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**Question Paper Code : 52436**

**B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017**

**Third Semester**

**Electronics and Communication Engineering**

**EC 2201 – ELECTRICAL ENGINEERING**

**(Regulations 2008)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions**

**PART – A**

**(10×2=20 Marks)**

1. Write the principle of generator.
2. Write down the significance of back E. M. F.
3. What is the reason for mentioning the transformer rating in kVA ?
4. Draw the equivalent circuit of a loaded transformer.
5. List down the types of induction motor.
6. Mention the condition for maximum starting torque in induction motor.
7. List down the advantages of rotating field over rotating armature.
8. Write a note on stepper motor.
9. Draw the one line diagram of electric power system.
10. Mention the effect of high voltage on volume of copper.



## PART – B

(5×16=80 Marks)

11. a) I) A 220V DC shunt motor runs at 500 rpm, when the armature current is 50A. Calculate the speed if the torque is doubled. Given that  $R_a = 0.2$  ohm. (8)
- II) Explain briefly on different characteristics of shunt generator. (8)
- (OR)
- b) Discuss in detail about brake test and Swinburne's test for determining the efficiency of DC machines with its advantages and disadvantages. (16)
12. a) I) The core of a 3-phase 50 Hz, 11000/550V delta/star, 300 kVA, core-type transformer operates with a flux of 0.05 Wb, find number of HV and LV turns per phase, EMF per turn, full load HV and LV phase currents. (8)
- II) Give a detailed description on working principle of transformer with its EMF equation. (8)
- (OR)
- b) Mention the different types of test performed in a transformer and explain in briefly with equations, circuits and advantages. (16)
13. a) I) The power supplied to a 3-phase induction motor is 40kW and their corresponding stator losses are 2kW. Calculate the total mechanical power developed and rotor copper loss if slip is 0.04 per unit. (8)
- II) Explain the principle of operation of three-phase induction motor. (8)
- (OR)
- b) Mention the different type of starting methods available for three phase induction motor and explain in detail about any three methods. (16)
14. a) Discuss in detail about synchronous impedance method and ampere turn method with different tests. (16)
- (OR)
- b) Explain in detail about reluctance motor and hysteresis motor. (16)
15. a) Compare and contrast on HVAC and HVDC transmission. (16)
- (OR)
- b) I) Discuss in detail about the classifications of substation. (8)
- II) Write a detailed note on insulators with their types, material used and properties. (8)