14EE104/14EE204

Hall Ticket Number:

I/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2019 **Common to all Branches**

First/Second Semester **Basic Electrical and Electronics Engineering**

Time: Three Hours **Maximum:** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

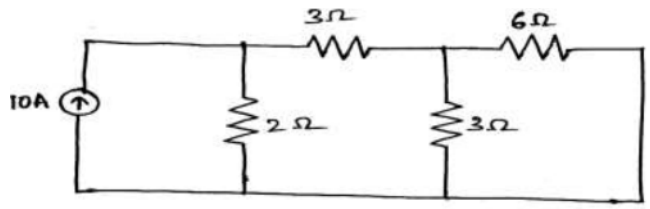
Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)
   a) Define Kirchhoff's voltage law.
   b) Define voltage division rule.
   c) Write the expression for energy stored in capacitor.
   d) What is instantaneous value?
   e) Define form factor.
   f) Write EMF equation of transformer.
   g) What is intrinsic semiconductor?
   h) Draw ideal V-I characteristics of PN diode.
   i) What is Rectifier?
   j) Convert $(100)_{10}$ to binary number.
   k) What is combinational circuit?
   l) What is binary circuit?

UNIT I

2. a) Obtain coefficient of coupling K between two coils of inductances connected in series. 6M

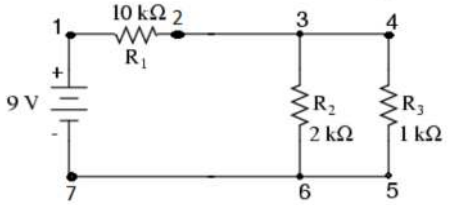
   b Determine the current through 6Ω resistor in the below figure.



6M

(OR)

3. a) Find the voltage drop across R1, R2 and R3 shown in figure below.



6M

   b) The energy stored in the magnetic field of an inductor is 80 J when the current flowing in the inductor is 2 A. Calculate the inductance of the coil. 6M

UNIT II

4. a) Explain the process of generating Alternating voltage. 6M
   b) Derive the EMF equation of Transformer. 6M

(OR)

5. a) Explain the following for sinusoidal wave form: 6M
   i) Alternating Quantity ii) R.M.S. Value iii) Average value
   b) Obtain the rms value, average value and form factor for a voltage of symmetrical square shape whose amplitude is 10V and time period is 40secs. 6M

P.T.O.

UNIT III

6.	a)	Explain V-I characteristics of a PN diode.	6M
	b)	Explain about Full wave rectifier with neat waveforms.	6M

(OR)

7.	a)	Explain how zener diode acts as voltage regulator.	6M
	b)	Compare Half wave and full wave rectifiers.	6M

UNIT IV

8.	a)	Find the 1's compliment of the following expressions (i) AB+A(B+C)+B′ (B+D) (ii) A+ B′ C(A+B+ C′)	6M
	b)	Explain fabrication process of Hybrid IC's	6M

(OR)

9.	a)	Reduce the following Boolean expression to two literals F = A B′ C+B+B D′ +AB D′+ A′C	6M
	b)	Explain fabrication process of Monolithic IC's	6M

14EE104/14EE204

I/IV B.Tech (Regular) Degree Examination, I Semester

Basic Electrical and Electronics Engineering

(Common to all branches)

Time: 3 hours Max Marks:60

Answer Question No.1 Compulsorily (1X12=12 Marks)

Answer ONE question from each unit (4X12=48 Marks)

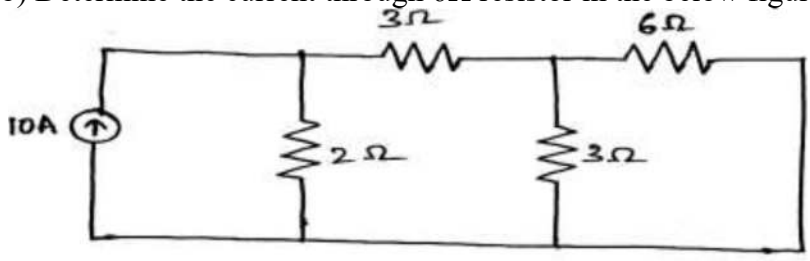
1. Answer all questions

   a) Define Kirchhoff's voltage law.
   b) Define voltage division rule.
   c) Write the expression for energy stored in capacitor.
   d) What is instantaneous value.
   e) Define form factor.
   f) Write EMF equation.
   g) What is intrinsic semiconductor.
   h) Draw ideal V-I characteristics of PN diode.
   i) What is Rectifier.
   j) Convert $(100)_{10}$ to Hexadecimal number.
   k) What is combinational circuit.
   l) What is Monolithic IC.

UNIT-I

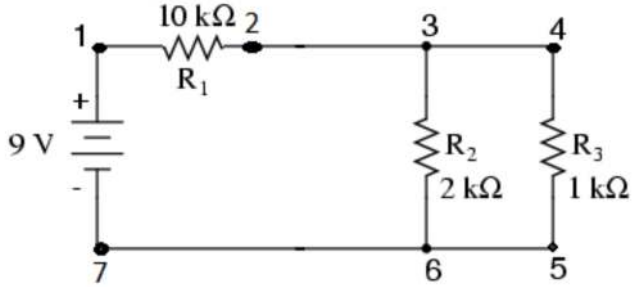
2. a) Obtain coefficient of coupling K between two coils of inductances connected in series. 6M

   b) Determine the current through 6Ω resistor in the below figure 6M



(OR)

3. a) Find the voltage drop across R1, R2 and R3 shown in figure below. 6M



b) The energy stored in the magnetic field of an inductor is 80 J when the current flowing in the inductor is 2 A. Calculate the inductance of the coil. 6M

4. a) Explain the process of generating Alternating voltage. 8M
   b) Derive the EMF equation of Transformer. 4M

(OR)

5. a) Explain the following:
   i) Alternating Quantity ii) R.M.S. Value iii) Average value 4M
   b) Obtain the rms value, average value and form factor for a voltage of symmetrical square shape whose amplitude is 10V and time period is 40secs. 8M
6. a) Explain V-I characteristics of a PN diode. 6M
   b) Explain about Full wave rectifier with neat waveforms. 6M

(OR)

7. a) Explain how zener diode acts as voltage regulator. 6M
   b) Compare Half wave and full wave rectifiers. 6M
8. a) Find the compliment of the following expressions 6M
   (i) AB+A(B+C)+B′ (B+D)
   (ii) A+ B′ C(A+B+ C′)
   b) Explain fabrication process of Hybrid IC's 6M

(OR)

9.a) Reduce the following Boolean expression to two literals 6M
   F = A B′ C+B+B D′ +AB D′+ A′C
   b) Explain fabrication process of Monolithic IC's 6M

SCHEME VALUATION FOR SET-1

1. a) definition -1M
   b) definition -1M
   c) expression -1M
   d) definition -1M
   e) definition -1M
   f) expression -1M
   g) definition -1M
   h) diagram -1M
   i) definition -1M
   j) answer -1M
   k) definition -1M
   l) definition -1M

2. a) derivation -4M, final expression -2M

   b) procedure-4M, answer-2M

3. a) procedure-4M, answer-2M

   b) procedure-4M, answer-2M

4. a) explanation -6M, diagram-2M

   b) derivation -3M, answer-1M

5. a) i)2M ii)1M iii)1M

   b) rms value-3M, average value-3M, form factor-2M

6. a) explanation -3M, diagram-3M

   b) explianation-3M, diagram-3M

7. a) explianation-3M, diagram-3M

   b) any 4 differences-6M

8. a) procedure-4M, answer-2M

   b) explianation-4M, diagram-2M

9. a) procedure-4M, answer-2M

   b) explianation-4M, diagram-2M