Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 66213

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2011
Regulations 2008

Second Semester

Common to Civil, Aeronautical, Automobile, Marine, Mechanical,
Production, Chemical , Petroleum Engineering and to Biotechnology,
Polymer, Textile, Textile(Fashion), Rubber and Plastics Technology

GE2151 Basic Electrical and Electronics Engineering

Time: Three Hours   Maximum: 100 marks

Answer ALL Questions

Part A - (10 x 2 = 20 marks)

1. State Kirchhoff's voltage and current law.

2. List any three types of indicating instruments.

3. Sketch the circuit diagram for separately excited DC generator.

4. What is a transformer?

5. Define peak inverse voltage of a PN junction diode.

6. Define : Current amplification factor for CE configuration in transisters.

7. Draw the symbol of AND gate and write its truth table.

8. What is a decade counter?

9. Mention two advantages of modulation when compared to transmission of unmodulated signal.

10. What is the basic function of a communication satellite?

Part B - (5 x 16 = 80 marks)

11. (a) (i) Use mesh analysis to determine the three mesh currents in the circuit shown below. (10)
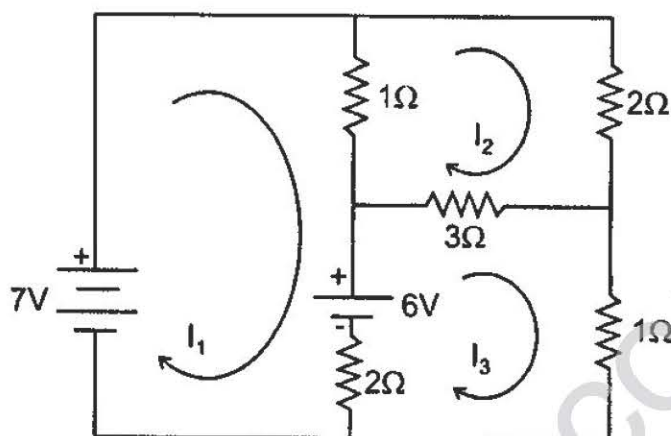
(ii) A series R-C circuit with R = 20 Ω and C = 127 μF has 160 V, 50 Hz supply connected to it. Find the impedance, current and power factor. (6)

OR

11. (b) (i) Determine the line current, power factor and total power when a 3-phase 400 V supply is given to a balanced load of impedance $(8 + j6)\Omega$ in each branch, is connected in Star. (8)

(ii) With the help of a neat diagram, explain the construction and operation of an induction type energy meter. (8)

12. (a) (i) With neat sketches, explain the construction and the working principle of d.c. generator. Also derive the emf equation. (12)

(ii) A short-shunt cumulative compound DC generator supplies 48 kW at 240 V. The shunt field, series field and armature resistances are 120, 0.015 and 0.03 ohms respectively. Calculate the induced emf and the load resistance. (4)

OR

12. (b) (i) Derive the emf equation of a transformer. (8)

(ii) Why a single phase induction motor is not self starting? Explain the working of split phase capacitor start Induction motor. (8)

13. (a) (i) With the help of sketches of circuits and waveforms, explain the working of half-wave rectifier and full-wave bridge rectifier. (10)

(ii) Obtain the expressions for DC output voltage for half-wave and full-wave rectifiers. (6)

OR

13. (b) (i) For a transistor connected in common emitter configuration, sketch the typical output and input characteristics and explain the shape of the characteristics. (8)

(ii) Sketch the circuit of a simple transistor amplifier and explain the function of the components. (8)

14. (a) (i) Draw a full adder circuit using logic gates. Explain with truth table. Give also the expressions for sum and carry. (8)

(ii) Explain the operation of RS flip-flop and clocked RS flip-flop.

(8)

OR

14. (b) (i) Explain the working of binary weighted register type D/A converter. (8)

(ii) Explain the operation of an asynchronous counter. (8)

15. (a) (i) Draw the block diagram arrangement of an AM transmitter and explain its operation. (8)

(ii) Explain the operation of a FM transmitter. (8)

OR

15. (b) (i) Give some applications of optical fiber communications. (4)

(ii) With the help of a block diagram describe the working of a Monochrome (Black and White) TV transmitter. (12)

———