6.2.3 No load and Load operation, Phasor Diagram

6.2.4 Effect of Excitation and power factor control

7. Fractional Kilowatt Motors (6 hours)

7.1 Single phase Induction Motors: Construction and Characteristics

7.2 Double Field Revolving Theory

7.3 Split phase Induction Motor

7.1.1 Capacitors start and run motor

7.1.2 Reluctance start motor

7.4 Alternating Current Series motor and Universal motor

7.5 Special Purpose Machines: Stepper motor, Schrage motor and

Servo motor

Practical:

1. Magnetic Circuits

- To draw B‐H curve for two different sample of Iron Core

- Compare their relative permeability

2. Two Winding Transformers

- To perform turn ratio test

- To perform open circuit (OC) and short circuit (SC) test to

determine equivalent circuit parameter of a transformer and

hence to determine the regulation and efficiency at full load

3. DC Generator

- To draw open circuit characteristic (OCC) of a DC shunt generator

- To draw load characteristic of shunt generator

4. DC Motor

- Speed control of DC Shunt motor by (a) armature control method

(b) field control method

- To observe the effect of increasing load on DC shunt motor’s

speed, armature current, and field current.

5. 3‐phase Machines

- To draw torque‐speed characteristics and to observe the effect of

rotor resistance on torque‐speed characteristics of a 3‐phase

Induction Motor

- To study load characteristics of synchronous generator with (a)

resistive load (b) inductive load and (c) capacitive load

6. Fractional Kilowatt Motors

- To study the effect of a capacitor on the starting and running of a

single‐phase induction motor

- Reversing the direction of rotation of a single phase capacitor

induct

References:

1 I.J. Nagrath & D.P.Kothari,” Electrical Machines”, Tata McGraw Hill

2 S. K. Bhattacharya, “Electrical Machines”, Tata McGraw Hill

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5 A.E. Fitzgerald, C.Kingsley Jr and Stephen D. Umans,”Electric Machinery”,

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6 B.R. Gupta & Vandana Singhal, “Fundamentals of Electrical Machines,

New Age International

7 P. S. Bhimbra, “Electrical Machines”’ Khanna Publishers

8 Irving L.Kosow, “Electric Machine and Tranformers”, Prentice Hall of

India.

9 M.G. Say, “The Performance and Design of AC machines”, Pit man &

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10 Bhag S. Guru and Huseyin R. Hizirogulu, “Electric Machinery and

Transformers” Oxford University Press, 2001.

Evaluation Scheme

The questions will cover all the chapters of the syllabus. The evaluation scheme

will be as indicated in the table below

Chapters Hours Marks distribution\*

1 4 8

2 8 16

3 6 12

4 6 12

5 6 10

6 6 10

7 6 12

Total 42 80

\* There could be a minor deviation in the marks distribution.