BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Diploma in Electrical Engineering

Course Name – Electrical Machine I

Course Code - DEE302

Semester / Year - Semester III

Time allotted : 85 Minutes Full Marks : 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 70=70

1. *(Answer any Seventy)*

(i) Which is not the basic element of the transformer?

a) core b) primary winding

c) secondary winding d) mutual flux

(ii) The efficiency of a transformer is maximum when

a) It runs at half full load b) it runs at full load

c) its Cu loss equal iron loss d) it runs over load

(iii) Transformer cores are laminated in order to

a) simplify its construction b) minimize eddy current loss

c) reduce cost d) reduce hysteresis loss

(iv) The open circuit test is carried out in a transformer to find the

a) Cu loss b) Core loss

c) Total loss d) Insulation resistance

(v) The transformer lamination are insulated from each other by

a) Mica strip b) Thin coat of varnish

c) Paper d) Any of these

(vi) In a transformer the energy is conveyed from primary to secondary

a) Through cooling coil
b) Through air
c) By the flux
d) None of these

(vii) Which loss is not common between a transformer and rotating machines?

a) Eddy current loss
b) Copper loss
c) Windage loss
d) Hysteresis loss

(viii) The transformer lamination are insulated from each other by _____.

a) Mica strip
b) Thin coat of varnish
c) Paper
d) Any of these

(ix) The armature reaction in dc. machine causes distortion in the main field flux. This effect of armature reaction can be reduced by

a) Increasing the length of air gap
b) Decreasing the length of air gap
c) Use compensation winding
d) None of this

(x) In lap winding, the number of brushes is always

a) double the number of poles
b) same as the number of poles
c) half the number of poles
d) two

(xi) The resistance of armature winding depends on _____.

a) length of conductor
b) cross-sectional area of the conductor
c) number of conductors
d) All of these

(xii) The field coils of D.C. generator are usually made of _____.

a) mica
b) copper
c) cast iron
d) carbon

(xiii) In a commentator

a) copper is harder than mica
b) mica and copper are equally hard
c) mica is harder than copper
d) None of these

(xiv) Iron losses in a D.C. machine are independent of variations in
a) speed
b) load
c) voltage
d) speed and voltage

(xv) DC shunt generator has terminal voltage versus load current characteristic which is
a) Constant
b) Slightly drooping
c) Slightly rising
d) Highly drooping

(xvi) Which of the following type of dc generator gives constant output voltage at all loads?
a) Shunt generator
b) Series generato
c) Short shunt compound generato
d) Level compound generator

(xvii) Lamination of core are generally made of _____.
a) case iron
b) carbon
c) silicon steel
d) None of these

(xviii) The field coils of D.C. generator are usually made of _____.
a) mica
b) copper
c) cast iron
d) carbon

(xix) The commutator segments are connected to the armature conductors by means of
a) copper lugs
b) resistance wires
c) insulation pads
d) brazing

(xx) In a four-pole D.C. machine

a) all the four poles are north poles
b) alternate poles are north and south
c) all the four poles are south poles
d) two north poles follow two south poles

(xxi) A separately excited generator as compared to a self-excited generator

a) is amenable to better voltage control
b) is more stable
c) has exciting current independent of load current
d) has all these features

(xxii) Brushes of D.C. machines are made of

a) carbon
b) soft copper
c) hard copper
d) All of these

(xxiii) Armature reaction of an unsaturated D.C. machine is

a) cross magnetizing
b) demagnetizing
c) magnetizing
d) None of these

(xxiv) Which loss is common between a transformer and rotating machines?

a) Eddy current loss
b) Copper loss
c) Hysteresis loss
d) all

(xxv) Armature reaction effect of D.C. machine is

a) cross magnetizing
b) demagnetization
c) magnetizing
d) cross magnetizing and demagnetization

(xxvi) In D.C. generators, the brushes on commutator remain in contact with conductors which

a) lie under south pole
b) lie under north pole
c) lie under inter polar region
d) are farthest from the poles

(xxvii) The insulating material used between the commutator segments is

normally

a) graphite
b) paper
c) mica
d) insulating varnish

(xxviii) In D.C. generators, the cause of rapid brush wear may be

a) severe sparking
b) rough commutator surface
c) imperfect contact
d) Any of these

(xxix) 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 curren
d) magnetic flux, direction of force and direction of motion of conductor

(xxx) In case of a 4-pole D.C. generator provided with a two layer lap winding with sixteen coils, the the pole pitch will be

a) 4
b) 8
c) 16
d) 32

(xxxi) Which of the following components of a D.C, generator plays vital role for providing direct current of a D.C. generator ?

a) Dummy coils
b) Commutator
c) Eye bolt
d) Equilizer rings

(xxxii) In D.C. generators, lap winding is used for

a) high voltage, high current
b) low voltage, high current
c) high voltage, low current
d) low voltage, low current

(xxxiii) The e.m.f. generated by a shunt wound D.C. generator isE. Now while pole flux remainsconstant, if the speed of the generator is doubled, the e.m.f. generated will be

a) E/2 b) 2E

c) slightly less than E d) E

(xxxiv) The series field of a short-shunt D.C. generator is excited by

a) external current b) armature current

c) shunt current d) load current

(xxxv) Which of the following application requires high starting torque ?

a) Lathe machine b) Centrifugal pump

c) Locomotive d) Air blower

(xxxvi) Differentially compound D.C. motors can find applications requiring

a) high starting torque b) low starting torque

c) variable speed d) frequent on-off cycles

(xxxvii) For short circuit test of a transformer the instruments are connected in

a) h.v side b) l.v side

c) lv and h.v d) hv and l.v

(xxxviii) Transformer core is made of

a) laminated steel b) solid steel

c) non magneti d) laminated copper sheet

(xxxix) In D.C. shunt motors as load is reduced

a) the speed will increase abruptly b) the speed will increase in proportion to reduction in load

c) the speed will remain almost/constant d) the speed will reduce

(xl) For starting a D.C. motor a starter is required because

a) it limits the speed of the motor b) it limits the starting current to a safe value

c) it starts the motor
d) None of these

(xli) In traction the type of d.c motor used

a) shunt
b) separately excited
c) series
d) compound

(xlii) Direction of a dc shunt motor can be reversed by interchanging the

a) supply terminal
b) shunt field and armature terminal
c) shunt field or armature terminal
d) none of these

(xliii) If a dc series motor is started at no load, the speed will be

a) rated value
b) too low
c) too high
d) fluctuating

(xliv) In a D.C. shunt motor, speed is

a) independent of armature current
b) directly proportional to the armature current
c) proportional to the square of the current
d) inversely proportional to the armature current

(xlv) If a dc series motor is started at with load, the speed will be

a) rated speed
b) zero
c) very high
d) half of the rated speed

(xlvi) DC shunt generator has terminal voltage versus field current characteristic which is

a) Constant
b) Slightly drooping
c) Slightly rising
d) Highly drooping

(xlvii) What will happen if the back e.m.f. of a D.C. motor vanishes suddenly?

a) The motor will stop
b) The motor will continue to run

c) The armature may burn
d) The motor will run noisy

(xlviii) In case of D.C. shunt motors the speed is dependent on back e.m.f. only because

a) back e.m.f. is equal to armature drop
b) armature drop is negligible
c) flux is proportional to armature current
d) flux is practically constant in D:C. shunt motors

(xlix) These days D.C. motors are widely used in

a) pumping sets
b) air compressors
c) electric traction
d) Any of these

(l) By looking at which part of the motor, it can be easily confirmed that a particular motor is D.C. motor?

a) Frame
b) Shaft
c) Commutator
d) all

(li) Which of the following does not charge in a transformer?

a) frequency
b) current
c) voltage
d) All of these

(lii) The purpose of providing an iron core in transformer is to

a) reduce hysteresis
b) provide support to winding
c) decrease the reluctance of the magnetic path
d) reduce eddy current loss

(liii) Different type of windings are

a) core type
b) shell type
c) berry type
d) all of these

(liv) In an open circuit test on a transformer, the following side is open

circuited

a) high voltage side
b) low voltage side
c) primary side
d) secondary side

(lv) A common method of cooling a power transformer is

a) natural air cooling
b) air blast cooling
c) oil cooling
d) Any of these

(lvi) Which of the following is not a part of transformer installation?

a) conservator
b) breather
c) buchholz relay
d) exciter

(lvii) The starting resistance of a D.C. motor is generally

a) low
b) around 500 ohm
c) more than 500 ohm
d) all

(lviii) The efficiency of a transformer will be maximum when

a) eddy current loss=copper loss
b) copper losses=iron losses
c) copper losses=hysteresis losses
d) Any of these

(lix) Which one of the following is not the function of pole shoes in a D.C. machine ?

a) To reduce eddy current loss
b) To support the field coils
c) To spread out flux for better unifor-mity
d) To reduce the reluctance of the mag-netic path

(lx) Three point starter can be used for

a) series motor only
b) shunt motor only
c) compound motor only
d) both shunt and compound motor

(lxi) Full load copper loss in a transformer is 1600 W. At half load the loss will

be

a) 200W
b) 6000W
c) 500W
d) 400W

(lxii) If a dc shunt motor is started at no load, the speed will be

a) rated value
b) too low
c) too high
d) fluctuating

(lxiii) The maximum efficiency of a distribution transformer is

a) at no load
b) at 50% full load
c) at 80% full load
d) at full load

(lxiv) The regulation of transformer is negative, if the load at the secondary side is

a) resistive
b) inductive
c) capacitive
d) combination of resistive, inductive and capacitive

(lxv) In a transformer the energy is conveyed from primary to secondary?

a) Through cooling coil
b) Through air
c) By the flux
d) None of these

(lxvi) The magnetizing current of a transformer is usually small because it has

a) small air gap
b) large leakage flux
c) laminated silicon steel core
d) fewer rotating parts

(lxvii) The path of the magnetic flux in transformer should have

a) high reluctance
b) low reactance
c) high resistance
d) low resistance

(lxviii) The function of conservator to protect the transformer from

a) hysteresis loss
b) eddy current losses
c) copper losses
d) All of these

(lxix) The transformer ratings are usually expressed in terms of
a) volts
b) amperes
c) kW
d) kVA

(lxx) Open circuit test on transformers is conducted to determine
a) hysteresis losses
b) copper losses
c) core losses
d) eddy current losses