

**B.Tech. - VIEP - ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

June, 2016

00359

BIEEE-016 : INDUSTRIAL DRIVES

Time : 3 hours

Maximum Marks : 70

Note : (i) *Attempt any seven questions.*

(ii) *All questions carry equal marks.*

(iii) *Use of calculator is permitted.*

(iv) *Missing data, if any, may be suitably assumed.*

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1. What are the advantages of electrical drives ?
State the essential parts of electrical drives.
What are the functions of a Power Modulator ? 10

 2. Explain the operation of a closed loop speed control scheme with inner current control loop.
What are various functions of inner current control loop ? 10

 3. Explain how does a phase-locked loop speed control scheme operate. Enumerate applications of this scheme. 10

4. A fully-controlled rectifier-fed separately excited dc motor is required to operate in motoring and braking operations in the forward direction. Only one fully-controlled rectifier is available. What switching arrangement will be required ? Explain. 10
5. A separately excited dc motor is running on no load with weak field. Now the field current is increased. State and explain the various operations (braking, motoring) of the motor before it settles at a new steady-state speed. 10
6. Derive an equivalent circuit for the dc dynamic braking of an induction motor and explain why is it necessary to account for the saturation in the magnetic circuit. What are the important features of dc dynamic braking in relation to other methods of braking of induction motors ? 10
7. What are the similarities between a brushless dc motor and a conventional dc motor ? Why is it known as brushless dc motor ? What are its advantages over a conventional dc motor ? 10
8. Explain the slip power recovery schemes for slip ring induction motor drives. 10

9. Write short notes on any *two* of the following : $2 \times 5 = 10$

- (a) Load equalization in multimotor drive
 - (b) Four quadrant operation of dc motor drive
 - (c) CSI fed induction motor drive
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