

PSNA College of Engineering and Technology
Department of Electrical and Electronics Engineering
Serial Test-III
Special Electrical Machines

Year/Sem : IV/VII/B-SECTION
Staff In-charge: M.Kaliamoorthy

Max.Marks:50
Time: 90 Mins
Sub Code: EE1001

Part A (9 * 2 = 18)

Answer any NINE questions

1. Mention the kinds of PM used in BLDC motor
2. Mention the advantages of the brushless configuration.
3. Write the emf and torque equation of PMBLDC motor
4. What is Electronic commutator?
5. Draw the torque speed characteristics of BLDC motor
6. List the applications of PMBLDC motor.
7. What is the purpose of using AND gates in the controller of PMBLDC motor?
8. Compare PMBLDC motor with the dc commutator motor.
9. What is meant by hall sensor?
10. Draw the magnetic demagnetization curve.

Part B (2 *16 = 32)

Answer ALL questions

11. (a) Explain the construction and principle of operation of PMBLDC motor with neat diagrams.(12)
(b) Why the PMBLDC motor is called as electronically commutated motor? (4)

OR

12. Derive the torque and emf equation of square wave brushless dc motor. (8+8)
13. (a) Sketch the controller for PMBLDC motor and explain the function of various blocks. (8)
(b) Draw and explain the structure of BLDC motor with 120 degree magnet arc BLDC motor (8)

OR

14. (a) A BLDC motor has a no load speed of 6000RPM when connected to 120 V supply. The armature resistance is 2.5Ω . Rotational and iron losses may be neglected. Determine the speed when the supply voltage is 60V and the torque is 0.5Nm. No load speed when supply voltage is 120 Volts is 6000 RPM. (6)
(b) Compare and explain the mechanical commutator and brushes arrangement with that of the electronic commutator with neat diagrams (10)

Staff in charge

Head of the department