

Code No: **R164102G**

**R16**

**Set No. 1**

**IV B.Tech I Semester Regular/Supplementary Examinations, Jan/Feb - 2022**

**SPECIAL ELECTRICAL MACHINES**

**(Electrical and Electronics Engineering)**

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A (14 Marks)**

1. a) Define coercivity and remanence. [2]
- b) List the advantages of permanent magnet stepper motors. [2]
- c) What are the differences between a stepper motor and SRM? [3]
- d) Mention applications of PMSM motor. [2]
- e) What are the differences in the constructional features of PMSM motor and PMSM? [3]
- f) List any two differences between conventional IM and LIM? [2]

**PART-B (4x14 = 56 Marks)**

2. a) With the help of a neat sketch, explain the B-H loop of a permanent magnet material. [7]
- b) Explain the effect of temperature on permanent magnetic material. [7]
3. a) What are various types and applications of stepper motors? [7]
- b) Explain the construction of multi stack Variable reluctance stepper motor with neat sketches. [7]
4. Explain about different types of power converters used for Switched Reluctance Motors. [14]
5. a) Explain in detail the advantages and disadvantages of BLDC Motors over conventional motors. [7]
- b) Explain the principle of operation of BLDC motor. [7]
6. a) Compare square wave and sine wave permanent magnet motors. [7]
- b) Derive the EMF equation of Sine wave PMSM motor. [7]
7. a) Explain the classification of Linear induction motor? [7]
- b) Explain the working principle of linear induction motor? [7]

