ELECTROMAGNETIC THEORY
MULTIPLE CHOICE QUESTIONS
ELECTROSTATICS

1. The force between two charges is 120 N. If the distance between the charges is doubled, the force will be
(a) 60 N
(b) 30 N
(c) 40 N
(d) 15 N
Ans: b

2. The electric field intensity at a point situated 4 metres from a point charge is 200 N/C. If the distance is reduced to 2 metres, the field intensity will be
(a) 400 N/C
(b) 600 N/C
(c) 800 N/C
(d) 1200 N/C
Ans: c

3. The lines of force due to charged particles are
(a) always straight
(b) always curved
(c) sometimes curved
(d) none of the above
Ans: b

4. The electric field at a point situated at a distance d from straight charged conductor is
(a) proportional to d
(b) inversely proportional to d
(c) inversely proportional to d
(d) none of the above
Ans: b

5. The direction of electric field due +0 positive charge is .
(a) away from the charge
(b) towards the charge
(c) both (a) and (6)
(d) none of the above
Ans: a

6. A field line and an equipotential surface are
(a) always parallel
(b) always at 90°
(c) inclined at any angle 0
(d) none of the above
Ans: b

7. The ability of charged bodies to exert force on 6ne another is attributed to the existence of
(a) electrons
(b) protons
(c) neutrons

(d) electric field
Ans: d
8. If the sheet of a bakelite is inserted between the plates of an air capacitor, the capacitance will
(a) decrease
(b) increase
(c) remains unchanged
(d) become zero
Ans: b
9. A capacitor stores 0.24 coulombs at 10 volts. Its capacitance is
(a) 0.024 F
(b) 0.12 F
(c) 0.6 F
(d) 0.8 F
Ans: a
10. For making a capacitor, it is better to select a dielectric having
(a) low permittivity
(b) high permittivity
(c) permittivity same as that of air
(d) permittivity slightly more than that of air
Ans: b
11. The units of capacitance are
(a) volts/coulomb
(b) coulombs/volt
(c) ohms
(d) henry/Wb
Ans: b
12. If three 15 uF capacitors are connected in series, the net capacitance is
(a) 5 uF
(6) 30 uF
(c) 45 uF
(d) 50 uF
Ans: a
13. If three 10 uF capacitors are connected in parallel, the net cararitance is
(a) 20 uF
(b) 30 uE
(c) 40 uF
(d) 50 uF
Ans: b
14. A dielectric material must be
(a) resistor
(b) insulator
(c) good conductor
(d) semi conductor
Ans: b
15. An electrolytic capacitor can be used for

(a) D.C. only
(b) AC. only
(c) both D.C. as well as A.C.
Ans: a
16. The capacitance of a capacitor is not affected by
(a) distance between plates
(6) area of plates
(c) thickness of plates
(d) all of the above
Ans: c
17. Which of the following is not a vector ?
(a) Linear momentum
(b) Angular momentum
(c) Electric field
(d) Electric potential
Ans: b
18. Two plates of a parallel plate capacitor after being charged from a constant voltage source are separated apart by means of insulated handles, then the
(a) Voltage across the plates increases
(b) voltage across the plates decreases
(c) charge on the capacitor decreases
(d) charge on the capacitor increases
Ans: b
19. If A.C. voltage is applied to capacitive circuit, the alternating current can flow in the circuit because
(a) varying voltage produces the charg¬ing and dicharging currents
(b) of high peak value
(c) charging current can flow
(d) discharge current can flow
Ans: a
20. Voltage applied across a ceramic dielectric produces an electrolytic field 100 times greater than air. What will be the value of dielectric constant ?
(a) 50
(6) 100
(c) 150
(d) 200
Ans: b
21. Which of the following statements is correct ?
(a) Air capacitors have a blackband to indicate the outside foil
(6) Electrolytic capacitor must be con¬nected in the correct polarity
(c) Ceramic capacitors must be con¬nected in the correct polarity
(d) Mica capacitors are available in capacitance value of 1 to 10 pF
Ans: b
22. The dissipation factor of a good dielectric is of the order of
(a) 0.0002
(b) 0.002

(c) 0.02
(d) 0.2
Ans: a
23. "The total electric flux through any closed surface surrounding charges is equal to the amount oflcharge enclosed".
The above statement is associated with
(a) Coulomb's square law
(b) Gauss's law
(c) Maxwell's first law
(d) Maxwell's second law
Ans: b
24. Three capacitors each of the capacity C are given. The resultant capacity 2/3 C can be obtained by using them
(a) all in series
(b) all in parallel
(c) two in parallel and third in series with this combination
(d) two in series and third in parallel across this combination
Ans: c
25. For which of the following parameter variation, the capacitance of the capacitor remains unaffected ?
(a) Distance between plates
(b) Area of the plates
(c) Nature of dielectric
(d) Thickness of the plates
Ans: d
26. Which of the following statement is true ?
(a) The current in the discharging capacitor grows linearly
(b) The current in the dicharging capacitor grows exponentially
(c) The current in the discharging capacitor decays exponentially
(d) The current in the discharging capacitor decreases constantly
Ans: b
27. Which of the following expression is correct for electric field strength ?
(a) E = D/E
(b) E = D2/t
(c) E = jtD
(d) E= nD2
Ans: a
28. In a capacitor the electric charge is stored in
(a) metal plates
(b) dielectric
(c) both (a) and (6)
(d) none of the above
Ans: b
29. Which of the following materials has the highest value of dielectric constant?
(a) Glass
(b) Vacuum

(c) Ceramics
(d) Oil
Ans: c
30. Which of the following capacitors will have the least variation ?
(a) Paper capacitor
(b) Ceramic capacitor
(c) Silver plated mica capacitor
(d) None of the above
Ans: c
31. Which of the following statements is incorrect ?
(a) The leakage resistance of ceramic capacitors is generally high
(b) The stored energy in a capacitor decreases with reduction in value of capacitance
(c) The stored energy in a capacitor increases with applied voltage
(d) A wire cable has distributed capacitance between the conductors
Ans: b
32. Which of the following capacitors has relatively shorter shelf life ?
(a) Mica capacitor
(b) Electrolytic capacitor
(c) Ceramic capacitor
(d) Paper capacitor
Ans: b
33. The sparking between two electrical contacts can be reduced by inserting a
(a) capacitor in parallel with contacts
(6) capacitor in series with each contact
(c) resistance in line
(d) none of the above
Ans: a
34. In the case of a lossy capacitor, its series equivalent resistance value will be
(a) small
(b) very small
(c) large
(d) zero
Ans: c
35. The power dissipated in a pure capacitor is
(a) zero
(6) proportional to applied voltage
(c) proportional to value of capacitance
(d) both (b) and (c) above
Ans: a
36. In a capacitive circuit
(a) a steady value of applied voltage causes discharge
(b) an increase in applied voltage makes a capacitor charge
(c) decrease in applied voltage makes a capacitor charge
(d) none of the above
Ans: b
37. When a dielectric slab is introduced in a parallel plate capacitor, the potential difference

between plates will
(a) remain uncharged
(b) decrease
(c) increase
(d) become zero
Ans: b
38. Capacitance increases with
(a) increase in plate area and decrease in distance between the plates
(b) increase in plate area and distance between the plates
(c) decrease in plate area and value of applied voltage
(d) reduction in plate area and distance between the plates
Ans: a
39. A capacitor consists of
(a) two insulators separated by a con¬ductor
(b) two conductors separated by an in¬sulator
(c) two insulators only
(d) two conductors only
Ans: b
40. A gang condenser is a
(a) polarised capacitor
(6) variable capacitor
(c) ceramic capacitor
(d) none of the above
Ans:
41. A paper capacitor is usually available in the form of
(a) tubes
(b) rolled foil
(c) disc
(d) meshed plates
Ans: b
42. Air capacitors are generally available in the range
(a) 10 to 400 pF
(b) 1 to 20 pF
(c) 100 to 900 pF
(d) 20 to 100 pF
Ans: a
43. The unit of capacitance is
(a) henry
(b) ohm
(c) farad
(d) farad/m
Ans: c
44. A capacitor charged to 200 V has 2000 (iC of charge. The value of capacitance will be
(a) 10 F
(6) 10 uF
(c) 100 nF

(d) 1000 uF
Ans: b
45. A capacitor in a circuit became hot and ultimately exploded due to wrong con¬nections, which type of capacitor it could be ?
(a) Paper capacitor
(b) Ceramic capacitor
(c) Electrolytic capacitor
(d) Any-of the above
Ans: c
46. Energy stored in the electric field of a capacitor C when charged from a D.C source of voltage V is equal to joules
(a) CV2
(b) C2V
(c) CV2
(d) CV
Ans: a
47. The absolute permittivity of free space is given by
(a) 8.854 x 1(T9 F/m)
(6) 8.854 x 1(T10 F/m)
(c) 8.854 x KT11 F/m
(d) 8.854 x 10"12 F/m
Ans: b
48. The relative permittivity of free space is given by
(a) 1
(b) 10
(c) 100
(d) 1000
Ans: a
49. Electric field intensity is a quantity
(a) scalar
(b) vector
(c) both (a) and (6)
(d) none of the above
Ans: b
50. When 4 volts e.m.f. is applied across a 1 farad capacitor, it will store energy of
(a) 2 joules
(b) 4 joules
(c) 6 joules
(d) 8 joules
Ans: d
51. The capacitor preferred for high frequency circuits is
(a) air capacitor
(b) mica capacitor
(c) electrolytic capacitor
(d) none of the above
Ans: b

52. The capacity of capacitor bank used in power factor correction is expressed in terms of
(a) kW
(b) kVA
(c) kVAR
(d) volts
Ans: c
53. While testing a capacitor with ohm-metre, if the capacitor shows charging, but the final resistance reading is appreciably less than normal, it can be concluded that the capacitor is
(a) short-circuited
(b) open circuited
(c) alright
(d) leaky
Ans: d
54. If a 6 (iF capacitor is charged to 200 V, the charge in coulombs will be
(a) 800 uC
(b) 900 uC
(c) 1200 uC
(d) 1600 uC
Ans: c
55. Which capacitor will be physically smaller for the same ratings ?
(a) Ceramic capacitor
(b) Paper capacitor
(c) Both will be of equal size
(d) None of the above
Ans: a
56. What is the value of capacitance that must be connected in parallel with 50 pF condenser to make an equivalent capacitance of 150 pF ?
(a) 50 pF
(b) 100 pF
(c) 150 pF
(d) 200 pF
Ans: b
57. A mica capacitor and a ceramic capacitor both have the same physical dimensions. Which will have more value of capacitance ?
(a) Ceramic capacitor
(b) Mica capacitor
(c) Both will have identical value of capacitance
(d) It depends on applied voltage
Ans: a
58. Which of the following material has least value of dielectric constant ?
(a) Ceramics
(b) Oil
(c) Glass
(d) Paper
Ans: b
59. Which of the following capacitors will have the least value of breakdown voltage ?

(a) Mica
(b) Paper
(c) Ceramic
(d) Electrolytic
Ans: d
3.73. The breakdown voltage for paper capacitors is usually
(a) 20 to 60 volts
(b) 200 to 1600 volts
(c) 2000 to 3000 volts
(d) more than 10000 volts
Ans:
60. Dielectric constant for mica is nearly
(a) 200
(b) 100
(c) 3 to 8
(d) 1 to 2
Ans: c
61. The value of dielectric constant for vacuum is taken as
(a) zero
(b) 1
(c) 4
(d) 10
Ans: b
62. Which of the following capacitors is marked for polarity ?
(a) Air
(b) Paper
(c) Mica
(d) Electrolytic
Ans: d
63. Which of the following capacitors can be used for temperature compensation ?
(a) Air capacitor
(b) Ceramic capacitor
(c) Paper capacitor
(d) None of the above
Ans: b
64. Which of the following statements is incorrect ?
(a) The thinner the dielectric, the more the capacitance and the lower the voltage breakdown rating for a capacitor .
(b) A six dot mica capacitor colour coded white, green, black, red and yellow has the capacitance value of 500 pF
(c) Capacitors in series provide less capacitance but a higher voltage breakdown rating for the combina¬tion
(d) A capacitor can store charge be¬cause it has a dielectric between two conductors
Ans: b
65. Paper capacitors usually have a tolerance of
(a) ± 5%

(b) ± 10%
(c) ± 15%
(d) ± 20%
Ans: b
66. For closer tolerances which of the following capacitors is usually preferred ?
(a) Paper capacitor
(b) Mica capacitor
(c) Ceramic disc capacitor
(d) None of the above
Ans: b
67. The electrostatic force between two charges of one coulomb each and placed at a distance of 0.5 m will be
(a) 36 x 10fa
(b) 36 x 107 N
(c) 36 x 108 N
(d) 36 x 109 N
Ans: d
68. The units of volume charge density are
(a) Coulomb/metre
(b) Coulomb/metre
(c) Coulomb/metre
(d) Coulomb/metre
Ans: c
69. "The surface integral of the normal component of the electric displacement D over any closed surface equals the charge enclosed by the surface".
The above statement is associated with
(a) Gauss's law
(b) Kirchhoff s law
(c) Faraday's law
(d) Lenz's law
Ans: a
70. Dielectric strength of mica is
(a) 10 to 20 kV/mm
(6) 30 to 50 kV/mm
(c) 50 to 200 kV/mm
(d) 300 to 500 kV/mm
Ans: c
71. The dielectric constant (relative permittivity) of glass is given by
(a) 0.1 to 0.4
(b) 0.5 to 1.0
(c) 2.0 to 4.0
(d) 5 to 100
Ans: d
72 capacitors are mainly used for radio frequency tuning.
(a) Paper
(b) Air

(c) Mica
(d) Electrolytic
Ans: b
73. capacitors can be used only for D.C.
(a) Air
(b) Paper
(e) Mica
(d) Electrolytic
Ans: d
74. capacitors are used in transistor circuits.
(a) Ceramic
(b) Paper
(c) Air
(d) Electrolytic
Ans: a
75. capacitors are used for audio frequency and radio frequency coupling and tuning.
(a) Air
(b) Mica
(c) Plastic film
(d) Ceramic
Ans: b
76. The inverse of capacitance is called
(a) reluctance
(b) conductance
(c) susceptance
(d) elastance
Ans: d
77. When the dielectric is homogeneous,the potential gradient is
(a) uniform
(b) non-uniform
(c) zero
(d) any of the above
Ans: a
78. The potential gradient across the material of low permittivity is than across the material of high permittivity.
(a) smaller
(b) greater
(c) both (a) and (b)
(d) none of the above
Ans: b
79. _____field is associated with the capacitor.
(a) Electric
(b) Magnetic
(c) Both (a) and (b)
(d) None of the above
Ans: a

80. A capacitor having capacitance of 5 uF is charged to a potential difference of 10,000 V. The energy stored in the capacitor is
(a) 50 joules
(b) 150 joules
(c) 200 joules
(d) 250 joules
Ans: d
81. A single core cable used on 33000 V has conductor diameter 10 mm and the in¬ternal diameter of sheath 25 mm. The maximum electrostatic stress in the cable is
(a) 62 x 105 V/m
(b) 72 x 105 V/m
(c) 82 x 105 V/m
(d) 92 x 105 V/m
Ans: b
82. Two infinite parallel plates 10 mm apart have maintained between them a potential difference of 100 V. The acceleration of an electron placed between them is
(a) 0.56 x 1015 m/s2
(b) 1.5 x 1015 m/s2
(c) 1.6 x 1015 m/s2
(d) 1.76 x 1015 m/s2
Ans: d
83. The total deficiency or excess of electrons in a body is known as
(a) current
(b) voltage
(c) potential gradient
(d) charge
Ans: d
84. The relative permittivity has the following units
(a) F/m
(b) m/F
(c) Wb/m
(d) no units
Ans: c
85. The phenomenon of an uncharged body getting charged merely by the nearness of a charged body is known as
(a) pholoelectric effect
(b) chemical effect
(c) magnetic effect
(d) induction
Ans: d
86. A unit tube of flux is known as tube
(a) Newton
(b) Faraday
(c) Michale
(d) None of the above
Ans: b

87. The number of Faraday tubes of flux passing through a surface in an electric field is called
(a) electric flux
(6) electric flux density
(c) magnetic flux density
(d) electric charge density
Ans: a
88. The unit of electric instensity is
(a) N/C2
(b) Wb/m2
(c) N/C
(d) N2/C
Ans:
89. The value of E within the field due to a point charge can be found with the help of
(a) Faraday's laws
(b) Kirchhoff s laws
(c) Coulomb's laws
(d) none of the above
Ans: c
90. at a point may be defined as equal to the lines of force passing normally through a unit cross section at that point.
(a) Electric intensity
(6) Magnetic flux density
(c) Electric flux
(d) None of the above
Ans: a
91. Electric intensity at any point in an electric field is equal to the at that point.
(a) electric flux
(b) magnetic flux density
(c) potential gradient
(d) none of the above
Ans: c
92. Electric displacement is a_____quantity.
(a) scalar
(b) vector
(c) both of the above
(d) none of the above
Ans: b
93. at a point is equal to the negative potential gradient at that point.
(a) Electric intensity
(6) Electric flux
(c) Magnetic flux
(d) Magnetic flux density
Ans: a
94. The unit of dielectric strength is given by
(a) V/m

(b) V2/m
(c) m/V
(d) m/V2
Ans: a
95. Dielectric strength _____ with increasing thickness
(a) increases
(b) decreases
(c) remains unaltered
(d) none of the above
Ans: b
96. The property of a capacitor to store electricity is called its
(a) capacitance
(b) charge
(c) energy
(d) none of the above
Ans: a
97. is that property of a capacitor which delays any change of voltage across it.
(a) Inductance
(b) Capacitance
(c) Potential gradient
(d) None of the above
Ans: b
98. A capacitance of 100 fiF is connected in series with a resistance of 8000 £2. The time constant of the circuit is
(a) 0.2 s
(b) 0.4 s
(c) 0.6 s
(d) 0.8 s
Ans: d
99. In a cable capacitor, voltage gradient ismaximum at the surface of the
(a) earth
(b) conduction
(c) sheath
(d) insulator
Ans: b
100. The time constant of an R-C circuit is defined as the time during which capacitor charging voltage actually rises to _____ percent of its_____value.
(a) 37, initial
(b) 63.2, initial
(c) 63.2, final
(d) 37, final
Ans: c
101. The time constant and R-C circuit may also be defined as the time during which the charging current falls to _____ percent of its initial maximum value,
(a) 37
(b) 42

(c) 63
(d) 73
Ans: a
102. The capacitance of a capacitor is influenced by
(a) plate area
(b) plate separation
(c) nature of dielectric
(d) none of the above
(e) all of the above
Ans:
103. A capacitor consists of two
(a) ceramic plates and one mica disc
(b) insulators separated by a dielectric
(c) silver-coated insulators
(d) conductors separated by an insulator
Ans: d
104. Permittivity is expressed in
(a) Farad/sq-m
(b) Farad/metre
(c) Weber/metre
(d) Weber/sq-m
Ans: b
105. Dielectric strength of a material depends on
(a) moisture content
(b) temperature
(c) thickness
(d) all of the above
(e) none of the above
Ans: d
106. What will happen to an insulating medium if voltage more than the breakdown voltage is applied on it ?
(a) It will become magnetic
(b) It will melt
(c) It will get punctured or cracked
(d) Its molecular structure will get changed
Ans: c
107. Which medium has the least dielectric strength ?
(a) Paraffin wax
(b) Quartz
(c) Glass
(d) Air
Ans: d
108. 1 volt/metre is same as
(a) 1 metre/coulomb
(6) 1 newton metre
(c) 1 newton/metre

(d) 1 joule/coulomb
Ans: c
109. One volt is the same as
(a) one joule/coulomb
(b) one coulomb/joule
(c) one coulomb
(d) one joule
Ans: a
110. The capacitance between two plates increases with
(a) shorter plate area and higher ap¬plied voltage
(6) shorter plate area and shorter dis¬tance between them
(c) larger plate area, longer distance between plates and higher,applied voltage
(d) larger plate area and shorter distance between plates
Ans: d
111. The capacitance C is charged through a resistance R. The time constant of the charging circuit is given by
(a) CIR
(b) 1/RC
(c) RC
(d) RIC
Ans: c
112. The bridge used for the measurement of the value of the capacitance is
(a) Wien's bridge
(b) Wheatstone bridge
(c) Schering bridge
(d) Hay's bridge
Ans: c
113. If an ohmmeter reading immediately goes practically to zero and stays there, capacitor is
(a) charged
(b) short-circuited
(c) lossy
(d) satisfactory
Ans: b
114. Out of the following capacitors of identical rating which one will have the smallest dimensions ?
(a) Aluminium foil capacitor
(b) Mica capacitor
(c) Ceramic capacitor
(d) Paper capacitor
Ans: c
115. An uncharged conductor is placed near a charged conductor, then
(a) the uncharged conductor gets charged by conduction
(6) the uncharged conductor gets charged by induction and then attracted towards the charging body
(c) the uncharged conductor is attracted first and then charged by induction

(d) it remains as such
Ans: b
116. The presence of an uncharged conductor near a charged one increases the
(a) charge of the charged conductor
(6) capacity of the charged conductor
(c) potential of the charged conductor
(d) all of the above
Ans: b
117. Paper condenser is
(a) always polarised
(6) usually of fixed value
(c) electrolytic condenser
(d) a variable condenser
Ans: b
118. Mica capacitors are characterised by all of thte following except
(a) stable operation
(b) accurate value
(c) low leakage reactance
(d) low losses
Ans: c
119. A potential of 400 V is applied to a capacitor, the plates of which are 4 mm apart. The strength of electric field is
(a) 100 kV/m
(b) 10 kV/m
(c) 5 kV/m
(d) 2 kV/m
Ans: a
120. For a good 0.05 uF capacitor ohmmeter reading should
(a) show low resistance momentarily and back off to a very high resis¬tance
(6) show high resistance momentarily and then a very low resistance
(c) go quickly to 50 ohm approximately and remain there
(d) not move at all
Ans: a
121. The ohmmeter reading for a short circuited capacitor is
(a) infinity
(b) few kilo ohms
(c) few megaahms
(d) zero
Ans: d
122. Which of the following statements is correct ?
(a) Mica capacitors are available in capacitance values of 5 to 20 \iF
(b) Air capapitors have a black band to indicate the outside foil
(c) Electrolytic capacitors must be connected in correct polarity
(d) Ceramic capacitors must be con¬nected in correct polarity
Ans: c
123. Which of the following capacitors preferred for high frequency circuits ?

(a) Air capacitor
(b) Electrolytic capacitor
(c) Mica capacitor
(d) none of the above
Ans: c
124. An electrolytic capacitor is generally made to provide
(a) low capacitance
(b) fixed capacitance
(c) variable capacitance
(d) large value of capacitance
Ans: d
125. In order to remove static electricity from machinery
(a) construct insulated cabins
(b) insulate the machinery
(c) ground the framework
(d) humidify the surroundings
Ans: c
126. If a third equal and similar charge is placed between two equal and similar charges, then this third charge will
(a) move out of the field of influence of the two charges
(b) remain in stable equilibrium
(c) not be in equilibrium
(d) be in unstable equilibrium
Ans: b
127. A region around a stationary electric charge has
(a) an electric field
(b) a magnetic field
(c) both (a) and (b)
(d) none of the above
Ans: a
128. The minimum value of potential gradient in a cable occurs in
(a) insulation
(b) conductor
(c) outer sheath
(d) uniformly all over
Ans: a
129. Dielectric strength of medium
(a) increases with rise in temperature
(b) increases with moisture content
(c) is same for all insulating materials
(d) none of the above
Ans: d
130. Acharge which when placed in vacuum from an equal and similar charge repels with a force of 9 x 10 N, is known as
(a) milli-coulomb
(b) micro-coulomb

(c) pico-coulomb
(d) coulomb
Ans: b
131. Dielectric strength of a medium is usually expressed in
(a) J/mm
(b) C/m2
(c) kV/mm
(d) N/mm
Ans: c
132. A positive and a negative charge are initially 50 mm apart. When they are moved close together so that they are now only 10 mm apart, the force between them will be
(a) 5 times smaller than before
(b) 5 times greater than before
(c) 10 times greater than before
(d) 25 times larger than before
Ans: d
133. Which is the most superior dielectric out of the following ?
(a) Air
(b) Glass
(c) Bakelite
(d) Paper
Ans: c
134. When a dielectric is placed in an electric field the field strength
(a) decreases
(b) increases
(c) reduces to zero
(d) remain unchanged
Ans: a
135. To prevent the generation of static charges on rubber or flat leather
(a) surface is moistened
(b) conductive dressing is done
(c) oil compound dressing is done
(d) talcum powder is sprayed on the surface
Ans: b
136. Which of the following capacitor is preferred in case of single phase motor ?
(a) Mica capacitor
(b) Paper capacitor
(c) Electrolytic capacitor
(d) Ceramic capacitor
Ans: c
137. A capacitance is a circuit component that opposes the change in circuit
(a) current
(b) voltage
(c) impedance
(d) none of the above
Ans: a

138. A condenser suitable for D.C. only is
(a) metallic plate variable gang condenser
(b) metallic paper capacitor
(c) oil impregrated paper condenser
(d) poled aluminium electrolytic condenser
Ans: d
139. In a capacitor, the electric charge is stored in
(a) metal plates
(b) dielectric
(c) dielectric as well as metal plates
(d) none of the above
Ans: b

MAGNETISM AND ELECTROMAGNETISM

1. Tesla is a unit of
(a) field strength
(b) inductance
(c) flux density
(d) flux
Ans: c
2. A permeable substance is one
(a) which is a good conductor
(6) which is a bad conductor
(c) which is a strong magnet
(d) through which the magnetic lines of force can pass very easily
Ans: d
3. The materials having low retentivity are suitable for making
(a) weak magnets
(b) temporary magnets
(c) permanent magnets
(d) none of the above
Ans: b
4. A magnetic field exists around
(a) iron
(b) copper
(c) aluminium
(d) moving charges
Ans: d
7. Ferrites are materials.
(a) paramagnetic
(b) diamagnetic
(c) ferromagnetic
(d) none of the above
Ans: c
8. Air gap has_____eluctance as compared to iron or steel path
(a) little
(b) lower

(c) higher
(d) zero
Ans: b
9. The direction of magnetic lines of force is
(a) from south pole to north pole
(b) from north pole to south pole
(c) from one end of the magnet to another
(d) none of the above
Ans: b
10. Which of the following is a vector quantity ?
(a) Relative permeability
(b) Magnetic field intensity
(c) Flux density
(d) Magnetic potential
Ans: b
11. The two conductors of a transmission line carry equal current I in opposite directions. The force on each conductor is
(a) proportional to 7
(b) proportional to X
(c) proportional to distance between the conductors
(d) inversely proportional to I
Ans: b
12. A material which is slightly repelled by a magnetic field is known as
(a) ferromagnetic material
(b) diamagnetic material
(c) paramag>etic material
(d) conducting material
Ans: b
13. When an iron piece is placed in a magnetic field
(a) the magnetic lines of force will bend away from their usual paths in order to go away from the piece
(b) the magnetic lines of force will bend away from their usual paths in order to pass through the piece
(c) the magnetic field will not be affected
(d) the iron piece will break
Ans: b
14. Fleming's left hand rule is used to find
(a) direction of magnetic field due to current carrying conductor
(b) direction of flux in a solenoid
(c) direction of force on a current car¬rying conductor in a magnetic field
(d) polarity of a magnetic pole
Ans: c
15. The ratio of intensity of magnetisation to the magnetisation force is known as
(a) flux density
(b) susceptibility
(c) relative permeability

(d) none of the above
Ans: b
16. Magnetising steel is normals difficult because
(a) it corrodes easily
(6) it has high permeability
(c) it has high specific gravity
(d) it has low permeability
Ans: d
17. The left hand rule correlates to
(a) current, induced e.m.f. and direc¬tion of force on a conductor
(b) magnetic field, electric field and direction of force on a conductor
(c) self induction, mutual induction and direction of force on a conductor
(d) current, magnetic field and direc¬tion of force on a conductor
Ans: d
18. The unit of relative permeability is
(a) henry/metre
(b) henry
(c) henry/sq. m
(d) it is dimensionless
Ans: d
19. A conductor of length L has current I passing through it, when it is placed parallel to a magnetic field. The force experienced by the conductor will be
(a) zero
(b) BLI
(c) B2LI
(d) BLI2
Ans: a
20. The force between two long parallel conductors is inversely proportional to
(a) radius of conductors
(b) current in one conductor
(c) product of current in two conduc¬tors
(d) distance between the conductors
Ans: d
21. Materials subjected to rapid reversal of magnetism should have
(a) large area oiB-H loop
(b) high permeability and low hysteresis loss
(c) high co-ercivity and high reten-tivity
(d) high co-ercivity and low density
Ans: b
22. Indicate which of the following material does not retain magnetism permanently.
(a) Soft iron
(b) Stainless steel
(e) Hardened steel
(d) None of the above
Ans: a
23. The main constituent of permalloy is

(a) cobalt
(b) chromium
(c) nickel
(d) tungsten
Ans: c
24. The use of permanent magnets is. not made in
(a) magnetoes
(6) energy meters
(c) transformers
(d) loud-speakers
Ans: c
25. Paramagnetic materials have relative permeability
(a) slightly less than uuity
(b) equal to unity
(c) slightly more than unity
(d) equal to that ferromagnetic mate rials
Ans: c
26. Degaussing is the process of
(a) removal of magnetic impurities
(b) removing gases from the materials
(c) remagnetising metallic parts
(d) demagnetising metallic parts
Ans:
27. Substances which have permeability less than the permeability of free space are known as
(a) ferromagnetic
(b) paramagnetic
(c) diamagnetic
(d) bipolar
Ans: c
28. Two infinitely long parallel conductors in vacuum anf' separated 1 metre between centres >rhen a current of 1 ampere flows thn. ugh each conductor, produce on each otLer a force of
(a) 2 x 1(T2 N/m)
(b) 2 x KT3 N/m
(c) 2 x 10"5 N/m
(d) 2x 1(T7 N/m)
Ans: d
29. In the left hand rule, forefinger always represents
(a) voltage
(b) current
(c) magnetic field
(d) direction of force on the conductor
Ans: c
30. Which of the following is a ferromagnetic material ?
(a) Tungsten

(b) Aluminium
(c) Copper
(d) Nickel
Ans: d
31. Ferrites are a sub-group of
(a) non-magnetic materials
(b) ferro-magnetic materials
(c) paramagnetic materials
(d) ferri-magnetic materials
Ans: d
32. Gilbert is a unit of
(a) electromotive force
(b) magnetomotive force
(c) conductance
(d) permittivity
Ans: b
33. The working of a meter is based on the use of a permanent magnet. In order to protect the meter functioning from stray magnetic fields
(a) meter is surrounded by strong magnetic fields
(b) a soft iron shielding is used
(c) a plastic shielding is provided
(d) a shielding of anon-magnetic material is used
Ans: b
34. Reciprocal of permeability is
(a) reluctivity
(b) susceptibility
(c) permittivity
(d) conductance
Ans: a
35. The relative permeability is less than unity is case of
(a) ferromagnetic materials
(b) ferrites
(c) non-ferrous materials
(d) diamagnetic materials
Ans: d
36. Which of the following is the unit of magnetic flux density ?
(a) weber
(b) lumens
(c) tesla
(d) none of the above
Ans: c
37. The magnetism left in the iron after exciting field has been removed is known as
(a) permeance
(b) residual magnetism
(c) susceptance
(d) reluctance

Ans: b
38. Which of the following is not a unit of flux?
(a) Maxwell
(b) Telsa
(c) Weber
(d) All of the above
Ans: b
39. Which of the following is expected to have the maximum permeability ?
(a) Brass
(b) Copper
(c) Zinc
(d) Ebonite
Ans: d
40. One telsa is equal to
(a) 1 Wb/mm2
(b) 1 Wb/m
(c) 1 Wb/m2
(d) 1 mWb/m2
Ans: c
42. Out of the following statements, concerning an electric field, which statement is not true ? (
a) The electric intensity is a
vector quantity
(b) The electric field intensity at a point is numerically equal to the force exerted upon a charge placed at that point
(c) An electric field is defined as a point in space at which an electric charge would experienc* a force
(d) Unit field intensity in the exertion of a force of one newton on a charge of one coulomb
Ans: b
43. When a magnet is in motion relative to a coil the induced e.m.f. does not depend upon
(a) resistance of the coil
(b) motion of the magnet
(c) number of turns of the coil
(d) pole strength of the magnet
Ans: a
44. One maxwell is equal to
(a) 10 webers
(b) 10 webers
(c) 10 webers
(d) 10 webers
Ans: d
46. When two ends of a circular uniform wire are joined to the terminals of a battery, the field at the centre of the circle
(a) will be zero
(b) will be infinite

(c) will depend on the amount of e.m.f. applied
(d) will depend on the radius of the circle
Ans: d
47. Susceptibility is positive for
(a) non-magnetic substances
(b) diamagnetic substances
(c) ferromagnetic substances
(d) none of the above
Ans: c
48. Two long parallel conductors carry 100 A. If the conductors are separated by 20 mm, the force per metre of length of each conductor will be
(a) 100 N
(b) 10 N
(c) 1 N
(d) 0.1 N
Ans: d
49. A 300 mm long conductor is carrying a current of 10 A and is situated at right angles to a magnetic field having a flux density of 0.8 T ; the force on the conductor will be
(a) 240 N
(6) 24 N
(c) 2.4 N
(d) 0.24 N
Ans: c
50. A 200 turn coil having an axial length of 30 mm and a radius of 10 mm is pivoted in a magnetic field having a flux density of 0.8 T. If the coil carries a current of 0.5 A, the torque acting on the coil will be
(a) 4.8 N-m
(b) 0.48 N-m
(e) 0.048 N-m
(d) 0.0048 N-m
[Hint. Torque = 2BIlNr N-m]
Ans: c
51. The electromagnet has 50 turns and a current of 1A flows through the coil. If the length of the magnet circuit is 200 mm, what is the magnetic field strength ?
(a) 2500 AT/m
(b) 250 AT/m
(c) 25 AT/m
(d) 2.5 AT/m
Ans: b
52. What is the magnitude and the direction of force per 1.1m length of a pair of conductors of a direct current linecarrying 10 amperes and spaced 100 mm apart ?
(a) 22 x 10"8 N
(b) 22 x 10"7 N
(c) 22 x 10-6 N
(d) 22 x 10"5 N
Ans: d

53. A square cross-sectional magnet has a pole strength of 1 x 10 Wb and cross sectional area of 20 mm x 20 mm. What is the strength at a distance of 100 mm from the unit pole in air ?
(a) 63.38 N/Wb
(b) 633.8 N/Wb
(c) 6338 N/Wb
(d) 63380 N/Wb
Ans: c
56. The unit of flux is the same as that of
(a) reluctance
(b) resistance
(c) permeance
(d) pole strength
Ans: d
57. Unit for quantity of electricity is
(a) ampere-hour
(b) watt
(c) joule
(d) coulomb
Ans: d
58. The Biot-savart's law is a general modification of
(a) Kirchhoffs law
(b) Lenz's law
(c) Ampere's law
(d) Faraday's laws
Ans: c
61. The most effective and quickest may of making a magnet from soft iron is by
(a) placing it inside a coil carrying current
(b) induction
(c) the use of permanent magnet
(d) rubbing with another magnet
Ans: a
62. The commonly used material for shielding or screening magnetism is
(a) copper
(b) aluminium
(c) soft iron
(d) brass
Ans: c
63. If a copper disc is rotated rapidly below a freely suspended magnetic needle, the magnetic needle shall start rotating with a velocity
(a) less than that of disc but in opposite direction
(b) equal to that of disc and in the same direction
(c) equal to that of disc and in the opposite direction
(d) less than that of disc and in the same direction
Ans: d
64. A permanent magnet

(a) attracts some substances and repels others
(b) attracts all paramagnetic substan¬ces and repels others
(c) attracts only ferromagnetic sub¬stances
(d) attracts ferromagnetic substances and repels all others
Ans: a
65. The retentivity (a property) of material is useful for the construction of
(a) permanent magnets
(b) transformers
(c) non-magnetic substances
(d) electromagnets
Ans: a
66. The relative permeability of materials is not constant.
(a) diamagnetic
(b) paramagnetic
(c) ferromagnetic
(d) insulating
Ans: c
67. The materials are a bit inferior conductors of magnetic flux than air.
(a) ferromagnetic
(b) paramagnetic
(c) diamagnetic
(d) dielectric
Ans: c
68. Hysteresis loop in case of magnetically hard materials is more in shape as compared to magnetically soft materials.
(a) circular
(b) triangular
(c) rectangular
(d) none of the above
Ans: c
69. A rectangular magnet of magnetic moment M is cut into two piece of same length, the magnetic moment of each piece will be
(a) M
(6) M/2
(c) 2 M
(d) M/4
Ans: b
70. A keeper is used to
(a) change the direction of magnetic lines
(b) amplify flux
(c) restore lost flux
(d) provide a closed path for flux
Ans: d
71. Magnetic moment is a
(a) pole strength
(6) universal constant

(c) scalar quantity
(d) vector quantity
Ans: d
72. The change of cross-sectional area of conductor in magnetic field will affect
(a) reluctance of conductor
(b) resistance of conductor
(c) (a) and (b) b >th in the same way
(d) none of the above
Ans: c
73. The uniform magnetic field is
(a) the field of a set of parallel conductors
(b) the field of a single conductor
(c) the field in which all lines of mag¬netic flux are parallel and equidis¬tant
(d) none of the above
Ans: c
74. The magneto-motive force is
(a) the voltage across the two ends of exciting coil
(b) the flow of an electric current
(c) the sum of all currents embraced by one line of magnetic field
(d) the passage of magnetic field through an exciting coil
Ans: c
75. What will be the current passing through the ring shaped air cored coil when number of turns is 800 and ampere turns are 3200 ?
(a) 2
(b) 4
(c) 6
(d) 8
Ans: b
76. What will be the magnetic potential difference across the air gap of 2 cm length in magnetic field of 200 AT/m ?
(a) 2 AT
(b) 4 AT
(c) 6 AT
(d) 10 AT
Ans: b
77. Which of the following statements is correct ?
(a) The magnetic flux inside an exciting coil is lower than its outside surface
(6) The magnetic flux inside an exciting coil is zero
(e) The magnetic flux inside the exciting coil is greater than its outside surface
(d) The magnetic flux inside the exciting coil is same as on its outside surface
Ans: d
78. A certain amount of current flows through a ring-shaped coil with fixed number of turns. How does the mag
netic induction B varies inside the coil if an iron core is threaded into coil without dimensional change of coil ?
(a) Decreases

(b) Increases
(c) Remains same
(d) First increases and then decreases depending on the depth of iron in¬sertion
Ans: b
79. The magnetic reluctance of a material
(a) decreases with increasing cross sectional area of material
(6) increases with increasing cross-sec-tional area of material
(c) does not vary with increasing cross-sectional area of material
(d) any of the above
Ans: a
80. The initial permeability of an iron rod is
(a) the highest permeability of the iron rod
(b) the lowest permeability of the iron rod
(c) the permeability at the end of the iron rod
(d) the permeability almost in non-magnetised state
Ans: d
82. How does the magnetic compass needle behave in a magnetic field ?
(a) It assures a position right angle to magnetic field
(b) It starts rotating
(c) It assures a position which follows a line of magnetic flux
(d) None of the above
Ans: c
83. In a simple magnetic field the strength of magnet flux
(a) is constant and has same value in energy part of the magnetic field
(6) increases continuously from initial value to final value
(c) decreases continuously from initial value to final value
(d) first increases and then decreases till it becomes zero
Ans: d
84. The stray line of magnetic flux is defined as
(a) a line vertical to the flux lines
(b) the mean length of a ring shaped coil
(c) a line of magnetic flux in a non-uniform field
(d) a line of magnetic flux which does not follow the designed path
Ans: d
85. The bar magnet has
(a) the dipole moment
(b) monopole moment
(c) (a) and (b) both
(d) none of the above
Ans: a
86. Which of the following materials are dia-magnetic ?
(a) Silver
(b) Copper
(c) Silver and copper
(d) Iron
Ans: c

87. Which of the following type of materials are not very important for engineering applications ?
(a) Ferromagnetic
(b) Paramagnetic
(c) Diamagnetic
(d) None of the above
Ans: c
88. The susceptibility of paramagnetic materials generally lies between
(a) KT3 and 1CT6
(b) 1CT3 and 1CT7
(c) KT4 and KT8
(d) 10"2 and KT5
Ans: a
89. For which of the following materials the saturation value is the highest ?
(a) Ferromagnetic materials
(6) Paramagnetic materials
(c) Diamagnetic materials
(d) Ferrites
Ans: d
90. The magnetic materials exhibit the property of magnetisation because of
(a) orbital motion of electrons
(b) spin of electrons
(c) spin of nucleus
(d) either of these
(e) all of the above
Ans: c
91. For which of the following materials the net magnetic moment should be zero ?
(a) Diamagnetic materials
(b) Ferrimagnetic materials
(c) Antiferromagnetic materials
(d) Antiferrimagnetic materials
Ans: c
92. The attraction capacity of electromagnet will increase if the
(a) core length increases i
(b) core area increases
(c) flux density decreases
(d) flux density increases
Ans: d
93. Which of the following statements is correct ?
(a) The conductivity of ferrites is better than ferromagnetic materials
(b) The conductivity of ferromagnetic materials is better than ferrites
(c) The conductivity of ferrites is very high
(d) The conductivity of ferrites is same as that of ferromagnetic materials
Ans: a
96. Temporary magnets are used in
(a) loud-speakers

(b) generators
(c) motors
(d) all of the above
Ans: d
97. Main causes of noisy solenoid are
(a) strong tendency of fan out of lami-nations at the end caused by repul¬sion among magnetic lines of force
(b) uneven bearing surface, caused by dirt or uneven wear between moving and stationary parts
(c) both of above
(d) none of the above
Ans: c
99. Strength of an electromagnet can be increased by
(a) increasing the cross-sectional area
(b) increasing the number of turns
(c) increasing current supply
(d) all above methods
Ans:
100. Core of an electromagnet should have
(a) low coercivity
(6) high susceptibility
(c) both of the above
(d) none of the above
Ans: c
101. Magnetism of a magnet can be destroyed by
(a) heating
(b) hammering
(c) by inductive action of another magnet
(d) by all above methods
Ans: d

MAGNETIC CIRCUIT

1. An air gap is usually inserted in magnetic circuits to
(a) increase m.m.f.
(b) increase the flux
(c) prevent saturation
(d) none of the above
Ans: c
2. The relative permeability of a ferromagnetic material is
(a) less than one
(b) more than one
(c) more than 10
(d) more than 100 or 1000
Ans: d
3. The unit of magnetic flux is
(a) henry
(b) weber

(c) ampereturn/weber
(d) ampere/metre
Ans: b
4. Permeability in a magnetic circuit corresponds to_____ in an electric circuit.
(a) resistance
(b) resistivity
(c) conductivity
(d) conductance
Ans: c
5. Point out the wrong statement.
Magnetic leakage is undesirable in electric machines because it
(a) lowers their power efficiency
(b) increases their cost of manufacture
(c) leads to their increased weight
(d) produces fringing
Ans: a
6. Relative permeability of vacuum is
(a) 1
(b) 1 H/m
(c) 1/4JI
(d) 4n x 10-' H/m
Ans: a
7. Permanent magnets are normally made of
(a) alnico alloys
(b) aluminium
(c) cast iron
(d) wrought iron
Ans: a
8. Energy stored by a coil is doubled when its current is increased by percent.
(a) 25
(b) 50
(c)41.4
(d) 100
Ans: c
9. Those magnetic materials are best suited for making armature and transformer cores which have____permeability and_____hystersis loss.
(a) high, high
(b) low, high
(c) high, low
(d) low, low
Ans: c
10. The rate of rise of current through an inductive coil is maximum
(a) at 63.2% of its maximum steady value
(b) at the start of the current flow
(c) after one time constant
(d) near the final maximum value of current

Ans: b
11. When both the inductance and resistance of a coil are doubled the value of
(a) time constant remains unchanged
(b) initial rate of rise of current is doubled
(c) final steady current is doubled
(d) time constant is halved
Ans: a
12. The initial rate of rise of current through a coil of inductance 10 H when suddenly connected to a D.C. supply of 200 V is_____Vs
(a) 50
(b) 20
(c) 0.05
(d) 500
Ans: b
13. A material for good magnetic memory should have
(a) low hysteresis loss
(b) high permeability
(c) low retentivity
(d) high retentivity
Ans: d
14. Conductivity is analogous to
(a) retentivity
(b) resistivity
(c) permeability
(d) inductance
Ans: c
15. In a magnetic material hysteresis loss takes place primarily due to
(a) rapid reversals of its magnetisation
(b) flux density lagging behind magnetising force
(c) molecular friction
(d) it high retentivity
Ans: d
16. Those materials are well suited for making permanent magnets which have_____retentivity and _____coercivity.
(a) low, high
(b) high, high
(c) high, low
(d) low, low
Ans: b
17. If the area of hysteresis loop of a material is large, the hysteresis loss in this material will be
(a) zero
(b) small
(c) large
(d) none of the above
Ans: c

18. Hard steel is suitable for making permanent magnets because
(a) it has good residual magnetism
(b) its hysteresis loop has large area
(c) its mechanical strength is high
(d) its mechanical strength is low
Ans: a
19. Silicon steel is used in electrical machines because it has
(a) low co-ercivity
(b) low retentivity
(c) low hysteresis loss
(d) high co-ercivity
Ans: c
20. Conductance is analogous to
(a) permeance
(b) reluctance
(c) flux
(d) inductance
Ans: a
21. The property of a material which opposes the creation of magnetic flux in it is known as
(a) reluctivity
(b) magnetomotive force
(c) permeance
(d) reluctance
Ans: d
22. The unit of retentivity is
(a) weber
(b) weber/sq. m
(c) ampere turn/metre
(d) ampere turn
Ans: b
23. Reciprocal of reluctance is
(a) reluctivity
(b) permeance
(c) permeability
(d) susceptibility
Ans: b
24. While comparing magnetic and electric circuits, the flux of magnetic circuit is compared with which parameter of electrical circuit ?
(a) E.m.f.
(b) Current
(c) Current density
(d) Conductivity
Ans: b
25. The unit of reluctance is
(a) metre/henry
(b) henry/metre

(c) henry
(d) 1/henry
Ans: d
26. A ferrite core has less eddy current loss than an iron core because
(a) ferrites have high resistance
(b) ferrites are magnetic
(c) ferrites have low permeability
(d) ferrites have high hysteresis
Ans: d
27. Hysteresis loss least depends on
(a) volume of material
(b) frequency
(c) steinmetz co-efficient of material
(d) ambient temperature
Ans: d
28. Laminated cores, in electrical machines, are used to reduce
(a) copper loss
(b) eddy current loss
(c) hysteresis loss
(d) all of the above
Ans: b

ELECTROMAGNETIC INDUCTION

1. The property of coil by which a counter e.m.f. is induced in it when the current through the coil changes is known as
(a) self-inductance
(b) mutual inductance
(c) series aiding inductance
(d) capacitance
Ans: a
2. As per Faraday's laws of electromagnetic induction, an e.m.f. is induced in a conductor whenever it
(a) lies perpendicular to the magnetic flux
(b) lies in a magnetic field
(e) cuts magnetic flux
(d) moves parallel to the direction of the magnetic field
Ans: c
3. Which of the following circuit element stores energy in the electromagnetic field ?
(a) Inductance
(b) Condenser
(c) Variable resistor
(d) Resistance
Ans: a
4. The inductance of a coil will increase under all the following conditions except
(a) when more length for the same number of turns is provided
(6) when the number of turns of the coil increase
(c) when more area for each turn is provided

(d) when permeability of the core increases
Ans: a
5. Higher the self-inductance of a coil,
(a) lesser its weber-turns
(b) lower the e.m.f. induced
(c) greater the flux produced by it
(d) longer the delay in establishing steady current through it
Ans: d
6. In an iron cored coil the iron core is removed so that the coil becomes an air cored coil. The inductance of the coil will
(a) increase
(b) decrease
(c) remain the same
(d) initially increase and then decrease
Ans: b
7. An open coil has
(a) zero resistance and inductance
(b) infinite resistance and zero inductance
(c) infinite resistance and normal inductance
(d) zero resistance and high inductance
Ans: b
8. Both the number of turns and the core length of an inductive coil are doubled. Its self-inductance will be
(a) unaffected
(b) doubled
(c) halved
(d) quadrupled
Ans: b
9. If current in a conductor increases then according to Lenz's law self-induced voltage will
(a) aid the increasing current
(b) tend to decrease the amount of cur-rent
(c) produce current opposite to the in-creasing current
(d) aid the applied voltage
Ans: c
10. The direction of incViced e.m.f. can be found by
(a) Laplace's law
(b) Lenz's law
(c) Fleming's right hand rule
(d) Kirchhoff s voltage law
Ans: b
11. Air-core coils are practically free from
(a) hysteresis losses
(b) eddy current losses
(c) both (a) and (b)
(d) none of the above
Ans: c

12. The magnitude of the induced e.m.f. in a conductor depends on the
(a) flux density of the magnetic field
(b) amount of flux cut
(c) amount of flux linkages
(d) rate of change of flux-linkages
Ans: d
13. Mutually inductance between two magnetically-coupled coils depends on
(a) permeability of the core
(b) the number of their turns
(c) cross-sectional area of their com-mon core
(d) all of the above
Ans: d
14. A laminated iron core has reduced eddy-current losses because
(a) more wire can be used with less D.C. resistance in coil
(b) the laminations are insulated from each other
(c) the magnetic flux is concentrated in the air gap of the core
(d) the laminations are stacked vertf-cally
Ans: b
15. The law that the induced e.m.f. and current always oppose the cause producing them is due to
(a) Faraday
(b) Lenz
(c) Newton
(d) Coulomb
Ans: b
16. Which of the following is not a unit of inductance ?
(a) Henry
(b) Coulomb/volt ampere
(c) Volt second per ampere
(d) All of the above
Ans: b
17. In case of an inductance, current is proportional to
(a) voltage across the inductance
(b) magnetic field
(c) both (a) and (b)
(d) neither (a) nor (b)
Ans: b
18. Which of the following circuit elements will oppose the change in circuit current ?
(a) Capacitance
(b) Inductance
(c) Resistance
(d) All of the above
Ans: b
19. For a purely inductive circuit which of the following is true ?
(a) Apparent power is zero
(b) Relative power is.zero

(c) Actual power of the circuit is zero
(d) Any capacitance even if present in the circuit will not be charged
Ans: c
20. Which of the following is unit of inductance ?
(a) Ohm
(b) Henry
(c) Ampere turns
(d) Webers/metre
Ans: b
21. An e.m.f. of 16 volts is induced in a coil of inductance 4H. The rate of change of current must be
(a) 64 A/s
(b) 32 A/s
(c) 16 A/s
(d) 4 A/s
Ans: d
22. The core of a coil has a length of 200 mm. The inductance of coil is 6 mH. If the core length is doubled, all other quantities, remaining the same, the in ductance will be
(a) 3 mH
(b) 12 mH
(c) 24mH
(d)48mH
Ans: a
23. The self inductances of two coils are 8 mH and 18 mH. If the co-efficients of coupling is 0.5, the mutual inductance of the coils is
(a) 4 mH
(b) 5 mH
(c) 6 mH
(d) 12 mH
Ans: c
24. Two coils have inductances of 8 mH and 18 mH and a co-efficient of coupling of 0.5. If the two coils are connected in series aiding, the total inductance will be
(a) 32 mH
(b) 38 mH
(c) 40 mH
(d) 48 mH
Ans: b
25. A 200 turn coil has an inductance of 12 mH. If the number of turns is increased to 400 turns, all other quantities (area, length etc.) remaining the same, the inductance will be
(a) 6 mH
(b) 14 mH
(c) 24 mH
(d) 48 mH
Ans: d
26. Two coils have self-inductances of 10 H and 2 H, the mutual inductance being zero. If the two coils are connected in series, the total inductance will be

(a) 6 H
(b) 8 H
(c) 12 H
(d) 24 H
Ans: c
27. In case all the flux from the current in coil 1 links with coil 2, the co-efficient of coupling will be
(a) 2.0
(b) 1.0
(c) 0.5
(d) zero
Ans: b
28. A coil with negligible resistance has 50V across it with 10 mA. The inductive reactance is
(a) 50 ohms
(b) 500 ohms
(c) 1000 ohms
(d) 5000 ohms
Ans: d
29. A conductor 2 metres long moves at right angles to a magnetic field of flux density 1 tesla with a velocity of 12.5 m/s. The induced e.m.f. in the conductor will be
(a) 10 V
(6) 15 V
(c) 25V
(d) 50V
Ans: c
30. Lenz's law is a consequence of the law of conservation of
(a) induced current
(b) charge
(c) energy
(d) induced e.m.f.
Ans: c
31. A conductor carries 125 amperes of current under 60° to a magnetic field of 1.1 tesla. The force on the conductor will be
nearly
(a) 50 N
(b) 120 N
(c) 240 N
(d) 480 N
Ans: b
32. Find the force acting on a conductor 3m long carrying a current of 50 amperes at right angles to a magnetic field having a flux density of 0.67 tesla.
(a) 100 N
(b) 400 N
(c) 600 N
(d) 1000 N

Ans: a
33. The co-efficient of coupling between two air core coils depends on
(a) self-inductance of two coils only
(b) mutual inductance between two coils only
(c) mutual inductance and self inductance of two coils
(d) none of the above
Ans: c
34. An average voltage of 10 V is induced in a 250 turns solenoid as a result of a change in flux which occurs in 0.5 second. The total flux change is
(a) 20 Wb
(b) 2 Wb
(c) 0.2 Wb
(d) 0.02 Wb
Ans: d
35. A 500 turns solenoid develops an average induced voltage of 60 V. Over what time interval must a flux change of 0.06 Wb occur to produce such a voltage ?
(a) 0.01 s
(b) 0.1 s
(c) 0.5 s
(d) 5 s
Ans: c
36. Which of the fpllowing inductor will have the least eddy current losses ?
(a) Air core
(b) Laminated iron core
(c) Iron core
(d) Powdered iron core
Ans: a
37. A coil induces 350 mV when the current changes at the rate of 1 A/s. The value of inductance is
(a) 3500 mH
(b) 350 mH
(c) 250 mH
(d) 150 mH
Ans: b
38. Two 300 uH coils in series without mutual coupling have a total inductance of
(a) 300 uH
(b) 600 uH
(c) 150 uH
(d) 75 uH
Ans: b
39. Current changing from 8 A to 12 A in one second induced 20 volts in a coil.
The value of inductance is
(a) 5 mH
(b) 10 mH
(c) 5 H
(d) 10 H

Ans: c
40. Which circuit element(s) will oppose the change in circuit current ?
(a) Resistance only
(b) Inductance only
(c) Capacitance only
(d) Inductance and capacitance
Ans: b
41. A crack in the magnetic path of an inductor will result in
(a) unchanged inductance
(b) increased inductance
(c) zero inductance
(d) reduced inductance
Ans: d
42. A coil is wound on iron core which carries current I. The self-induced voltage in the coil is not affected by
(a) variation in coil current
(b) variation in voltage to the coil
(c) change of number of turns of coil
(d) the resistance of magnetic path
Ans: b
43. A moving magnetic field will produce the same effect as a conductor that is moving.
(a) Yes
(b) No
Ans:
44. The polarity of the induced voltage can be determined by using the left-hand generator rule.
(a) Yes
(b) No
Ans: a
45. Increasing the field or increasing the current will decrease the force on the conductor.
(a) Yes
(b) No
Ans: b
46. Reversing the field or the current will reverse the force on the conductor.
(a) Yes
(b) No
Ans: a
47. When a conductor moves in the field, so that it makes an angle 8 with the lines of flux, the force F is given as : F = Bl sin2 0.
(a) Yes
(b) No
Ans: b
48. The self-inductance of the coil may be defined as equal to the e.m.f. induced in volts when the current in the circuit changes at the rate of unit weber turns.
(a) Yes
(b) No

Ans: b