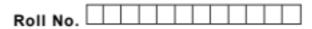


www.FirstRanker.com

www.FirstRanker.com



Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) (2012 Onwards E-III) (Sem.-7) ENERGY EFFICIENT MACHINES Subject Code : BTEE-805D M.Code : 71945

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Write briefly :

- 1. How is an energy efficient motor different than a standard motor?
- 2. Do energy efficient motors require more maintenance?
- 3. Should one rewind my standard-efficiency motor or purchase an energy efficient motor?
- 4. What horsepower, speed and voltage ranges are available?
- 5. What is the efficiency of an energy efficient motor at different load points?
- 6. What is the power factor of an energy efficient motor?
- 7. Can a standard motor be rewound as an energy efficient motor?
- 8. Is the service factor any different from that of a standard motor?
- 9. What is the payback period for selecting an energy efficient versus a standard-efficiency motor?
- 10. Aren't energy efficient motors unsuitable for adjustable speed drive applications?

1 M-Code 71945

(S2)-815



FirstRanker.com

www.FirstRanker.com

SECTION-B

- Write some applications of constant torque and variable torque loads. Write a short note on a 'Multi-Speed Motor'.
- How do you size the capacitor rating required for an induction motor? Write some strategies for correcting poor power factor in motors.
- Comment on 'Construction Aspects' how an "Energy Efficient Motor" is different from a "Standard Motor"? List down some ill-suited applications for 'Energy Efficient Motors'.
- 14. Why 'Induction Motors' are so popular over all types of motors? How do you define percentage unbalance in voltage?
- 15. Why is it beneficial to operate motors in star mode for under loaded motors? What is the thumb rule for installing capacitors to motor terminal?

SECTION-C

 A 4-pole 415 V 3-phase, 50 Hz induction motor runs at 1440 RPM at .88 pf lagging and delivers.

10.817 kW. The stator loss is 1060 W, and friction & windage losses are 375 W. Calculate

A. Slip, B. Rotor Copper loss, C. Line current and D. Efficiency

hanni

- 17. What are the effects of harmonics on motor operation and performance? Calculate the annual energy-savings and simple payback from replacing an existing standard motor with a premium efficiency Motor versus repairing a standard efficiency motor with a sample example.
- Discuss direct measurement method and loss segregation method to determine the efficiency of energy efficient methods.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

