MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

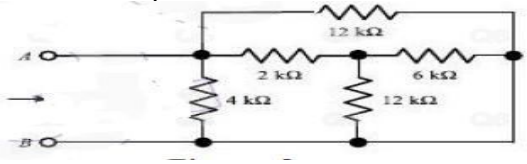
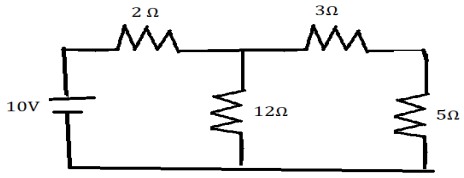
I B.Tech I Semester (MR20- 2020-21 Admitted Students)

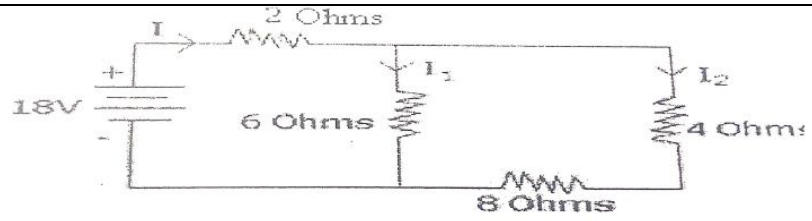
I Mid Examination (Question bank)

Subject :BASIC ELECTRICAL & ELECTRONICS ENGINEERING **Branch: CSE,IT,DS,CS,AIML,IOT**

Subject Code: Max.Marks:

MODULE : 1

Q.No.	Question	Bloom's Taxonomy Level	CO
1	Find the equivalent resistance for the following circuit? 	Applying	1
	OR		
2.	By using Thevinin's theorem Determine the current through 5 ohm resistor? 	Applying	1
3.	Explain superposition theorem with an example.	Understanding	1
	OR		
4	State and explain maximum transfer theorem	Understanding	1
5	Derive Star to Delta conversion equations and Delta to Star conversion equations.	Evaluating	1
	OR		
6	For the following circuit shown in figure calculate the current in the various branches	Analyze	1

			
7.	Explain Resistor ,Inductor and Capacitor in series and parallel	Understanding	1
	OR		
8	Write down KVL and KCL and Explain with Example.	Understanding	1

MODULE-II

Q.No.	Question	Bloom's Taxnomy Level	CO
1	Find Average value, RMS value, Form factor and Peak factor of sinusoidal current.	Applying	2
	OR		
2.	A series circuit consumes 2000W at 0.5 leading power factor when connected to 230 V , 50 Hz AC supply . Calculate (a) Current (b) KVA (c) KVAR	Applying	2
3.	Explain the terms (i) Maximum value (ii) Form factor (iii) Peak factor (iv)RMS value.(v) Average value	Understanding	
	OR		
4	Distinguish between the analysis of single phase pure inductor and pure Capacitor .	Understanding	2
5	Draw and explain the analysis of single phase RLC series circuit.	Applying	2
	OR		
6	An ac circuit consists of a pure resistance of 10 ohms and is connected across an AC supply of 230 V 50Hz. Calculated (a) RMS value of current (b) power (c) power factor (d) write down the equation for voltage	Applying	2

	and current.		
7.	An alternating voltage of 80+j60 V is applied to a circuit and the current flowing is 4- j2 A . Find the (a) impedance (b) phase angle (c) power factor (d) power consumed.	Applying	2
	OR		
8	Draw and explain the analysis of single phase RL series circuit.	Applying	2

MODULE-III

Q.No.	Question	Bloom's Taxnomy Level	CO
1	Explain the following terms (i) Lenzs law (ii) Faradays law (iii) Fleming Right hand rule	Understanding	3
	OR		
2	Explain the Constructional details of a DC Machines	Understanding	3
3	Explain the principle and operation of a DC generator.	Understanding	3
	OR		
4	Derive the equation for induced EMF of a DC generator.	Evaluating	
5	A 4-pole, DC generator has a useful flux per pole of 0.07 wb runs at 750 rpm. The armature winding is wave wounded with 252 conductors. Calculate the generated emf.	Applying	3
	OR		
6	A 4-pole ,lap wound Dc generator has a useful flux of 0.07wb per pole. Calculate the generated EMF when it is rotated at a speed of 900rpm with the help of prime mover. Armature consists of 440 no. of conductors. Also calculate the generated emf if lap wound armature is replaced by wave wound armature.	Applying	3

MALLA REDDY ENGINEERING COLLEGE

(AUTONOMOUS)

Question Bank for **I**- BTECH SEM - MID-I

BRANCH : CSE , IT DS , CS,AMIL & IOT

SUBJECT : BASICS ELECTRICAL & ELECTRONICS ENGINEERING

Objective Questions

1 Kirchhoff's second law is based on law of conservation of [ ]
(A) charge
(B) energy
(C) momentum
(D) mass.

2 What is the relationship between the resistance and voltage when the current is kept constant? [ ]
(A) equal to
(B) inversely proportional
(C) directly proportional
(D) constant

3 An ideal current source has [ ]
(A) Infinite source resistance
(B) Zero internal resistance
(C) Zero voltage on no load
(D) Zero ripple

4 An ideal voltage source should have [ ]
(A) Zero source resistance
(B) Infinite source resistance
(C) Terminal voltage is proportional to current
(D) Open-circuit voltage nearly equal to voltage of the load current

5 Identify the passive element among the following [ ]
(A) Voltage source
(B) current source
(C) inductor
(D) transistor

6 How much energy is stored by a 0.05μF capacitor with a voltage of 1000V? [ ]
(A) 0.025J
(B) 0.05J
(C) 5J
(D) 100J

7 The unit of power is [ ]
(A) Watt
(B) Volt
(C) Current
(D) None

8 State Kirchoff's current Law [ ]

(A) sum of all positive currents is equal to sum of all negative currents.
(B) sum of all positive emfs is equal to the sum of all negative emfs taken in order
(C) sum of all powers in a circuit
(D) sum of all emfs in a circuit

9 Define Kirchoff's voltage law [ ]

(A) algebraic sum of emf's - algebraic sum of voltage drops = 0
(B) algebraic sum of emf's + algebraic sum of voltage drops = 0
(C) zero
(D) algebraic sum of currents

10 A terminal where more than two branches met is called: [ ]

(A) Node
(B) Terminus
(C) Loop
(D) None of the above

11 Ohm's Law states that current through a conductor, under ----conditions is proportional to potential difference across the conductor. [ ]

(A) constant pressure
(B) constant pressure, temperature and volume
(C) constant volume
(D) constant temperature

12 In a parallel circuit, the relation between different currents is [ ]

(A) Zero = $I_1 + I_2 + I_3 + I_4 + - - - --$
(B) $I_T = I_1 \text{ X } I_2 \text{X } I_3 - - - - - -$
(C) $I_1 + I_2 + I_3 + - - - -- =$ infinity
(D) $I_T = I_1 + I_2 + I_3 + - - - --$

13 What are the units of voltage, current and Resistance respectively [ ]

(A) Ohms, Volts, Amperes
(B) Volts, Farads, Amperes
(C) Henries, Volts, Amperes
(D) Volts, Amperes, Ohms

14 What is the rule followed for kirchoff's voltage law? [ ]

(A) mesh rule
(B) current rule
(C) loop rule
(D) wheat stone rule

15 In a parallel circuit, the total resistance of circuit----------as the number of resistors connected in parallel---------- [ ]

(A) increases, increases
(B) increases, decreases
(C) decreases, decreases
(D) decreases, increases

16 In a series circuit, the total resistance of circuit-----as the number of resistors connected in series -------- [ ]

(A) increases, increases
(B) increases, decreases

(C) decreases, decreases
(D) decreases, increases

17 The mass of proton is roughly how many times the mass of an electron? [ ]
(A) 184,000
(B) 184,00
(C) 1840
(D) 184

18 One kilowatt hour of electrical energy is the same as [ ]
(A) 36×10^5 watts
(B) 36×10^s ergs
(C) 36×10^5 joules
(D) 36×10^5 B.T.U.

19 Which of the following is not the same as watt? [ ]
(A) joule/sec
(B) amperes/volt
(C) amperes x volts
(D) $(\text{amperes})^2 \times \text{ohm}$

20 A circuit contains two un-equal resistances in parallel [ ]
(A) current is same in both
(B) large current flows in larger resistor
(C) potential difference across each is same
(D) smaller resistance has smaller conductance

21 Conductance is expressed in terms of [ ]
(A) ohm / m
(B) m / ohm
(C) mho / m
(D) mho

22 We have three resistances of values 2 Ω, 3 Ω and 6 Ω. Which of following combination will give an effective resistance of 4 Ω [ ]
(A) All the three resistances in parallel
(B) 2 Ω resistance in series with parallel combination of 3 Ω and 6 Ω resistance
(C) 3 Ω resistance in series with parallel combination of 2 Ω and 6 Ω resistance
(D) 6 Ω resistance in series with parallel combination of 2 Ω and 3 Ω resistance

23 The unit of electrical conductivity is [ ]
(A) mho / metre
(B) mho / sq. m
(C) ohm / metre
(D) ohm / sq. m.

24 The resistance of a 100 W, 200 V lamp is [ ]
(A) 100 ohm
(B) 200 ohm
(C) 400 ohm
(D) 1600 ohm

25 Three 3 ohm resistors are connected to form a triangle. What is the resistance between any two of the corners [ ]
(A) 3 / 4 ohms

(B) 3 ohms
(C) 4.5 ohms
(D) 4/3 ohm

26 A resistance of 5 ohms is further drawn so that its length becomes double. Its resistance will now be [ ]
(A) 5 ohms
(B) 7.5 ohms
(C) 10 ohms
(D) 20 ohms

27 Specific resistance of a substance is measured in [ ]
(A) ohms
(B) mhos
(C) ohm-cm
(D) cm/ohm

28 A wire of resistance R has it length and cross-section both doubled. Its resistance will become [ ]
(A) 4 R
(B) 2 R
(C) R
(D) R / 4.

29 The value of supply voltage for 500 W ,5 ohm load is [ ]
(A) 500 V
(B) 100V
(C) 50 V
(D) 10V

30 100 resistors of 100 ohms each arc connected in parallel. Their equivalent resistances will be [ ]
(A) 10,000 ohms
(B) 100 ohms
(C) 1 ohm
(D) 1/ 10000 ohm

31 Kirchhoff's first law is based on law of conservation of [ ]
(A) charge
(B) energy
(C) momentum
(D) mass.

32 The unit of voltage is [ ]
(A) Watt
(B) Volt
(C) Current
(D) None

33 The resistance of a 10 Ohm & 20 Ohm are connected in series then the equivalent resistance is -------- [ ]
(A) 30 ohm
(B) 20 ohm
(C) 10 ohm

(D) 6.66 ohm

34 The resistance of a 10 Ohm & 20 Ohm are connected in parallel then the equivalent resistance is -------- [ ]

(A) 30 ohm
(B) 3.33 ohm
(C) 10 ohm
(D) 6.66 ohm

35 The unit of resistor is [ ]

(A) Watt
(B) Volt
(C) ohm
(D) None

36 The resistance of a 3.33 Ohm & 3.33 Ohm are connected in series then the equivalent resistance is -------- [ ]

(A) 3.33 ohm
(B) 6.66 ohm
(C) 9.99 ohm
(D) 0 ohm

37 The resistance of a 5 Ohm & 5 Ohm are connected in parallel then the equivalent resistance is -------- [ ]

(A) 0.5 ohm
(B) 3.5 ohm
(C) 1.5 ohm
(D) 2.5 ohm

38 The unit of current is [ ]

(A) Watts
(B) Volts
(C) Amp
(D) None

39 In a parallel circuit, the current passing through the element is [ ]

(A) same
(B) infinity
(C) different
(D) none

40 In a parallel circuit, the voltage across the element is------ [ ]

(A) infinity
(B) same
(C) different
(D) none

41 In a series circuit, the current passing through the element is [ ]

(A) same
(B) infinity
(C) different
(D) none

42 In a series circuit, the voltage across the element is------ [ ]

(A) same

(B) infinity
(C) different
(D) none

43 The equivalent resistance in star circuit is --------- to equivalent resistance in delta [ ]
(A) equal
(B) infinity
(C) different
(D) none

44 The equivalent resistance in delta circuit is --------- to equivalent resistance in star [ ]
(A) different
(B) infinity
(C) equal
(D) none

45 Capacitance store the energy in the form of ------- [ ]
(A) Electrostatic field
(B) Electromagnetic field
(C) uniform field
(D) none

46 inductance store the energy in the form of ------- [ ]
(A) Electrostatic field
(B) Electromagnetic field
(C) uniform field
(D) none

47 Which one is the energy storage element [ ]
(A) inductor
(B) resistor
(C) diode
(D) none

48 Which one is the energy storage element [ ]
(A) diode
(B) resistor
(C) Capacitor
(D) none

49 A circuit contain one energy storage element is called [ ]
(A) Active circuit
(B) Passive circuit
(C) Linear circuit
(D) Non linear circuit

50 A circuit contain no energy storage elements is called [ ]
(A) Active circuit
(B) Passive circuit
(C) Linear circuit
(D) Non linear circuit

51 RMS Value of sinusoidal Voltage is [ ]
(A) $Vm/\sqrt{2}$
(B) 0

(C) VI /sinϕ
(D) VI/cosϕ

52 Average Value of sinusoidal Voltage is [ ]
(A) Vm/$\sqrt{2}$
(B) 2Vm/π
(C) VI /sinϕ
(D) VI/cosϕ

53 Form factor of sinusoidal Voltage is [ ]
(A) 1.11
(B) 2
(C) 3
(D) 4

54 Peak factor of sinusoidal Voltage is [ ]
(A) 1.11
(B) 2
(C) $\sqrt{2}$
(D) 4

55 In symmetrical wave RMS Value is calculated for [ ]
(A) one Alternation
(B) Full Cycle
(C) Both
(D) None

56 For Half wave Rectifier Second alternation is [ ]
(A) ZERO
(B) Positive
(C) Negative
(D) None

57 50HZ Means [ ]
(A) 1 cycle/sec
(B) 2 Cycles/sec
(C) 50 Cycles/sec
(D) 50 Cycles/min

58 If $E_1 = A\sin\omega t$ and $E_2 = A\sin(\omega t - \theta)$, then [ ]
(A) E1& E2 are in phase
(B) E2 lags E1by θ
(C) E1 lags E2by θ
(D) E2 lags E1by 90^0

59 The equation for 25 cycles current sine wave having rms value of 30 amps, will be [ ]
(A) 42.4sin50πt
(B) 42.4sin25πt
(C) 30sin25πt
(D) 30sin25πt

60 The rms value of sinusoidal voltage wave V = 200sinωt, is [ ]
(A) 200/√2
(B) 100/√2 V
(C) 200√2 V

(D) $100\sqrt{2}$ V

61 The value of supply voltage for 400 W, 4 Ω load is [ ]

(A) 40 V
(B) 20 V
(C) 100 V
(D) 1600 V

62 Peak Factor gives [ ]

(A) Peak Value To R.M.S. Value
(B) Average Value To Peak Value
(C) R.M.S. Value To Average Value
(D) R.M.S. Value To Peak Value

63 For a Frequency of 200Hz,The Time Period Will be [ ]

(A) 0.05 S
(B) 0.005 S
(C) 0.0005 S
(D) 0.5 S

64 For a Sine Wave With Peak Value I_{max} the R.M.S. Value Is [ ]

(A) 0.5
(B) 0.707
(C) 0.9
(D) 1.414 Imax

65 energy stored in inductor is in the form of [ ]

(A) electrical field

(B) both

(C) none

(D) magnetic field

66 If the area of hysteresis loop of a material is large, the hysteresis loss in this material will be [ ]

(A) zero

(B) small

(C) medium

(D) large

67 How many cycles does a sine wave go through in 10s when its frequency is 60HZ [ ]

(A) 10 cycles
(B) 60 cycles
(C) 600 cycles
(D) 6 cycles

68 If the peak value of a sine wave voltage is 10V, what is the peak to peak value? [ ]

(A) 20V
(B) 10V
(C) 5V
(D) 7.07V

69 If peak value of sine wave voltage is 5V, then rms value is [ ]
(A) 0.707V
(B) 3.535 V
(C) 5V
(D) 1.17V

70 A phasor represents [ ]
(A) Magnitude of the quantity
(B) width of the quantity
(C) Magnitude & direction of the quantity
(D) Phase angle of quantity

71 The form factor is the ratio of [ ]
(A) peak value to r.m.s. value
(B) r.m.s. value to average value
(C) average value to r.m.s. value
(D) none

72 Relationship between frequency and speed [ ]
(A) F=pn/120
(B) P=fn/120
(C) F=pn*120
(D) P=fn*120

73 The standard form of an alternating voltage is given by [ ]
(A) $e=E_M \cos \theta$
(B) $e=E_M \sin \theta$
(C) $e=E_M \tan \theta$
(D) $e=E_M \cot \theta$

74 The standard form of an alternating current is given by [ ]
(A) $i=I_M \cos \theta$
(B) $i=I_M \cos \theta$
(C) $i=I_M \cos \theta$
(D) $i=I_M \sin \theta$

75 Relationship between ANGULAR VELOCITY and FREQUENCY [ ]
(A) $\omega= 2\pi f$
(B) $\omega= 2\pi$
(C) $\omega= \pi f$
(D) $\omega= 4\pi f$

76 The unit of Impedance is [ ]
(A) Mho
(B) Ohm
(C) Volt
(D) Ampere

77 The unit of Admittance is [ ]

(A) Mho
(B) Ohm
(C) Volt
(D) Ampere

78 Unit of Active Power [ ]
(A) VA
(B) VAR
(C) Watts
(D) None

79 Unit of Reactive Power [ ]
(A) VA
(B) VAR
(C) Watts
(D) None

80 Unit of Apparent Power [ ]
(A) VA
(B) VAR
(C) Watts
(D) None

81 In an RL Series circuit when current takes reference point, then the voltage is [ ]
(A) In phase, Lead
(B) In phase, Lag
(C) Lag, Lead
(D) Lead , Lag

82 In an RL Series circuit the value of phase difference is [ ]
(A) 0°
(B) 90°
(C) 180°
(D) 360°

83 Instantaneous power I inductor is proportional to the------- [ ]
(A) Product of the instantaneous current and rate of change of current
(B) Square of instantaneous current
(C) Square of the rate of change of current
(D) Temperature of the inductor

84 In case of Inductive circuit, Frequency is _____Proportional to the inductance (L) or inductive reactance (X_L) [ ]
(A) Directly
(B) Inversely
(C) Equal
(D) No Effect

85 In case of Inductive circuit, Frequency is _____ Proportional to the Current [ ]
(A) Directly
(B) Inversely
(C) Equal

(D) No Effect

86 In case of capacitive circuit, Frequency is _____Proportional to the Capacitance (C) or capacitive reactance (X_C) [ ]

(A) Directly
(B) Inversely
(C) Equal
(D) No Effect

87 In a Capacitive circuit, when Capacitance (C) increases, (the circuit current also increases), then the circuit power factor _____? [ ]

(A) Increases
(B) Decreases
(C) Remain Same
(D) None of the above

88 If Current and Voltage are 90 Degree Out of Phase, Then The Power (P) will be [ ]

(A) Infinite
(B) Maximum
(C) Minimum
(D) Zero

89 Power Factor (Cos θ) =_____? [ ]

(A) KW/KVA
(B) R/Z
(C) The Cosine of angle between Current and voltage
(D) All of the above

90 The relationship between Impedance (Z) and Admittance(Y) is _____? [ ]

(A) Z=1/Y
(B) Z=1+Y
(C) Z=1-Y
(D) $Z=Y^2$

91 From the impedance triangle, the power factor is [ ]

(A) RZ
(B) Z/R
(C) R/Z
(D) R+Z

92 Susceptance is the reciprocal of [ ]

(A) Resistance
(B) Reactance
(C) Impedance
(D) Conductance

93 Unit of Susceptance is [ ]

(A) Ohm
(B) Ampere
(C) Mho
(D) Volt-Ampere

94 In a R-L-C circuit [ ]

(A) Exchange of power takes place between inductor and supply line
(B) Exchange of power takes place between capacitor and supply line

(C) Exchange of power does not take place between resistance and the supply line
(D) All above are correct

95 The apparent power drawn by an A.C. circuit is 10 kVA and active power is 8 kW. The reactive power in the circuit is [ ]
(A) 4 kVAR
(B) 6 kVAR
(C) 8 kVAR
(D) 16 kVAR

96 A phasor is [ ]
(A) a line which represents the magnitude and phase of an alternating quantity
(B) a line representing the magnitude and direction of an alternating quantity
(C) a coloured tag for distinction between different phases of a 3-phase supply
(D) an instrument used for measuring phases of an unbalanced 3-phase load

97 When AC flows through a pure capacitance then the current [ ]
(A) leads the emf by 90°
(B) leads the emf by - 90°
(C) lags the emf by 90°
(D) is in phase with emf

98 The power dissipated in a pure capacitor is [ ]
(A) zero
(B) proportional to applied voltage
(C) proportional to the value of capacitance
(D) both (B) and (C) above

99 The voltage triangle in an RLC circuit, the power factor is [ ]
(A) V/V_R
(B) V_R/V
(C) V_L-V_C/V
(D) V_C-V_L/V

100 The power dissipated in a pure inductor is [ ]
(A) proportional to applied voltage
(B) zero
(C) proportional to the value of capacitance
(D) both (B) and (C) above.

101 e.m.f can be generated [ ]
(A) by moving a coil in magnetic field
(B) when two different metals are joined
(C) when light falls on materials
(D) All of above

102 When current flows through a conductor ---field is set up along length of conductor [ ]
(A) Electric
(B) magnetic
(C) both a & b
(D) None

103 Flux linkage with a coil is given by [ ]
(A) NØ
(B) Ø

(C) Ø
(D) NONE

104 Induced emf in a coil is given by [ ]
(A) -N(dt/dØ)
(B) -NØ
(C) -NdØ
(D) -N(dØ/dt)

105 When magnet is in motion relative to a coil, induced emf does not depend upon [ ]
(A) Pole strength
(B) motion of magnet
(C) resistance of coil
(D) Number of turns

106 Lenz's law is a consequence of the law of conservation of [ ]
(A) Energy
(B) charge
(C) induced emf
(D) induced current

107 For a coil self inductance is given by [ ]
(A) IØ
(B) NØ/I
(C) NI/Ø
(D) NØI

108 Which opposes the flux is known as [ ]
(A) Resistance
(B) Reluctance
(C) Conductance
(D) permanence

109 The process by which voltage is induced in a conductor whenever there is relative motion between conductor and magnetic field is [ ]
(A) Electromagnetic induction
(B) magnetization
(C) demagnetization
(D) All of the above

110 Which law states that the polarity of induced emf opposes cause that produce it [ ]
(A) Faraday's law
(B) gauss law
(C) ohm's law
(D) Lenz Law

111 The armature of D.C. generator is laminated to [ ]
(A) reduce the bulk
(B) Insulate the core
(C) To reduce eddy current loss
(D) None of the above

112 According to Fleming's right-hand rule for finding the direction of induced e.m.f., when middle finger points in the direction of induced e.m.f., forefinger will point in the direction of [ ]

(A) lines of force

(B) motion of the conductors

(C) either of the above

(D) None of the above

113 Fleming's right-hand rule regarding direction of induced e.m.f., correlates [ ]

(A) magnetic flux, direction of current flow and resultant force

(B) magnetic flux, direction of motion and the direction of e.m.f. induced

(C) magnetic field strength, induced voltage and current

(D) magnetic flux, direction of force and direction of motion of conductor

114 While applying Fleming's right-hand rule the thumb points towards [ ]
(A) direction of induced e.m.f.
(B) direction of flux
(C) direction of motion of the conductor if forefinger points in the direction of generated e.m.f.
(D) direction of motion of conductor, if forefinger points along the lines of flux

115 Functions of commutator in d.c. machines are [ ]
(A) To facilitate the collection of current from armature conductors
(B) To convert internally developed induced emf to unidirectional emf
(C) To produce unidirectional torque in case of motors
(D) All of these

116 For the construction of the armature of a d.c. machine, the best suited material is [ ]
(A) Cast iron
(B) Silicon steel
(C) Carbon
(D) All of these

117 Which of the following part is used in construction of DC machine but not in AC [ ]
(A) Armature Winding
(B) Field winding
(C) Commutator
(D) Shaft

118 If a DC motor is connected to AC supply what will happen then? [ ]
(A) Not run
(B) Burn
(C) Run at normal speed
(D) Run at extremely low speed

119 The armature of DC motor is laminated to _____ [ ]
(A) To reduce mass
(B) To reduce hysteresis loss

(C) To reduce eddy current loss
(D) To reduce inductance

120 Which of the following is the best braking method? [ ]
(A) Friction
(B) Electromechanical action
(C) Eddy-currents
(D) Electric braking

121 Electrical braking of any variety becomes less effective as [ ]
(A) Speed increases
(B) Speed decreases
(C) Independent of speed
(D) Depends on supply voltage

122 In dynamic braking, when braking is applied system acts as [ ]
(A) Freely running machine
(B) Motor with slow speed
(C) Generator
(D) Motor with same speed in opposite direction

123 The speed in d.c. machine can be measured by using [ ]
(A) Tachometer
(B) Ammeter
(C) Voltmeter
(D) Anemometer

124 While carrying out brake tests if the belt snaps, then the motor will [ ]
(A) Rotate at reduced speed but in forward direction
(B) Rotate at increased speed but in forward direction
(C) Rotate at reduced speed but in backward direction
(D) Rotate at increased speed but in backward direction

125 The rotational or stray losses includes [ ]
(A) Iron losses only
(B) Iron losses, friction and windage losses
(C) Iron losses, copper losses, friction and windage losses
(D) None of these