Reg. No. : | | | | | | | | | | |

Question Paper Code: 34030

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electronics and Instrumentation Engineering

01UEE426 - PRINCIPLES OF ELECTRICAL MACHINES

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Write the emf equation for (i) DC motor   (ii) DC generator.

2. The armature of a DC machine is laminated. Why?

3. Why Transformer rating is in kVA?

4. Define all day efficiency of a transformer.

5. What is slip?

6. State the condition for maximum starting torque produced in an induction motor.

7. What is a synchronous capacitor?

8. What is hunting in synchronous machines and how it is suppressed?

9. What is a universal motor?

10. A single phase induction motor is not self starting. Justify.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the construction and operating principle of DC generator with neat sketch.

(16)

Or

(b) With neat sketch explain the electrical and mechanical characteristics of DC shunt motors. (16)

12. (a) Explain the construction and operating principle of transformer with neat sketch.
(16)

Or

(b) Draw and explain the working of a transformer on load with phasor diagram. How it affects the power factor of the loaded transformer. (16)

13. (a) Derive an expression for the torque equation of a 3-phase induction motor. (16)

Or

(b) Explain the principle of operation of a three phase induction motor. (16)

14. (a) Explain the principle of operation of a synchronous motor. (16)

Or

(b) Discuss in detail about hunting and V curves for synchronous motor. And also discuss how to prevent the hunting in synchronous motor. (16)

15. (a) Explain the principle of operation of a capacitor start and run single phase induction motor and mention its advantages. (16)

Or

(b) Explain the construction and performance of a permanent magnet synchronous motor. (16)

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