



Series HMJ

SET-4

कोड नं.
Code No.

311

रोल नं.

Roll No.

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परीक्षार्थी कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें ।

Candidates must write the Code on the title page of the answer-book.

नोट	NOTE
(I) कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 11 हैं ।	(I) Please check that this question paper contains 11 printed pages.
(II) प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए कोड नम्बर को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें ।	(II) Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
(III) कृपया जाँच कर लें कि इस प्रश्न-पत्र में 28 प्रश्न हैं ।	(III) Please check that this question paper contains 28 questions.
(IV) कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें ।	(IV) Please write down the Serial Number of the question in the answer-book before attempting it.
(V) इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है । प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा । 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे ।	(V) 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

विद्युत् मशीनें (सैद्धान्तिक)

ELECTRICAL MACHINES (Theory)

निर्धारित समय : 2 घण्टे

अधिकतम अंक : 40

Time allowed : 2 hours

Maximum Marks : 40

**SECTION A****PART I**

Attempt any **ten** questions.

1×10=10

1. Iron core of a power transformer is laminated 1
 - (A) To reduce hysteresis loss
 - (B) To reduce eddy current loss
 - (C) To reduce copper loss
 - (D) Due to (A) and (B) above

2. In a transformer, the following winding has more cross-sectional area : 1
 - (A) Primary winding
 - (B) Secondary winding
 - (C) High voltage winding
 - (D) Low voltage winding

3. Cross-section of the iron core of a power transformer is approximately circular. This is done because 1
 - (A) It is easy to assemble a circular core.
 - (B) It is easy to make a circular coil.
 - (C) Electromagnetic forces tend to make the coil circular.
 - (D) Of all of the above reasons

4. If the field circuit of a D.C. series motor gets opened on a small load then 1
 - (A) motor will pick up very high speed.
 - (B) motor will slow down.
 - (C) motor will stop.
 - (D) motor will run normally.



5. Iron losses in a D.C. machine take place in 1
- (A) Yoke
 - (B) Armature core only
 - (C) Yoke and armature
 - (D) None of the above
6. Losses which do not occur in a transformer but do occur in rotating electrical machines are 1
- (A) hysteresis and eddy current losses
 - (B) friction and windage losses
 - (C) copper losses
 - (D) magnetic losses
7. Inrush current to motor at starting is mainly reduced 1
- (A) To save the motor from thermal damage
 - (B) To avoid starting shocks to the rotor of the motor
 - (C) To avoid voltage drop in the line
 - (D) Due to none of the above
8. A shaded pole motor does not possess 1
- (A) Commutator
 - (B) Centrifugal switch
 - (C) Capacitor
 - (D) All of the above



9. Burning out of motor winding is due to 1
- (A) Open circuiting of capacitor
 - (B) Change in capacitor value
 - (C) Short circuited capacitor
 - (D) None of the above
10. Starting capacitor of a FHP single-phase motor will have a capacitance of about 1
- (A) 12 μF
 - (B) 40 μF
 - (C) 300 μF
 - (D) 1000 μF
11. An alloy of 60% lead and 40% tin is called 1
- (A) Hard solder
 - (B) Soft solder
 - (C) Bronze
 - (D) None of the above
12. Melting point of a soft solder may be 1
- (A) below 100° C
 - (B) between 190° C and 250° C
 - (C) 600° C
 - (D) None of the above



खण्ड ख

किसी एक प्रश्न का उत्तर दीजिए ।

5×1=5

27. यूनिवर्सल मोटर की संरचना (बनावट) का वर्णन इसका चित्र बनाकर कीजिए । इसके कार्यकारी सिद्धांत एवं उपयोग लिखिए । 5
28. सोल्डरिंग करने के विभिन्न तरीके क्या हैं ? सोल्डर में विभिन्न धातु कौन-कौन से हैं और उनका अनुपात क्या होता है ? 5



SECTION B

Attempt any **one** question.

5×1=5

27. Describe with a sketch, the construction of a universal motor. Write its working principle and uses. 5
28. What are the various methods of soldering ? What are the various components of solder and their proportion ? 5