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Question Paper Code : 27211

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Third Semester

Electronics and Communication Engineering

EE 6352 — ELECTRICAL ENGINEERING AND INSTRUMENTATION

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How are D.C. machines classified?
2. For a d.c. motor, write the expression for speed.
3. Draw the equivalent circuit of an ideal transformer.
4. Give the principle behind an autotransformer.
5. Define the regulation of an alternator. How is it expressed?
6. For domestic and commercial purposes which motor is best suited and why?
7. Write the static characteristics of measurement.
8. What is a thermistor? Where do you deploy it?
9. Write briefly about the bridge is used for measuring capacitance.
10. State the application of Q meters.

PART B — (5 × 16 = 80 marks)

11. (a) Illustrate the construction of a DC machine with suitable diagrams and derive the emf equation for a DC shunt generator.

Or

- (b) Write down the operating principle of a DC-motor and discuss the characteristics of any one type of DC motor.

12. (a) Compare the operations of the transformer when in no load and on load respectively with their relevant phasor diagrams.

Or

- (b) (i) Derive the equation of a transformer. (8)
(ii) Summarise the transformer losses and explain on how is its efficiency calculated. (8)

13. (a) (i) Discuss the various methods of starting synchronous motors. (6)
(ii) Write down the equation of the induced emf for an alternator and calculate the same for a 3 phase, 50 Hz, 20 poles salient pole alternator with star connected stator winding which has 180 slots on the stator. Each slot consists of 8 conductors. The flux per pole is 25 mwb and is sinusoidally distributed. The coils are full pitch. (10)

Or

- (b) Illustrate the principle of operation of three phase induction motor along with its construction and suitable diagrams. (16)

14. (a) (i) How are transducers classified? (8)
(ii) Explain the working of an LVDT. (8)

Or

- (b) (i) State the cause and effects of the errors encountered while measuring. (8)
(ii) Explain the working of a piezo electric transducer. (8)

15. (a) Explain the working of a storage oscilloscope. (16)

Or

- (b) Explain with neat diagrams the bridge balance condition for Weinbridge and for Schering bridge. (8 + 8)