

(3 Hours)

Total Marks: 80

N.B: (1) Question No. 1 is compulsory.

(2) Attempt any three from the remaining questions.

(3) Figures to the right indicate full marks.

(4) Each question is of 20 Marks

- Q.1** Attempt any 4 questions
- | | |
|--|----------|
| A Explain energy stored in magnetic field | 5 |
| B Explain the losses occurring in DC machine. | 5 |
| C What are the advantages of digital meters over analog meters? | 5 |
| D What are the applications of potentiometer circuits? | 5 |
| E What is resolution and sensitivity of digital meters? | 5 |
- Q.2**
- | | |
|---|-----------|
| A Explain in brief the principle of electro-mechanical energy conversion and develop a model of electro-mechanical energy conversion device. | 10 |
| B Explain rheostatic braking and plugging of DC shunt motor. | 10 |
- Q.3**
- | | |
|--|-----------|
| A Explain Maxwells inductance bridge to measure self-inductance, derive the equation of self-inductance and draw phasor diagram. | 10 |
| B Draw and explain speed-torque characteristic, speed-armature current characteristics and torque-armature current characteristics of DC shunt motor. | 10 |
- Q.4**
- | | |
|--|-----------|
| A Explain with neat diagram Swinburne's test on DC machine. | 10 |
| B Illustrate the working of ramp type digital voltmeter (DVM) with the help of block diagram and waveforms. | 10 |
- Q.5**
- | | |
|---|-----------|
| A Explain the concept of doubly excited machines and derive the expression for the electromagnetic torque. | 10 |
| B Explain Schering bridge with neat diagram. | 10 |
- Q.6**
- | | |
|--|-----------|
| A What are transducers? Give a brief classification of transducers with examples. | 10 |
| B Explain the construction and working principle of digital Tachometer. | 10 |