

# **ELECTRICAL MACHINES (787)**

## **Sample Question Paper**

### **Class XII - 2018-19**

**Time: 2 Hours**

**Max. Marks: 40**

**General Instructions:**

1. Question paper is divided into two sections: Section-A and Section-B.
2. **Section–A:**
  - i. Multiple choice question/Fill in the blanks/Direct Questions of 1 mark each. Answer any 10 questions out of the given 12 questions.
  - ii. Very Short Answer of 2 marks each. Answer any 5 questions from the given 7 questions.
  - iii. Short Answer of 3 marks each. Answer any 5 questions from the given 7 questions.
3. **Section–B:** Long/Essay type questions of 5 marks each. Answer any 1 question from the given 2 questions.
4. All questions of a particular section must be attempted in the correct order.
5. Please check that this question paper contains 28 questions out of which 21 questions are to be attempted.
6. The maximum time allowed is 2hrs.

#### **SECTION –A**

**Answer any 10 questions out of the given 12 questions:**

1. Which motor cannot be started on no load? **(1)**
  - (a) Series Motor
  - (b) Shunt motor
  - (c) Cumulative compound motor
  - (d) Both b and c.
2. Which of the following motor has negative speed regulation? **(1)**
  - (a) Series motor
  - (b) Stunt motor
  - (c) Cumulative compound motor
  - (d) Differential compound motor
3. Core of transformer is laminated to **(1)**
  - (a) Reduce hysteresis losses
  - (b) Eddy current losses
  - (c) Copper losses
  - (d) All of the above
4. A transformer transforms \_\_\_\_\_ **(1)**
  - (a) Power factor
  - (b) Voltage
  - (c) Power
  - (d) Energy

5. Natural oil cooling is used in transformer upto a rating of (1)  
(a) 3000 kVA  
(b) 1000 kVA  
(c) 500 kVA  
(d) 250 kVA
6. Soldering iron is made of wedge shape in order to..... (1)  
(a) Apply high pressure at edge  
(b) Retain heat  
(c) Retain solder  
(d) Forge welding
7. The purpose of using flux in soldering is to..... (1)  
(a) Increase fluidity of solder metal  
(b) Fill up gaps left in a bad joint  
(c) Carbon steel  
(d) Prevent oxides forming
8. The starting torque of a capacitor start motor is (1)  
(a) zero  
(b) low  
(c) same as rated torque  
(d) more than rated torque.
9. A universal motor is one (1)  
(a) which can run on any value of supply voltage  
(b) which has infinitely varying speed  
(c) which can operate on ac as well as dc voltage  
(d) which can work as single phase or three phase motor.
10. The motor used in household refrigerators is (1)  
(a) dc series motor  
(b) dc shunt motor  
(c) universal motor  
(d) single phase induction motor.
11. The direction of rotation of universal motor can be reversed by (1)  
(a) reversing the supply terminals  
(b) switching over from ac to dc  
(c) interchanging the brush leads  
(d) any of the above.
12. In an induction motor, rotor speed is always (1)  
(a) Less than the stator speed  
(b) More than the stator speed  
(c) Equal to the stator speed  
(d) None of these

**Very Short Questions: (2 marks each).**

**Answer any 5 questions out of the given 7 questions:**

13. How is speed control of dc motor achieved? (2)
14. What are the functions of poles in dc motors? (2)
15. What are characteristics of capacitor start motor? (2)
16. What are different types of solder? (2)
17. Give winding details of fractional horse power motor? (2)
18. What are the causes of faults in ac motor? (2)
19. List applications of voltage and current transformer. (2)

**Short Questions: (3 marks each).**

**Answer any 5 questions out of the given 7 questions:**

20. What is single phase repulsion motor? Also write various applications of single phase motor? (3)
21. Describe the construction of starters used to start a three-phase slip-ring induction motor. (3)
22. Explain the construction and working principle of compound motor with a neat schematic diagram. (3)
23. Explain testing, fault finding and repairing of dc motor. (3)
24. Describe working principle of Shunt motor. Also give the differences between series and shunt motor. (3)
25. Draw and explain step up and step down transformers. (3)
26. Give construction details and winding details of shaded pole motor. (3)

**SECTION –B**

**Long/Essay type questions (5 marks each).**

**Answer any 1 question out of the given 2 questions:**

27. What are various soldering techniques? Explain in details. (5)
28. Classify AC motors. Explain principle of operation, construction and characteristics of Universal Motor. (5)