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BIEE-027

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI) / ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRICAL ENGINEERING (ACELVI)

00336

Term-End Examination

June, 2016

BIEE-027 : ELECTRICAL MACHINES – I

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any* ***five*** *questions. Use of scientific calculator is allowed. Missing data, if any, may be suitably assumed.*

1. (a) Why is the efficiency of a transformer high as compared to other rotating machines ? Suggest methods to enhance efficiency of a transformer. *4*

(b) Explain heat-run test of a single-phase transformer in detail. *10*

2. (a) What is an Auto transformer ? State its merits and demerits over the two-winding transformer. *7*

(b) Explain speed-torque characteristics of DC series and shunt motor. *7*

3. (a) Describe the constructional details of a DC machine. 7

(b) The induced e.m.f. in a DC machine, when running at 500 rpm is 180 V. Calculate the induced e.m.f while the machine is running at 600 rpm by assuming flux to be constant. 7

4. (a) State the reasons for operating transformers in parallel. Describe the advantages of using several small transformers in parallel over the use of a single large transformer. 7

(b) Explain the process of commutation in DC machine and describe the methods to improve it. 7

5. Explain the various methods of speed control of a DC motor with neat sketches. 14

6. (a) Draw and explain the external characteristics of shunt, series and compound generators. 7

(b) Draw the connection diagram of two shunt generators connected in parallel and discuss their load sharing. 7

7. Write technical notes on any ***two*** of the following : *2×7=14*

(a) Three winding transformer

(b) Tap changing transformer

(c) Three-phase to single-phase conversion