Code No: R1621012 **R16** SET - 1

II B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

~~~~~~

PART –A

1.	a)	State Kirchhoff's current law and Kirchhoff's voltage law.	(2M)
	b)	Write different types of DC motors.	(2M)
	c)	Define regulation of transformer and write the equation for regulation of transformer.	(3M)
	d)	Define slip and explain significance of slip in three phase induction motor.	(3M)
	e)	What are the advantages of full wave rectifier over half wave rectifier	(2M)
	f)	What are various types of feedback amplifiers?	(2M)

PART -B

2.	a)	Differentiate between independent and dependent sources. What is their circuit representation?	(7M)
	b)	Derive relationship between star to delta and delta to star conversion.	(7M)
3.	a)	Write working principle of DC motor and derive torque equation of DC motor.	(7M)
	b)	Why starter is necessary for DC motor and explain three point starter with neat diagram.	(7M)
4.	a)	Explain working principle of transformer and derive EMF equation for transformer.	(7M)
	b)	Explain different parts of transformer.	(7M)
5.	a)	Explain regulation of alternator by synchronous impedance method.	(7M)
	b)	Draw and explain torque – slip characteristics of induction motor.	(7M)
6.	a)	Derive the expression for average, RMS efficiency and ripple factor of half-wave rectifier.	(7M)
	b)	Explain characteristics of operation amplifiers.	(7M)
7.	a)	Draw the schematic of an NPN transistor indicating the various current components and explain how each one of them arises.	(7M)
	b)	Explain the frequency response of CE amplifier.	(7M)

||''|'''|''|'|'''||
~~~~~~

Code No: R1621012 **R16** SET - 2

II B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

~~~~~~

PART –A

1. a) Define capacitance and Write the formula for capacitance of a parallel plate capacitor. (2M)
   b) What are the significance of torque in a DC motor (2M)
   c) Explain constructional details of single phase transformer. (3M)
   d) Define slip and rotor frequency. (3M)
   e) Define frequency response and bandwidth of an amplifier. (2M)
   f) What is the efficiency of full-wave rectifier? (2M)

PART -B

2. a) State and Explain Kirchoff's current Law and Kirchoff's voltage law. (7M)
   b) Find the current I supplied by the battery of the Fig.2 through delta / star transformation. (7M)

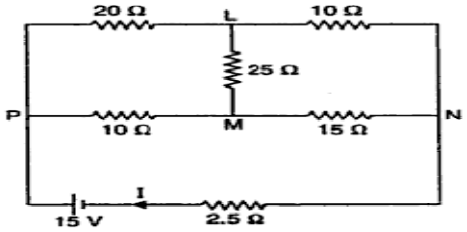


Fig. 2

3. a) Explain principle of operation of DC Generator and derive EMF Equation of DC Generator. (7M)
   b) Explain Swinburn's test when the machine act as DC Motor. (7M)

4. a) Explain the constructional details and principle of operation of single phase Transformer. (7M)
   b) Explain different losses in a transformer and derive the formula for regulation of transformer. (7M)

5. a) Explain working principle of alternator and induction motor. (7M)
   b) Explain different losses appeared in induction motor. (7M)

||''|'''|''|'|'|''''||
~~~~~~

6. a) Explain the operation of bridge rectifier and draw its output waveforms. List out its applications. (7M)
   b) Explain the characteristics of operational amplifier. (7M)

7. a) Explain the operation and characteristics of PNP transistor with suitable diagram. (7M)
   b) Explain the operation of transistor as an amplifier. (7M)

||''|'''|''|'|''''||

Code No: R1621012 **R16** SET - 3

II B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

~~~~~~

PART –A

1. a) Write the expression for star to delta transformation. (2M)
   b) Explain the importance of back EMF in DC motor. (2M)
   c) Define transformer and ideal transformer. (2M)
   d) Write principle of operation of alternator. (3M)
   e) Define Op-amplifier. (2M)
   f) A single stage amplifier has collector load Rc=20KΩ, input resistance R_{in}=2KΩ and β=100. If R_L=75Ω then find the voltage gain. (3M)

PART -B

2. a) Explain the following terms (7M)
      i) Potential difference
      ii) Ohm's law+
      iii) Kirchoff's laws
   b) Find the equivalent resistance between two points A and B of the fig.1 shown (7M)

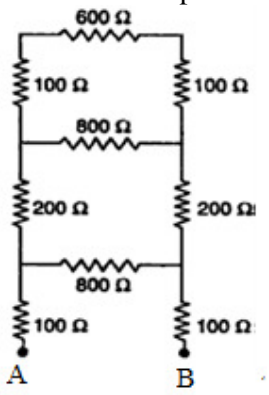


Fig.1

3. a) A 4-pole wave wound d.c machine armature has 294 conductors. Find (i) Flux per pole to generate 230V at 1500 r.p.m. (ii) Electromagnetic torque at this flux when armature current is 120 A. (7M)
   b) Explain different methods of speed control of DC shunt motors. (7M)

4. a) Explain working principle of transformer and write about different parts of the transformer. (7M)
   b) Derive EMF equation of transformer. (7M)

||''|''|''|''|''||
~~~~~~

5. a) Explain principle of operation of alternators. (7M)
   b) Draw and explain Torque – slip characteristics of induction motor. (7M)

6. a) Explain the operation of full wave rectifier and draw its output waveforms. List out its applications. (7M)
   b) Explain the characteristics of operational amplifier. (7M)

7. a) Explain the operation of single stage CE amplifier. (7M)
   b) Explain the concepts of Feedback amplifier. (7M)

||''|'''|''|'|''''||

Code No: R1621012 **R16** SET - 4

II B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

~~~~~~

PART –A

1. a) Write different types of elements in electrical circuits. (2M)
   b) Write different types of DC motors. (2M)
   c) Write about constructional details transformer. (3M)
   d) Write principle of operation of alternator. (3M)
   e) Draw the block diagram of operational amplifier (2M)
   f) Write various types of feedback amplifiers. (2M)

PART -B

2. a) Explain Kirchoff's laws with one example each. (7M)
   b) Derive the equations for equivalent resistances for star/delta and delta/star transformations. (7M)

3. a) Explain principle of operation of DC generator and derive EMF equation of DC generator. (7M)
   b) What is the necessity of starter? Explain three point starter with a neat diagram (7M)

4. a) Explain the principle of operation of transformer and also explain the method of finding the efficiency of transformer. (10M)
   b) Derive EMF equation of single phase transformer. (4M)

5. a) Explain regulation of alternator by synchronous impedance method. (7M)
   b) Explain the constructional details and principle of operation of three phase induction motor. (7M)

6. a) Explain the operation of half wave rectifier and draw its output waveforms. List out its applications. (7M)
   b) Explain characteristics of operation amplifiers. (7M)

7. a) Compare three different configurations of transistors. (7M)
   b) Explain the operation of CE amplifiers with its frequency response. (7M)

||''|''|''|''|''||
~~~~~~