ANDHRA PRADESH PUBLIC SERVICE COMMISSION :: VIJAYAWADA
ASSISTANT ELECTRICAL INSPECTORS IN A.P. ELECTRICAL INSPECTORATE
Scheme of the Examination
PAPER-3 (CONCERNED SUBJECT) ELECTRICAL ENGINEERING

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1. In a transmission system, the weight of copper used is proportional to

   1/E²

2. The self-inductance of a long cylindrical conductor due to its internal flux linkages is K H/m. If the diameter of the conductor is doubled, then the self-inductance of the conductor due to its internal flux linkages would be

   K H/m

3. The skin effect of a conductor reduces with the increase in

   Resistivity of the conductor material

4. The inductance of a transmission line is minimum when

   GMD is low and GMR is high

5. Consider the following materials for line conductors:

   1. Hard drawn copper
   2. Cadmium copper
   3. Aluminium
   4. Galvanised steel

   The correct sequence of the descending order of their electrical conductivity is

   1, 2, 3, 4

6. For a single-phase overhead line having solid copper conductors of diameter 1 cm spaced 60 cm between centres, the inductance in mH/km is

$$0.05 + 0.2 \log \frac{60}{0.5}$$

7. The capacitance of an overhead transmission line increases with

   1. Increases in mutual geometrical mean distance
   2. Increase in height of conductors above ground

   Select the correct answer from the following

   Both 1 and 2 are false

8. A 3-phase overhead transmission line has its conductors horizontally spaced with spacing between adjacent conductors equal to ‘d’. If now the conductors of the line are rearranged to form an equilateral triangle of sides equal to ‘d’ then

   Average capacitance will increase and inductance will decrease

9. If in a short transmission line, resistance and inductive reactance are found to be equal and regulation appears to be zero, then the load will

   Be 0.707 leading

10. A short transmission line, having its line Impedance angle as θ, is delivering a given power at the receiving end at a lagging power factor angle of ϕ. Which one of the following is a set of conditions for which this line will have maximum and zero regulation?

	Maximum Regulation	Zero Regulation
c)	$\phi = \theta$	$\phi + \theta = \frac{\pi}{2}$

11. The A, B, C, D constants of a 220 kV line are: $A = D = 0.94\angle 10^{\circ}$, $B = 130\angle 73^{\circ}$, $C = 0.001\angle 90^{\circ}$. If the sending-end voltage of the line for a given load delivered at a nominal voltage is 240 kV, the % voltage regulation of the line is

16

12. The ABCD parameters of a 3-phase overhead transmission line are $A = D = 0.9\angle 0^{\circ}$, $B = 200\angle 90^{\circ}\,\Omega$, $C = 0.95\times 10^{-3}\angle 90^{\circ}\,S$. At no-load condition a shunt inductive reactor is connected at the receiving end of the line to limit the receiving-end voltage to be equal to the sending-end voltage. The ohmic value of the reactor is

2000 Ω

13. A 220 kV, 20 km long 3-phase transmission line has the following A, B, C, D constants.

$A = D = 0.96\angle 3^{\circ}$, $B = 55\angle 65^{\circ}\,\Omega / phase$, $C = 0.0005\angle 80^{\circ}\,S / phase$. Its charging current per phase is

$\frac{11}{\sqrt{3}}$ ***A***

14. The ABCD constants of a 3-phase transmission line are: $A = D = 0.8\angle 1^{\circ}$, $B = 170\angle 85^{\circ}\,\Omega$, $C = 0.002\angle 90.4^{\circ}\,mho$. The sending-end voltage is 400 kV. The receiving end voltage under no-load condition is

500 kV

15. The values of A, B, C and D constants for a short transmission line are respectively

1, Z, 0 and 1

16. What will be the most economical value of diameter of a single core cable to be used on 50 kV, single phase system, when the maximum permissible stress in the di-electric is not exceeding 40 kV/cm?

3.53 cm

17. What is the empirical formula to calculate the number of strands?

3n (n+1) + 1

18. The presence of ground causes the line capacitance to

Increases by about 0.2%

19. A conductor is composed of seven identical copper strands each having a radius r, the self GMD of the conductor will be

2.177 r

20. A 3-phase transmission line of negligible resistance and capacitance has an inductive reactance of 100 ohms per phase. When the sending-end and receiving-end voltages are maintained at 110 kV, the maximum power that can be transmitted will be

121 MW

21. The sag of the conductors of a transmission line is 2.5 m, when the span is 250 m. Now if the height of supporting tower is increased by 25%, the sag will

Remain unchanged

22. A 132 kV transmission line has following data: Wt. of conductor = 680 kg/km, Length of span = 260 m, Ultimate strength = 3100 kg, Safety factor = 2, Then the sag of the conductor will be

3.7 m

23. A transmission line has a span of 200 metres between level supports. The conductor has a cross-sectional area of 1·29 cm^2, weighs 1170 kg/km and has a breaking stress of 4218 kg/cm^2 with a safety factor 5, then what is the working tension on the conductor

1088 kg

24. The propagation constant of a transmission line is given as

$j\omega\sqrt{LC}$

25. A transmission line has R, L, G, C distributed parameters per unit length of line. If Υ is the propagation constant of the line, which one of the following expressions represents the characteristic impedance of the line

$$\frac{R + j\omega L}{\Upsilon}$$

26. Strain type insulators are used

Any of (At dead ends or At intermediate anchor towers)

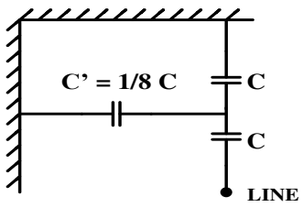
27. The voltage rating of a multiple shell pin type insulator unit cannot be increased beyond a limiting value by increasing the number of shells, because

The internal voltage distribution between shells becomes unequal

28. In three-unit insulator string, voltage across the lowest unit is 17.5 kV and string efficiency is 84.28%. The total voltage across the string will be equal to

44.25 kV

29. The equivalent capacitor arrangement of a two-string insulator is shown in the figure. The maximum voltage that each unit can withstand should not exceed 17.5 kV. The line voltage of the complete string is



33 kV

30. If the frequency of a transmission system is changed from 50 Hz to 100 Hz, the string efficiency

Remain unchanged

31. Two-insulator discs of identical capacitance value C makes up a string for a 22 kV, 50 Hz, single-phase overhead line insulation system. If the pin to earth capacitance is also C, then the string efficiency is

75%

32. A string insulator has 4 units. The voltage across the bottom most unit is 30% of the total voltage. Its string efficiency is

83.33%

33. A suspension type insulator has three units with self-capacitance C and ground capacitance of 0.2 C having a string efficiency of

78%

34. Consider the following statements:

In the case of suspension type insulators, the string efficiency can be improved by

1. Using a longer cross arm
2. Using a guard ring
3. Grading the insulator discs
4. Reducing the cross-arm length

Of these statements

1, 2, and 3 are correct

35. Grading ring is used to equalize the potential distribution across the units of the suspension insulator because it

Forms capacitances which help to cancel the charging current from link pins

3. Underground Cables: Insulation of cables – Grading of cables – Capacitance Measurement in cables – Testing of Cables – Power frequency withstand tests.

36. Single-core cable should have armour made of

Non-magnetic but conducting material

37. The insulation resistance of a single-core cable is 200 MΩ/km. The insulation resistance for 5 km length is

40 MΩ

38. Three insulating materials with breakdown strengths of 250 kV/cm, 200 kV/cm, 150 kV/cm and permittivities of 2.5, 3.0 and 3.5 are used in a single core cable. If the factor of safety for the materials is 5, the location of the materials with respect to the core of the cable will be

2.5, 3.0, 3.5

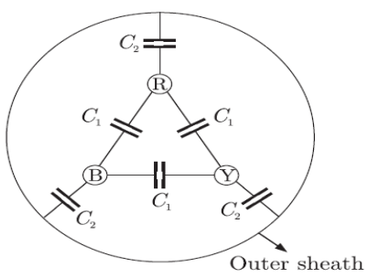
39. Grading of cables

Reduces insulation cost and increases current rating

40. The intersheaths in cables are used to

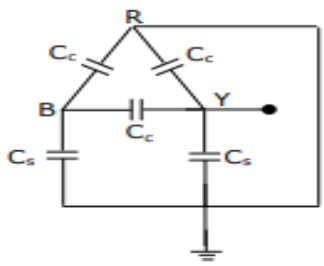
Provide proper stress distribution

41. Consider a 3-core, 3-phase, 50 Hz, 11 kV cable whose conductors are denoted as R, Y and B in the figure. The inter-phase capacitance (C_1) between each pair of conductors is 0.2 μF and the capacitance between each line conductor and the sheath is 0.4 μF . The per-phase charging current is



2 A

42. For the circuit shown in figure, the capacitance measured between terminals B and Y will be



$$\frac{\left(C_s+3C_c\right)}{2}$$

43. In a test by Murray loop for ground fault on 500 m of cable having a resistance of 1·6 Ω/km, the faulty cable is looped with a sound cable of the same length and area of cross-section. If the ratio of the other two arms of the testing network at balance is 3:1, then what is the distance of the fault from the testing end of cables

250 m

44. Dielectric hysteresis loss in a cable varies as

(Impressed voltage) ^{2}

45. The loss angle of a cable is δ . The power factor is

sin δ

46. The maximum short-circuit current occurs in the case of

Three-phase bolted fault

47. An isolated synchronous generator with transient reactance equal to 0.1 p.u on a 100 MVA base is connected to the high voltage bus through a step-up transformer of reactance 0.1 p.u on a 100 MVA base. The fault level at the bus is

500 MVA

48. If the positive, negative and zero-sequence reactances of an element of a power system are 0.3, 0.3 and 0.8 p.u respectively, then the element would be a

    Transmission line

49. The load currents in short-circuit calculation are neglected because

    1. Short-circuit currents are much larger than load currents
    2. Short-circuit currents are greatly out of phase with load currents.

    Which of these statement(s) is/are correct?

    1 alone

50. A 10 kVA, 400 V/200 V single-phase transformer with 10% impedance, draws a steady short-circuit current of

    250 A

51. The line currents of a 3-phase power supply are

$$I_R = 3 + j5A$$

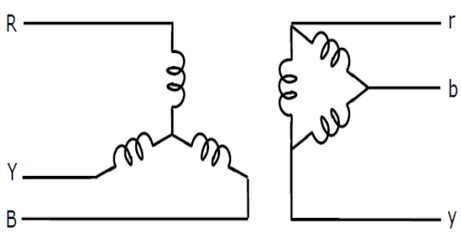
$$I_Y = 2 + j2A$$

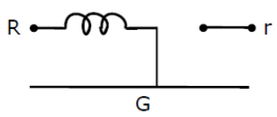
$$I_B = -2 - j1A$$

    The zero-sequence current will be:

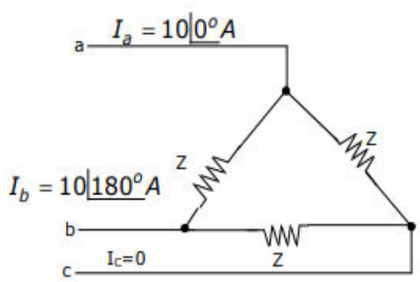
$$1 + j2A$$

52. The zero-sequence circuit of the three-phase transformer shown in the figure is





53. A 3-phase transmission line supplies Δ-connected load Z. The conductor 'c' of the line develops an open circuit fault as shown in figure. The currents in the lines are as shown on the diagram. The +ve sequence current component in line 'a' will be



$5.78\angle -30^\circ$

54. The positive, negative and zero sequence impedances of a solidly grounded system under steady state condition always follow the relations

$Z_1 > Z_2 > Z_0$

55. The bus admittance matrix of a power system is given as $\begin{bmatrix} -j50 & +j10 & +j5 \\ +j10 & -j30 & +j10 \\ +j5 & +j10 & -j25 \end{bmatrix}$ the impedance of the line between bus 2 and 3 will be equal to

    +j0.1

56. The positive-sequence current for a L-L fault of a 2 kV system is 1400 A, and corresponding current for a L-L-G fault is 2220 A. the zero-sequence impedance of the system is

    0.5275 Ω

57. At a 220 kV substation of a power system, it is given that the three-phase fault level is 4000 MVA and single-line-to ground fault level is 5000 MVA. Neglect the resistance and the shunt capacitances of the system, then what is the positive sequence driving point reactance at the bus is

    12.1 Ω

58. What will be the sum of ($I_B + I_Y$) in case of line to line fault, if the fault is occurring in the B and Y lines?

    0

59. A 3-phase, 3-wire system has a normal voltage of 10·4 kV between the lines. It is supplied by a generator having positive, negative and zero sequence reactances of 0·6, 0·5 and 0·2 Ω per phase respectively. What is the fault current which flows when a line-to-line fault occurs at the generator terminals?

    9447.5 A

60. In case of an unbalanced star-connected load supplied from an unbalanced 3-phase, 3-wire system, load currents will consists of

    Only Positive-sequence components and Negative-sequence components

5. Generating Stations: Location and types, types of hydroelectric power stations, layout of a hydro-power plant, types of turbines used – Pumped storage installations – Layout of thermal electric power stations, types of turbines used, condensers, cooling towers, boiler feed pump; energy flow diagram of steam power plant. Nuclear power generation; nuclear fission – types of nuclear power reactors – Principle of a fast breeder reactor.

61. What is the correct expression for the electrical power developed by a hydroelectric plant in kW?

    $\frac{0.736}{75} wQH\eta$

62. Taking the density of water to be 1,000 kg/m^3, how much power would be developed by a hydroelectric generator unit, assuming 100% efficiency, with 1.0 m head and 1.0 m^3/s discharge?

    9.80 kW

63. If power P available from a hydro-scheme is given by the formula P = 9.81 QH, where Q is the flow rate through the turbine in l/s and H is the head in metres, then P will be in units of

    W

64. In a medium or high head hydroelectric power station, a surge tank is provided to

    Control the pressure variations in the penstock pipes due to sudden load changes

65. For harnessing lower variable water heads, the suitable hydraulic turbine with high percentage of reaction and runner adjustable vanes is

    Kaplan

66. A hydel power plant of run-off-river type should be provided with pondage, so that the

    Firm capacity of the plant is increased

67. In pumped storage hydro power plant, the electrical machine is made to work alternately as generator and motor. The efficiency of the generator working at the same electrical power level is

    Less than that as motor

68. Consider the following statements concerning steam power plants:

1. Maintenance and operating costs are low
2. Water is required in huge quantity
3. Requires long time for starting
4. Handling of coal and disposal of ash can be done easily

Which of the above statements is/are correct?

2 and 3

69. Maximum efficiency of modern coal fired steam-raising thermal power plants is restricted to about 0.35, mainly because of

High energy loss from turbine exhaust to condenser

70. Arrange the following in the correct sequence in which the flue gas passes through them after coming out of the boiler in a thermal power station:

1. ID Fan
2. Air preheater
3. Economiser
4. Electrostatic precipitator

Select the answer using the given below codes

3, 2, 4, 1

71. A super critical boiler is one that operates above the pressure and temperature of the following values

218 kg/cm^2 and 540^0 C

72. The major function of the condenser is to

Reduce the back pressure so that maximum heat energy can be extracted from steam

73. For a 3-element feed water control in a coal-fired thermal power station, measurements of level of water in the boiler drums is made, so that the water level does not

Violate specified upper and lower limits

74. In coal-fired thermal power stations, what are the electrostatic precipitators used for?

To collect the dust particles from the flue gases

75. The efficiency of a nuclear power plant is less than that of a conventional fuel fired thermal plant because of

Low temperature and pressure conditions

76. In the nuclear fission reactions, isotope of uranium used is

U_{233}

77. Consider the following statements:

1. Nuclear fission occurs whenever uranium reacts with a neutron
2. Nuclear fission is accompanied by the release of neutrons and gamma rays
3. About 200 MeV of energy is released in the fission of a U^{235} nucleus
4. Energy from the fission of U^{235} nucleus is released mainly as kinetic energy of the neutrons and the energy of gamma radiations

Which of the above statements are correct?

a) 1, 2, 3 and 4

78. The radiation shield for a nuclear power reactor for biological safety is provided by having the reactor:

Encased by thick concrete wall

79. A heavy water reactor

Has higher neutron flux which can be produced at a given power level

80. Tarapur atomic power station has

Boiling water reactors

81. The operating characteristics of a reactance relay in the complex impedance plane is a

Straight line parallel to the X-axis

82. The plug setting of a n2egative sequence relay is 0.2 A. the current transformer ratio is 5:1. The minimum value of line to line fault current for the operation of the relay is

1 A

83. Directional overcurrent relays have two exciting coils connected across

CT and VT secondaries of the same phase

84. In distance protection, the relay measures

    Positive sequence impedance of the line from relay up to the fault point

85. A 3-phase 11/66 kV delta/star transformer, protected by merz-price scheme has CT ratio of 400/5 on lt side. Ratio of CT on ht side will be equal to

    23 : 1

86. For protection of parallel feeders fed from one end, the relays required are

    Non-directional relays at the source end and directional relays at the load end

87. The most efficient torque-producing actuating structure for induction-type relay is

    Induction-cup structure

88. Consider the following statements with reference to protective relays:
    1. The minimum relay coil current at which the relay operates is called pick-up value
    2. The pick-up value of a relay is 7.5 A and fault current is 30 A. therefore plug setting multiplier is 5
    3. An earth fault current is generally lesser than the short-circuit current
    4. Induction relays are used with both ac and dc quantities

    Which of these statements are correct?

    1 and 3

89. In an inverse definite minimum time, electromagnetic type over current relay, the minimum time feature is achieved because of

    Saturation of the magnetic circuit

90. A distance relay is said to be inherently directional if its characteristics on R-X diagram

    Is a circle that passes through the origin

91. For the protection a very long extra high voltage line, the protective relay used is

    Mho type distance relay

92. The short-circuit current of an alternator, in case of line-line fault, depends on its

    Synchronous reactance

93. We do not require any protection against prime mover failure in case of

    Turbo-generator sets

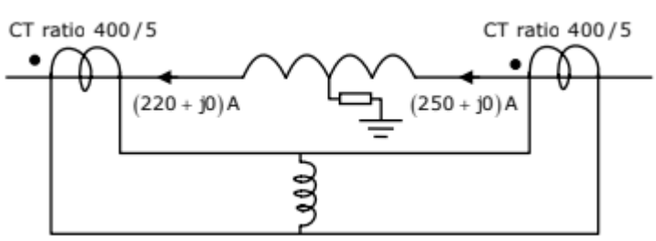
94. A large ac generator supplying power to an infinite bus has a sudden short circuit occurring at its terminals. Assuming the prime mover input and the voltage behind the transient reactance to remain constant immediately after the fault, the acceleration of the generator rotor is

    Inversely proportional to the moment of inertia of the machine

95. The bias factor S in unit protection of synchronous generators

    Lies between 0.05 and 0.1 pu

96. Consider a stator winding of an alternator with an internal high resistance ground fault. The currents under the fault conditions are as shown in figure. The winding is protected using a differential current scheme with current transformers of ratio 400/5 A as shown. The current through the operating coil is



    0.375 A

97. A negative sequence relay is commonly used to protect

Alternator

98. A large –size synchronous generator is protected against overloads by

Temperature sensitive relay

99. Which one of the following relays has the capability of anticipating the possible major fault in a transformer

Buchholz relay

100. To protect the power transformer (Y-Y with neutral grounded) against fault, what type of connection do the CTs have?

$\Delta - \Delta$ ***connection***

101. For the protection of transformers, harmonic restraint is used to guard against

Magnetising inrush current

102. The connections of CTs are opposite to that of transformer windings, so that current in the pilot wires of two are/have

Same phase

103. The Buchholz relay protects a transformer from

Types of internal faults

104. While energizing a transformer, to prevent the maloperation of a differentially connected relay, the relay restrained coil is biased with

Second harmonic current

105. IDMT relays are used to protect the power transformers against

Both External short circuits and Overloads

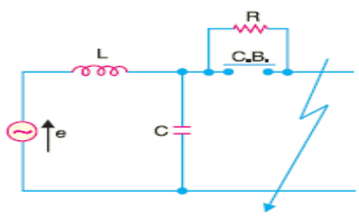
106. The interrupting time of a circuit breaker is the period between the instant of

Energizing of the trip circuit and the arc extinction on an opening operation

107. The arc voltage in a circuit breaker is

In the phase with the arcing current

108. In connection with the arc extinction in the circuit breaker, resistance switching is employed. Wherein a resistance is placed in parallel with the poles of the circuit breaker as shown in figure. This process introduces damping in the L-C circuit. For critical damping, the value of 'R' should be equal to



$0.5\sqrt{\frac{L}{C}}$

109. A three-phase breaker is rated 2,000 MVA, 33 kV. Its making current will be

89 kA

110. In a 220 kV system, the inductance and capacitance up to the circuit breaker location are 25 mH and 0.025 μF respectively. The value of resistor required to be connected across the breaker contacts which will give no transient oscillation is

500 Ω

111. A 50 Hz, 3-phase synchronous generator has inductance per phase of 15 mH. The capacitance of generator and circuit breaker is 0.002 μF . What is the natural frequency of oscillation?

29 kHz

112. The single most important property that makes SF_6 a very efficient medium for circuit breaking is

It is highly electronegative in character

113. Keeping in view the cost and overall effectiveness, the following circuit breaker is best suited for capacitor bank switching

Vacuum

114. The making and breaking currents of 3-phase ac circuit breakers in power system are respectively in what form?

Instantaneous value, Instantaneous value

115. A three –phase , 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. the symmetrical breaking current is

35 kA

116. The annual load duration curve of a power supply system may be considered as a straight line from 40 MW to 8 MW. The load factor of the system is

60%

117. An industrial consumer has a load pattern of 2,000 kW, 0.8 lag for 12 hours and 1000 kW unity power factor for 12 hours. The load factor is

0.75

118. A thermal generating station has an installed capacity of 15 MW and supplies a daily load of 10 MW for 12 hours and 5 MW of remaining 12 hours. The plant capacity factor for this station is

0.5

119. A generating station has a maximum demand of 30 MW, a load factor of 60% and a plant capacity factor of 50%. The reserve capacity of the plant is

6MW

120. The power which must be available ever under emergency conditions is known as

Firm reserve

121. A power plant has a maximum demand of 15 MW. The load factor is 50% and the plant factor is 40%. The operating reserve is

3.75 MW

122. In an interconnected grid system, the diversity factor of the whole system

Increases

123. The annual cost of generating station can be expressed in the form of Rs $(A + B \times kW + C \times kWh)$, where A, B, C are constants and kW and kWh represent capacity of the station and energy generated per year respectively. The choice between the base-load station and peak-load station basically depends on the fact that

a) Factor B should be less for the peak-load station and factor C should be less for the base-load station

124. In the optimum generator scheduling different power plants, the minimum fuel cost is obtained when

The incremental fuel cost of each plant multiplied by its penalty factor is the same

125. Two generating stations connected to a load centre having capacity of 50 MVA and 75 MVA deliver 100 MW to the load. The incremental fuel cost of plant 1 is 15 + 0.15 P_1 and that of the plant 2 is 18 + 0.15 P_2. What are the values of P_1 and P_2, respectively?

50 MW each

126. A lossless power system has to serve a load of 250 MW. There are two generators (G_1 and G_2) in the system with cost curves C_1 and C_2 respectively defined as follows:

$$C_1(P_{G1}) = P_{G1} + 0.055 \times P_{G1}^{\ 2}$$

$$C_2(P_{G2}) = 3P_{G2} + 0.03 \times P_{G2}^{\ 2}$$

Where P_{G1} and P_{G2} are the MW injections from generator G1 and G_2 respectively. Thus, the minimum Cost dispatch will be

P_{G1} = 100 MW and P_{G2} = 150 MW

127. In terms of power generation and B_{mn} coefficients, the transmission loss for a two-plant system is

$$P_1^2 B_{11} + 2P_1 P_2 B_{12} + P_2^{\ 2} B_{22}$$

128. If penalty factor of a plant is unity, its incremental transmission loss is

0.0

129. Two plants generate power as given below. P_{G1} = 50 MW and P_{G2} = 100 MW respectively. If the loss coefficients of the two plants are given as B_{11} = 0.002, B_{22} = 0.0015, B_{12} = -0.0011. the power lost will be

15 MW

130. For economic operation, the generator with highest positive incremental transmission loss will operate at

The lowest positive incremental cost of production

131. Match the following

List 1 (Types of motors)	**List 2 (Characteristics)**
A. DC series motor	1. Constant speed
B. DC shunt motor	2. High starting torque
C. 3-phase induction motor	3. Low starting torque
D. Synchronous motor	4. Poor stability

Codes:	A	B	C	D
	2	***1***	***3***	***4***

132. The type of drive used for a paper mill requiring constant speed operation and flexibility of control is

Individual or multi-motor drive

133. For estimation of power rating of an electric drive, its losses can be considered to be proportional to

(Power)^2

134. Two adjustable speed dc separately excited motors have maximum speeds of 1000 and 500 rpm. Speed is controlled by variation of field flux. Motor-A drives a load requiring constant developed power over the speed range and Motor-B drives a load requiring constant torque. All losses, including armature resistance and armature reaction may be neglected and magnetic circuit is assumed linear. If the developed power is equal at 500 rpm and armature currents are each 800 A, what will be the armature current at 1000 rpm

1600 A

135. An elevator drive is required to operate in

Four quadrants

136. The load torque decreases with the increase in speed in case of

Lathes, boring machines, milling machines

137. A small assembly shop 16 m long, 10 m wide and 3 m up to trusses is to be illuminated to level of 200 lux. The utilization and maintenance factors are 0.74 and 0.8 respectively. How many number of lamps are required to illuminate the whole area if the lumen output of the lamp selected is 3000 lumens

18

138. For the same rating, the size of the single-phase induction motor is about _____ that of the corresponding three-phase induction motor

1.5 times

139. The most economical method of electrical braking is

Regenerative braking

140. The duty cycle of a motor is

Load	Duration
20 kW	120 s
10 kW	120 s
Stopped	280 s

The continuous rating of motor suitable for above application would be

14.14 kW

141. A Lamp gives 1500 C.P. in every direction below the horizontal and no illumination above the horizontal, then how much of the total radiation sent vertically downward by the lamp in lumens.

4710

142. The distances of the screen from the lamp under test and standard lamp when adjusted are 1.6 m and 0.9 m respectively. If the standard lamp be of 80 CP, then what is the CP of the lamp under test

252.84 CP

143. Quadrilateral speed-time curve is the close approximation for

Urban service/ Suburban service

144. Neutral earthing is provided for

Both **Reducing the voltage stress on lines and equipment with respect to earth under various operating and fault conditions and Controlling the earth fault currents for protective relaying**

145. The method of neutral grounding effects the

Zero-sequence network

146. What is the reactance of Peterson coil suitable for a 33 kV, 3-phase transmission line having a capacitance to earth of each conductor as 4.5 μF ? Assume supply frequency to be 50 Hz.

235.8 **Ω**

147. A 230 kV, 3-phase, 50 Hz, 200 km transmission line has a capacitance to earth of 0.02 $\mu F / km$ per phase. Then what is the inductance of the Peterson coil used for earthing the above system

0.85 H

148. A 50 Hz overhead line has line to earth capacitance of 1.2 μF . It is desired to use earth fault neutralizer. What is the reactance to neutralize the capacitance of 90% of the length of the line

982.43 **Ω**

149. When single line to earth fault occurs on an ungrounded neutral system, the capacitive current in the two healthy phases rises to _____ times the normal value

$\sqrt{3}$

150. In Peterson coil grounding, when inductive fault current becomes equal to capacitive current of the system, then

$X_C = 3X_L; X_L = 3X_C$