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 : 75 Minutes

Full Marks : 60

[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 60=60

1.   *(Answer any Sixty)*

(i) A transformer transforms

   a) frequency   b) voltage

   c) current   d) voltage and current

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

   a) core   b) primary winding

   c) secondary winding   d) mutual flux

(iii) 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

(iv) Transformer cores are laminated in order to

   a) simplify its construction   b) minimize eddy current loss

   c) reduce cost   d) reduce hysteresis loss

(v) 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

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

    a) Mica strip   b) Thin coat of varnish

    c) Paper   d) Any of these

(vii) 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

(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) Iron losses in a D.C. machine are independent of variations in

a) speed

b) load

c) voltage

d) speed and voltage

(xiv) 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

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

a) mica

b) copper

c) cast iron

d) carbon

(xvi) The commutator segments are connected to the armature conductors by means of

a) copper lugs

b) resistance wires

c) insulation pads

d) brazing

(xvii) 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

(xviii) 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

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

a) carbon

b) soft copper

c) hard copper

d) All of these

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

    a) cross magnetizing   b) demagnetizing

    c) magnetizing   d) None of these

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

    a) Eddy current loss   b) Copper loss

    c) Hysteresis loss   d) all

(xxii) If brushes of a D.C. generator are moved in order to bring these brushes in magnetic neutral axis, axis there will be

    a) demagnetization only   b) cross magnetization as well as magnetization

    c) cross magnetization as well as demagnetizing   d) cross magnetization only

(xxiii) 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

(xxiv) The insulating material used between the commutator segments is normally

    a) graphite   b) paper

    c) mica   d) insulating varnish

(xxv) 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

(xxvi) 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

(xxvii) 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

(xxviii) The e.m.f. generated by a shunt wound D.C. generator is E. Now while pole flux remains constant, 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

(xxix) 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

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

a) Lathe machine　　　　　　　　　　b) Centrifugal pump

c) Locomotive　　　　　　　　　　　d) Air blower

(xxxi) 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

(xxxii) 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

(xxxiii) Transformer core is made of

a) laminated steel　　　　　　　　　　b) solid steel

c) non magneti   d) laminated copper sheet

(xxxiv) 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

(xxxv) 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

(xxxvi) 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

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

a) Constant   b) Slightly drooping

c) Slightly rising   d) Highly drooping

(xxxviii) 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

(xxxix) 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

(xl) 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

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

    a) frequency   b) current

    c) voltage   d) All of these

(xlii) Different type of windings are

    a) core type   b) shell type

    c) berry type   d) all of these

(xliii) 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

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

    a) low   b) around 500 ohm

    c) more than 500 ohm   d) all

(xlv) Sparking at the commutator of a D.C. motor may result in

    a) damage to commutator segments   b) damage to commutator insulation

    c) increased power consumption   d) All of these

(xlvi) Which of the following motor is preferred for operation in highly explosive atmosphere ?

    a) Series motor   b) Shunt motor

c) Air motor   d) Battery operated motor

(xlvii) 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

(xlviii) 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

(xlix) 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

(l) Eddy current loss in a transformer varies as

    a) square of frequency   b) reciprocal of frequency

    c) directly with frequency   d) root of square frequency

(li) 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

(lii) 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

(liii) 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

(liv) Efficiency of a distribution transformer is of the order of

a) 1

b) 0.98

c) 0.5

d) 0.25

(lv) The use of higher flux density in the transformer design

a) reduces weight per kVA

b) reduces iron losses

c) reduces copper losses

d) increases part load efficiency

(lvi) 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

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

a) high reluctance

b) low reactance

c) high resistance

d) low resistance

(lviii) A transformer can have zero voltage regulation at

a) to project against'internal fault

b) to reduce copper as well as core losse

c) to cool the transformer oil

d) to take care of the expansion and contraction of transformer oil due to variation of temperature of sur-roundings

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

a) hysteresis loss

b) eddy current losses

c) copper losses

d) All of these

(lx) The transformer ratings are usually expressed in terms of

a) volts

b) amperes

c) kW   d) kVA