Total No. of Printed Pages:2

SUBJECT CODE NO: E-232
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(EE/EEE/EEP)(CGPA) Examination Nov/Dec 2017
Transformers & DC Machines
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1) Q.1 and Q.6 are compulsory
2) Solve any two question from Q.2 to Q. 5
3) Solve any two questions from Q.7 to Q.10
4) Assume suitable data necessary

Section A

Q.1 Attempt any five 10

1) What are the losses in transformer under no load condition?
2) Why core of the transformer is laminated
3) Draw the equivalent circuit of transformer under no load
4) Define leakage flux and useful flux in transformer
5) What is the condition for maximum efficiency of transformer?
6) Calculate the no load current of transformer if magnetizing component and working component of current are 0.707 A and 0.5A resp.
7) Why we conduct open circuit test and short circuit test on transformer
8) Why silica gel is used in transformer

Q.2 a) With the help of neat – diagram explain back to back test on transformer 08

b) Explain how efficiency and regulation of transformer calculated with the help of short circuit and open circuit test 07

Q.3 a) A 20 KVA, 200/ 400V, 50H_z single phase transformer gives the following test results 08

O.C test	H.V wdg	200V	1.3A	120watt
S.C test	L.V wdg	22V	30A	200watt

Find the parameter of equivalent circuit.

b) Derive the expression for saving in Auto transformer as compared to conventional transformer 07

Q.4 a) Two single phase transformer with equal turns have impedance of (0.5 + j3) Ω and (0.6 + j10) Ω w.r.t secondary if they operate in parallel determine how they will share a total load of 100kw at p.f 0.8 1agging 08

b) Derive the EMF equation of transformer and define 1) Transformation Ratio 2) Turns ratio 07

Q.5 Explain the following (any three) 15

a) B.L.D.C motor
b) Stepper motor
c) Conditions for parallel operation
d) Scott connections
e) Phasor groups and clock notations

Section – B

Q.6 Attempt any five 10

1) State the working principle of DC motor
2) State the necessity of starter in DC motor
3) What are the different types of speed control of DC motor
4) What is Armature Reaction?
5) Explain the function of following parts
   i) Commutator
   ii) Brushes
6) How direction of DC motor can be reversed
7) State EMF equation of DC Generator
8) What are the different tests conducted on DC machines?

Q.7 a) Derive torque equation for DC motor 08

b) Explain any one method of commutation in detail 07

Q.8 a) With the help of neat diagram explain working of 4 point starter. How is it different from three point starter 08

b) A shunt generator delivers 195A at terminal p.d of 250V. the armature resistance and shunt field resistance are 0.2 Ω and 50 Ω respectively the iron and friction losses are equal to 950 watt find 07

i) EMF generated
ii) Cu losses
iii) O/P of prime mover
iv) Commercial , mechanical and electrical efficiencies

Q.9 a) Explain with neat sketch various parts of DC machines 08

b) Derive the ENF equation of DC generator 07

Q.10 Explain the following (any three) 15

a) Armature Reaction in DC m/c
b) Different characteristics of DC shout m/t
c) Voltage built up of shout generator
d) Swinburne test -----
e) Power stages in DC generator