

Roll No.

OLE-3042
B. Tech. 3rd Semester (EE)
Examination – April, 2021

ELECTRICAL MACHINES - I

Paper : PCC-EE-209-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Q. No. 1 is *compulsory*. Attempt *four* more question from the sections A, B, C & D by selecting at least one question from each section.

1. (i) What is MMF ? $2.5 \times 6 = 15$
- (ii) Define linear and nonlinear magnetic circuits.
- (iii) State faradays law of EMI.
- (iv) What do you mean by saliency ?

- (v) Define voltage regulation of a transformer.
- (vi) What are hysteresis and eddy current losses.

SECTION – A

- 2. State and Biot Savart Law. Explain Visualization of magnetic fields produced by a bar magnet and a current carrying coil. 15

OR

- 3. Explain force as a partial derivative of stored energy with respect to position of a moving element in magnetic circuit. 15

SECTION – B

- 4. Discuss Basic construction of a DC machine and Derive the EMF equation for DC generators. 15

OR

- 5. What is armature reaction? Discuss the effect of armature reaction on the terminal voltage in DC generators. 15

SECTION – C

- 6. Draw and explain the Load characteristics of DC compound generators. 15
- 7. Explain the methods of speed control of DC motors. 15

SECTION – D

8. Draw and explain the phasor diagram of single phase transformer on capacitive load. 15
9. What do you mean by Cooling of transformers. How it is achieved in practical transformers ? 15
-