copper losses at full load are 2000 W. Then at what load is the efficiency maximum ?  
(1) 225 KVA (2) 250 KVA (3) 450 KVA (5) 500 KVA
110. A hydroelectric power station is commonly found in  
(1) desert areas (2) hilly areas (3) swamps (4) grasslands
111. The function of a surge tank is to  
(1) supply water at constant pressure (2) relieve water hammer pressures in the penstock pipe  
(3) produce surge in the pipeline (4) None of the above
112. Operating cost of steam power plant is  
(1) less than that of nuclear power plants  
(2) less than that of diesel/gas turbine power plant  
(3) less than that of hydroelectric power plant  
(4) the same as that of nuclear power plant
113. The advantage of reheating of steam in a turbine is that  
(1) it increases the efficiency of the turbine (2) it reduces the wear on the blades  
(3) it increases the work done through the turbine (4) All of the above advantages
114. Turbo alternators run at  
(1) a variable speed of around 2,000 rpm (2) a constant speed of 1,000 rpm  
(3) a constant speed of 3,000 rpm (4) None of the above
115. The power output of a nuclear power stations is proportional to  
(1) the rate at which fission reaction occurs  
(2) square root of the rate at which fission reaction occurs  
(3) square of the rate at which fission reaction occurs  
(4) None of the above
116. Which material is used in controlling chain reaction in a nuclear reactor?  
(1) Thorium (2) Heavy water (3) Boron (4) Beryllium
117. A 3-phase, 4-wire system is commonly used for  
(1) primary distribution (2) secondary distribution  
(3) primary transmission (4) secondary transmission

118. Large industrial consumers are supplied power at  
(a) 400 KV (2) 11 KV (3) 66 KV (4) 132 KV
119. In a transmission system, the feeder supplies power to  
(1) transformer substations (step-up) (2) service mains  
(3) distributors (4) all of the above
120. The main advantage of ac transmission over dc transmission is  
(1) less insulation problems  
(2) low losses in transmission over long distances  
(3) less instability problem  
(4) low corona loss and reduced interference with communication circuits
121. Corona is accompanied by  
(1) violet visible discharge in darkness (2) hissing sound  
(3) vibration (4) All of the above
122. Corona loss in a transmission line is dependent on  
(1) diameter of the conductor (2) material of the conductor  
(3) height of the conductor (4) None of the above
123. In terms of constants A, B, C and D for short transmission lines which of the following relation(s) is /are valid?  
(a)  $A = D = 1$  (2)  $C = 0$  (3)  $B = Z$  (4) All of the above
124. To increase the transmission capability of a high voltage long line  
(1) the resistance can be increased (2) the resistance can be decreased  
(3) the series reactance can be reduced (4) the shunt admittance can be reduced
125. Series capacitance is used in a transmission line to  
(1) compensate the voltage drop (2) reduce line loss  
(3) limit short circuit current (4) improve load power factor
126. Sheaths are used in cables to  
(1) provide proper insulation (2) provide mechanical strength  
(3) prevent ingress of moisture (4) None of the above
127. The material(s) used for armouring of an underground cable is/are  
(1) galvanized steel wire (2) steel tape (3) aluminium (4) either (1) or (2)
128. The insulation of modern EHV lines is designed based on  
(1) the lightning voltage (2) corona  
(3) radio interference (4) switching voltage
129. Shunt compensation in an EHV line is used to  
(1) improve stability (2) reduce fault level  
(3) improve the voltage profile (4) substitute for synchronous phase modifier

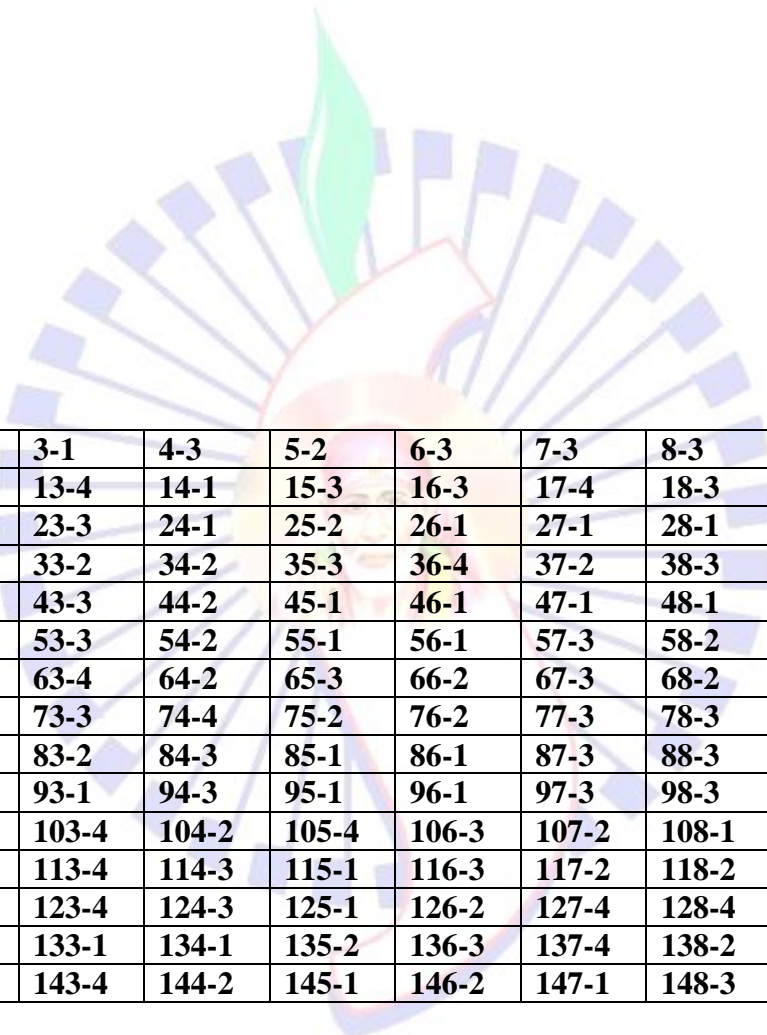


130. A circuit breaker is a  
(1) power factor correcting device (2) device to neutralize the effect of transients  
(3) waveform correcting device (4) current interrupting device
131. Interrupting medium in a contactor may be  
(1) air (2) oil (3) SF<sub>6</sub> gas (4) Any of the above
132. A relay used for protection of motors against overload is  
(1) Impedance relay (2) Electromagnetic attraction type  
(3) Thermal relay (4) Buchholz relay
133. The arc voltage produced in the circuit breaker is always  
(1) in phase with arc current (2) leading the arc current by 90°  
(3) lagging the arc current by 90° (4) None of the above
134. A lightning arrester connected between the line and earth in a power system  
(1) protects the terminal equipment against travelling surges  
(2) protects the terminal equipment against direct lightning stroke  
(3) suppresses high frequency oscillations in the line  
(4) reflects back the travelling waves approaching it
135. Series capacitors can be used in transmission lines to  
(1) provide reactive power compensation  
(2) reduce the line losses  
(3) reduce the voltage drop  
(4) reduce the receiving and voltage under light load conditions
136. For extra high voltage lines, which circuit breaker is preferred?  
(1) Bulk oil circuit breaker (2) Vacuum circuit breaker  
(3) SF<sub>6</sub> gas circuit breaker (4) Minimum oil circuit breaker
137. The acting contacts for circuit breakers are made of  
(1) Stainless steel (2) Hard pressed carbon (3) Porcelain (4) Copper tungsten alloy
138. Every well-developed machine consists of three important different parts, the prime mover, the transmission system and the working machine proper. The term drive is used for  
(1) Prime mover and the transmission  
(2) Prime mover and the working machine jointly  
(3) Transmission system and working machine jointly  
(4) Prime mover alone
139. Electric drive is becoming more and more popular because  
(1) It is simple, clean, compact and reliable  
(2) It provides easy and smooth control, flexibility in layout, easy starting and facility for remote control  
(3) It is cheaper in initial as well as in maintenance cost  
(4) All the above
140. The selection of an electric motor is governed by  
(1) Nature of load to be handled (2) Environmental condition  
(3) Nature of electric supply available (4) All the above.



141. Ward-Leonard controlled dc drives are usually used for  
(1) Light duty excavators (2) Medium duty excavators  
(3) Heavy duty excavators (4) All the above
142. In plugging the DC motors  
(1) Connections to armature are reversed (2) Connections to field are reversed  
(3) Connections to both armature and field are reversed (4) Connections to supply are reversed
143. The drawback(s) of regenerative braking is /are  
(1) Additional equipment is required for control of regeneration and for protection of equipment and machines  
(2) The DC machine required in case of regenerative braking are of larger size than those ordinarily employed  
(3) The operation of substations become complicated and difficult  
(4) All the above
144. The motor preferred for traction work is  
(1) DC shunt motor (2) DC series motor  
(3) Plain squirrel cage induction motor (4) Synchronous motor
145. For metal arc welding  
(1) Both DC and AC can be used but AC is preferred  
(2) Bare electrodes are no longer used except for automatic welding having arrangement to protect the weld area from the atmosphere  
(3) Correct welding current, voltage and speed are very important  
(4) All the above
146. Which of the following is not resistance welding?  
(1) Projection welding (2) MIG welding  
(3) Seam welding (4) Spot welding
147. Candle power is  
(1) The luminous flux emitted by the source per unit solid angle  
(2) The light radiating capacity of a source in a given direction  
(3) The unit of illumination  
(4) None of the above
148. A 250 V lamp has a total flux of 3000 lumens and takes a current of 0.8 A from 250 V mains. Its luminous efficiency is  
(1) 12 lumens/watt (2) 9-6 lumens/watt  
(3) 15 lumens/watt (4) 240 lumens/watt
149. Illumination due to moon light is about  
(1) 0.03 lumen/m<sup>2</sup> (2) 0.3 lumen/m<sup>2</sup>  
(3) 30-50 lumen/m<sup>2</sup> (4) 300 – 500 lumen/m<sup>2</sup>
150. Trapezoidal speed-time curve pertains to  
(1) Main line service (2) Urban service  
(3) Suburban service (4) Urban/Suburban service

**KEY :**



1-2	2-3	3-1	4-3	5-2	6-3	7-3	8-3	9-3	10-4
11-3	12-1	13-4	14-1	15-3	16-3	17-4	18-3	19-3	20-4
21-4	22-1	23-3	24-1	25-2	26-1	27-1	28-1	29-4	30-4
31-3	32-1	33-2	34-2	35-3	36-4	37-2	38-3	39-1	40-2
41-1	42-3	43-3	44-2	45-1	46-1	47-1	48-1	49-1	50-3
51-3	52-4	53-3	54-2	55-1	56-1	57-3	58-2	59-4	60-4
61-3	62-4	63-4	64-2	65-3	66-2	67-3	68-2	69-4	70-2
71-4	72-3	73-3	74-4	75-2	76-2	77-3	78-3	79-2	80-2
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91-1	92-2	93-1	94-3	95-1	96-1	97-3	98-3	99-2	100-1
101-3	102-1	103-4	104-2	105-4	106-3	107-2	108-1	109-2	110-2
111-2	112-2	113-4	114-3	115-1	116-3	117-2	118-2	119-3	120-2
121-4	122-1	123-4	124-3	125-1	126-2	127-4	128-4	129-3	130-4
131-4	132-3	133-1	134-1	135-2	136-3	137-4	138-2	139-4	140-4
141-3	142-1	143-4	144-2	145-1	146-2	147-1	148-3	149-3	150-1