

C 40926

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Name.....

Reg. No.....

**COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING)
DEGREE EXAMINATION, APRIL 2013**

EN 09 107—BASICS OF ELECTRICAL, ELECTRONICS AND COMMUNICATION
ENGINEERING

(2009 Scheme)

(Regular/Supplementary/Improvement)

Time : Three Hours

Maximum : 70 Marks

Section 1 (Basics of Electrical Engineering)

PART A

Answer all questions.

1. State Kirchhoff's voltage law. (2 marks)
2. What is the peak value of a sinusoidal alternating current of 4.78 R.M.S. amperes? (1 mark)
3. The no-load ratio of 50 Hz single phase transformer is 6000/250 V. Compute the number of turns in each winding, if the maximum flux is 0.06 Wb in the core. (2 marks)

PART B

Answer any two questions.

4. Define and explain the following :
(i) Reluctance. (ii) Flux. (5 marks)
5. Explain the elementary theory of ideal transformer. (5 marks)
6. What is meant by slip ? Explain. (5 marks)

PART C

Answer all questions.

7. (a) (i) Derive the e.m.f. equation of d.c. generator. (4 marks)
(ii) Explain the construction details of d.c. generator. (6 marks)

Or

- (b) Explain the construction and principle of operation of salient pole and smooth cylindrical type three phase synchronous generator. (10 marks)
8. (a) (i) Explain about dynamically induced E.M.F. (6 marks)
(ii) State and explain Lenz's law. (4 marks)

Or

Turn over

(b) (i) Explain the following :

- 1 Active power.
- 2 Reactive power.

(4 marks)

(ii) A resistance of 12Ω , an inductance of 0.15 H and a capacitor of $100 \mu\text{F}$ are connected in series across a 100 V , 50 Hz supply. Calculate :

- 1 Impedance.
- 2 Current
- 3 Phase angle between the current and voltage.

(6 marks)

Section 2 (Basics of Electronics and Communication Engineering)

PART A

Answer all questions.

1. What is meant by open loop and closed loop systems ? (2 marks)
2. What is meant by logic '0' and logic '1' ? (1 mark)
3. What is meant by roaming in mobile communication ? (2 marks)

PART B

Answer any two questions.

4. What is meant by negative feedback ? Explain the effects of negative feedback. (5 marks)
5. What is multiplexing ? Explain the concept of multiplexing. (5 marks)
6. Explain principle of GSM technology. (5 marks)

PART C

Answer all questions.

7. (a) Define and explain the following terms as applied to amplifier :

- (i) Current gain.
- (ii) Voltage gain.
- (iii) Input impedance.
- (iv) Output impedance.
- (v) Frequency response.

(5 × 2 = 10 marks)

Or

- (b) (i) Explain the principle of digital to analog converter. (5 marks)
- (ii) Write short note on programmable logic devices. (5 marks)

8. (a) (i) Draw the block diagram of FM transmitter and explain. (7 marks)
(ii) What are the advantages of optical communication? (3 marks)

Or

- (b) (i) Draw the block diagram of continuous wave radar and explain. (5 marks)
(ii) Explain the principle of satellite communication systems. (5 marks)

