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Question Paper Code : 27273

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

Second Semester

Civil Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all Branches except Electronics and Communication Engineering, Medical Electronics Engineering, Biomedical Engineering, Computer Science and Engineering, Information Technology, Computer and Communication Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Instrumentation and Control Engineering and Pharmaceutical Technology)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

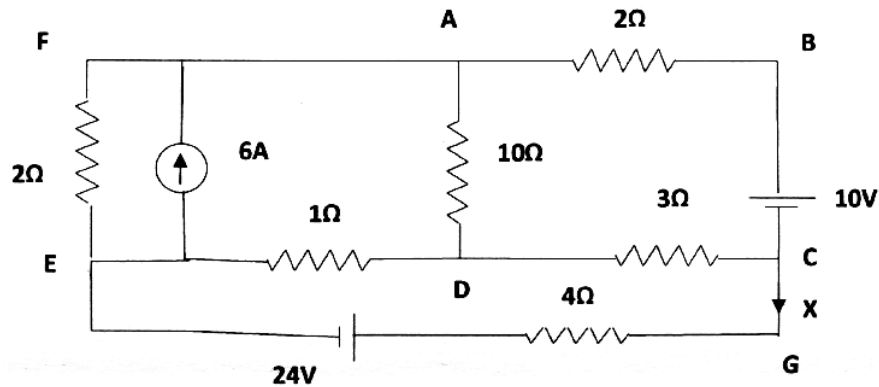
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Ohm's law and its limitations.
2. Mention the errors in Moving iron instruments.
3. List out the types of single phase induction motors.
4. Calculate the e.m.f generated by a 4-pole, wave-wound armature having 45 slots with 18 conductors per slot when driven at 1200 r.p.m. the flux per pole is 0.016 Wb.
5. Find the values of I_C , I_B and β , Transistor values are $\alpha = 0.95$, $I_E = 1$ mA.
6. What is the total current at the junction of PN junction diode?
7. Define the logic operation of AND gate with Boolean equation.
8. Convert $(634)_8$ to binary.
9. Define analog and digital signals.
10. What are the advantages of optical fibre communication?

PART B — (5 × 16 = 80 marks)

11. (a) Determine the current, power X in the $4\ \Omega$ resistance of the circuit shown below : (16)



Or

- (b) Draw and explain the working principle of attraction type, repulsion type M.I. instruments and derive its deflecting torque. (16)
12. (a) With neat sketches, explain the working principle and the construction of DC motor. Also derive the torque and speed equation. (16)
- Or
- (b) (i) Derive the torque and speed equations of DC motor. (8)
(ii) Explain the construction details of single phase transformer. (8)
13. (a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics. (16)
- Or
- (b) (i) Let $V_{BB} = 10\text{ V}$, $R_B = 1\text{ M}$, $\beta = 100$, $V_{CC} = 15$, $R_L = 10\ \Omega$ in the transistor circuit, find (1) I_B (2) I_c (3) I_E (4) V_{CE} , Neglect V_{BE} . (8)
(ii) Explain the working of zener diode and its applications. (8)
14. (a) (i) Draw the logic symbol of OR, NAND, NOT gate and explain its logic operation. (8)
(ii) Draw and explain the operation of following flip-flops, (1) RS flip-flops using NOR gate (2) D flip-flops using NAND gate. (8)
- Or
- (b) With necessary diagrams describe the operation of a 4-bit binary, ripple counter. (16)
15. (a) Describe the principle of modulation and its needs. Write the short note on amplitude modulation and frequency modulation. (16)
- Or
- (b) Describe the functional block diagram of Monochrome TV transmitter and receiver with a neat sketch. (16)

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Question Paper Code : 57413

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Second Semester

Civil Engineering

GE 6252 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all Branches except Electronics and Communication Engineering, Medical Electronics Engineering, Biomedical Engineering, Computer Science and Engineering, Information Technology, Computer and Communication Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Instrumentation and Control Engineering and Pharmaceutical Technology)

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. A 50 ohm resistor is in parallel with a 100 ohm resistor. The current in 50 ohm resistor is 7.2 A. What is the value of third resistance to be added in parallel to make the total line current as 12.1 A ?
2. List the operating forces present in indicating instruments.
3. Sketch the OCC of DC shunt generator.
4. Write down the EMF equation of a transformer.
5. Draw the circuit diagram of half wave rectifier.
6. List various hybrid parameters of transistor.
7. State De Morgan's theorem.
8. What is register in digital systems ?
9. Draw the block diagram of communication system and explain its operation.
10. What is ISDN ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) A series circuit has $R = 5\text{ohms}$, $L = 13\text{mH}$, and $C = 140\ \mu\text{F}$ and is supplied with 230V, 50Hz single phase. Find (i) Impedance (ii) current (iii) power (iv) power factor of the circuit. **(8)**
- (ii) Two impedances $(8 + j10)\ \text{ohm}$ and $(7 + j9)\ \text{ohm}$ are connected in parallel. Find magnitude and phase angle of total impedance. Another impedance $(5 - j2)\ \text{ohm}$ is connected in series with above combination. Find overall impedance. **(8)**

OR

- (b) Explain the construction and principle of operation of single phase energy meter. **(16)**
12. (a) (i) Describe various types self excited of DC generators with their circuit layout. **(8)**
- (ii) Explain the characteristics of DC shunt motor. **(8)**

OR

- (b) Explain the tests on single phase transformer and develop an equivalent circuit from the above tests. **(16)**
13. (a) (i) Explain V-I characteristics of zener diode and applications with necessary diagrams. **(8)**
- (ii) Explain the operation of full wave rectifier with necessary diagrams. **(8)**

OR

- (b) Explain how you will obtain the static characteristics of common emitter configuration. **(16)**
14. (a) (i) List various types of logic gates with its logic symbols and truth table. List also universal gates. **(8)**
- (ii) Realize the logic expression $Y = (A + B)(A' + C)(B + D)$ using basic gates. **(8)**

OR

- (b) Explain the full adder circuit with its expressions and truth table. **(16)**

15. (a) What is meant by modulation ? Explain different types of analog and digital modulation techniques with neat diagrams. **(16)**

OR

- (b) (i) Draw the block diagram of B/W TV receiver and explain it. **(8)**
- (ii) Draw the block diagram of optical fibre communication system and explain it. **(8)**

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Question Paper Code : 71943

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Second Semester

Mechanical Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering (Sandwich), Aeronautical Engineering, Agriculture Engineering, Automobile Engineering, Civil Engineering, Environmental Engineering, Geoinformatics Engineering, Industrial Engineering, Industrial Engineering and Management, Manufacturing Engineering, Marine Engineering, Materials Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Production Engineering, Robotics and Automation Engineering, Chemical Engineering, Chemical and Electrochemical Engineering, Fashion Technology, Food Technology, Handloom and Textile Technology, Petrochemical Technology, Petroleum Engineering, Plastic Technology, Polymer Technology, Textile Chemistry, Textile Technology, Textile Technology (Fashion Technology))

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

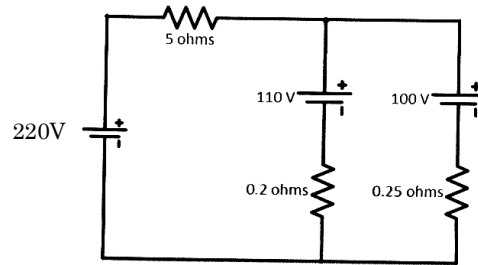
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Kirchoff's Laws.
2. Define power factor.
3. Mentions few applications of D.C. Generator.
4. Why single phase Induction Motor is non-self-starting?
5. What do you mean by biasing?
6. Define α and β .
7. State De Morgan's theorems.
8. Convert $(777)_8$ to decimal.
9. List out the limitations of amplitude modulation.
10. What is the function of a satellite transponder?

PART B — (5 × 16 = 80 marks)

11. (a) (i) For the given circuit given below, calculate the magnitude and direction of current in each battery and the total current taken from the 220 V supply mains. (12)



- (ii) A coil takes a current of 6A when connected to a 24 V d.c supply. To obtain the same current with a 50Hz a.c. supply, the voltage required is 30 V. Calculate
 (1) the inductance of the coil
 (2) the power factor of the coil. (4)
- Or
- (b) Explain the construction and working of Dynamometer type watt meter. Mention its merits and demerits. (12 + 4)
12. (a) (i) With a neat diagram explain the construction and working of D.C. Generator. (12)
 (ii) Derive the EMF equation. (4)
- Or
- (b) Explain the construction and working of single phase transformer. (16)
13. (a) (i) Explain the working of PN junction diode and mention its applications. (8)
 (ii) Draw the circuit diagram for full wave rectifier and explain its working. (8)
- Or
- (b) For the CE transistor configuration, draw the circuit and explain the input and output characteristics. (16)
14. (a) (i) Prove the Boolean identity
 $AB + A\bar{B} + \bar{A}B = A + B$. (4)
 (ii) Explain the working of JK and D flip flops. (12)
- Or
- (b) With a neat diagram explain the working of 4 bit binary ripple counter. (16)
15. (a) Short notes on
 (i) Microwave communication. (8)
 (ii) FAX. (8)
- Or
- (b) Draw the block diagram and explain the fiber optic communication. Mention its applications. (12 + 4)

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Question Paper Code : 77161

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Second Semester

Civil Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all Branches except Electronics and Communication Engineering, Medical Electronics engineering, Biomedical Engineering, Computer Science and Engineering, Information Technology, Computer and Communication Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Instrumentation and Control Engineering and Pharmaceutical Technology)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

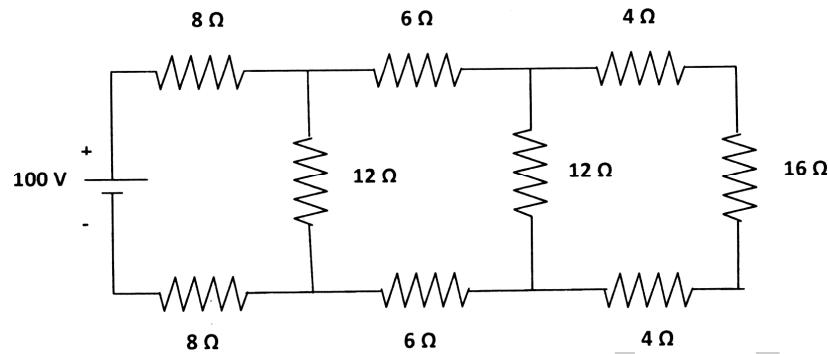
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Kirchhoff's Voltage Law.
2. Mention the errors in Moving iron instruments.
3. Give some applications of DC motor.
4. Why a single phase induction motor does not self start?
5. Find the values of I_C, I_B and β , Transistor values are $\alpha = 0.95$, $I_E = 1 \text{ mA}$.
6. Draw the characteristics of zener diode.
7. Convert $(634)_8$ to binary.
8. Which gates are called as the universal gates? What are its advantages?
9. Draw the block diagram of optical fibre communication?
10. List few applications of microwaves communication.

PART B — (5 × 16 = 80 marks)

11. (a) Calculate (i) equivalent resistance across the terminal of the supply (ii) total current supplied by the source (iii) power delivered to 16Ω resistor the circuit shown below.



Or

- (b) Draw and explain the working principle of attraction type, repulsion type M.I instruments and derive its deflecting torque.
12. (a) Explain the construction and principle of operation of a DC generator with neat sketch.

Or

- (b) (i) Derive the torque and speed equations of DC motor. (8)
(ii) Explain the construction details of single phase transformer. (8)
13. (a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics.

Or

- (b) Explain the working of the CB configuration of a BJT and draw its input, output characteristics.
14. (a) Draw and explain the operation following flip-flops, (i) RS flip-flops using NOR gate (ii) D flip-flops using NAND gate (iii) JK flip-flops using NAND gate.

Or

- (b) With necessary diagrams describe the operation of a 4-bit binary, ripple counter.
15. (a) Describe the functional block diagram of Monochrome TV transmitter and receiver with neat sketch.

Or

- (b) Describe the principle of Amplitude & Frequency modulation and its needs.

Reg. No. :

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Question Paper Code : 80505

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Second Semester

Civil Engineering

GE 6252 — BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering (Sandwich)/Aeronautical Engineering/
Agriculture Engineering/Automobile Engineering/Civil Engineering/Environmental
Engineering/Geoinformatics Engineering/Industrial Engineering/Industrial
Engineering and Management/Manufacturing Engineering/Marine
Engineering/Materials Science and Engineering/Mechanical Engineering/
Mechanical and Automation Engineering/Mechatronics Engineering/Petrochemical
Engineering/Production Engineering/Robotics and Automation
Engineering/Chemical Engineering /Chemical and Electrochemical
Engineering/Fashion Technology/Food Technology/Handloom
Technology/Petrochemical Technology/Petroleum Engineering/Plastic
Technology/Polymer Technology/Textile Chemistry/Textile Technology/Textile
Technology (Fashion Technology)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

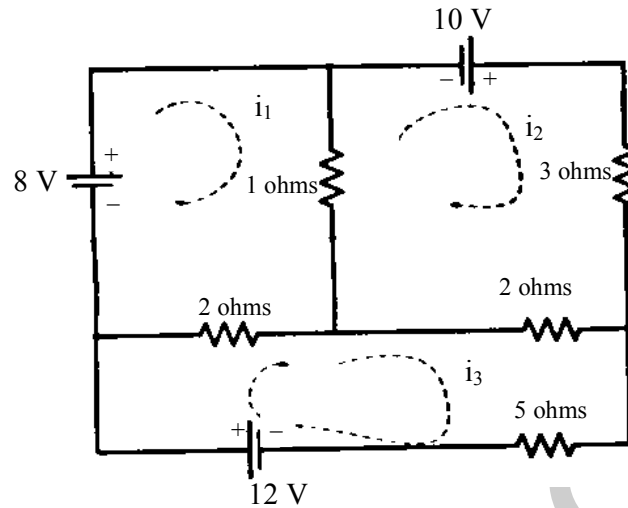
Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Ohm's Law.
2. Compare the Moving Coil and Moving Iron instruments.
3. Draw the circuit for various types of D.C. Motor.
4. Define voltage regulation of a transformer.
5. What is the difference between zener and avalanche breakdown?
6. Define ripple factor.
7. Explain universal gates.
8. Convert $(63)_8$ to hexadecimal.
9. Compare analog and digital signals.
10. Mention few applications of fiber optic communication systems.

PART B — (5 × 16 = 80 marks)

11. (a) For the give circuit, determine the current in 5 Ω resistor. (16)



Or

- (b) (i) Explain the construction and working of an Energy Meter. (12)
(ii) How do you extend the range of an ammeter and a voltmeter? (4)
12. (a) (i) With a neat diagram explain the construction and working of D.C. Motor. (12)
(ii) Derive the torque equation. (4)

Or

- (b) Explain the construction and working of single phase Induction Motor. (16)
13. (a) (i) Explain the working of Zener diode and mention its applications. (8)
(ii) Draw the circuit diagram for half wave rectifier and explain its working. (8)

Or

- (b) Explain the operation of NPN and PNP transistors. (16)
14. (a) (i) Prove the following Boolean identity

$$ABC + AB\bar{C} + \bar{A}BC = B(A + \bar{C})$$
 (4)
(ii) Draw the full adder circuit. Explain with Truth Table and expression. (12)

Or

- (b) With a neat diagram explain the working of binary ladder network for digital to analog conversion. (16)

15. (a) Describe the principle of Amplitude and Frequency Modulation. (8+8)

Or

- (b) (i) Draw the block diagram and explain the working of Satellite Communication Systems. (12)
- (ii) Mention its merits and demerits. (4)
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