

Code No: R1621012

R16

SET - 1

II B. Tech I Semester Regular Examinations, October/November - 2017
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours

Max. Marks: 70

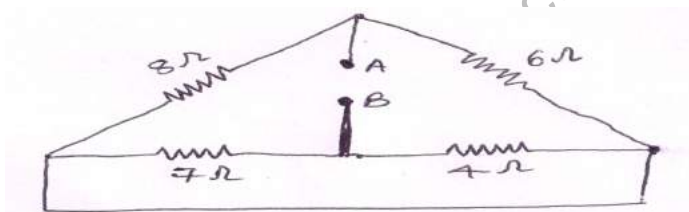
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

PART -A

1. a) Distinguish between linear and non – linear elements (2M)
- b) Why starter is needed to start dc shunt motor (2M)
- c) Why transformer rating is done in kVA (2M)
- d) What is synchronous impedance of an alternator (2M)
- e) Sketch and explain the characteristics of P – N junction Diode (3M)
- f) Explain the terms linear region, saturation region and cut off region w.r.t characteristics of a transistor (3M)

PART -B

2. a) Explain why current through an inductor cannot change instantaneously? Justify (7M)
- b) Determine the equivalent resistance between points AB in the following circuit: (7M)



3. a) Derive the torque equation of dc motor (7M)
- b) Explain the various characteristics of a dc shunt and series generator (7M)
4. a) Explain the working principle of a transformer with the help of phasor diagram (7M)
- b) A single phase, 500 kVA, 3300/230V transformer has $R_1=3.05 \text{ ohm}$, $X_1= 6.4 \text{ ohm}$, $R_2=0.0065 \text{ ohm}$, $X_2= 0.023 \text{ ohm}$. Find the total impedance referred to primary and secondary, copper losses? (7M)
5. a) Derive the emf equation of an alternator (7M)
- b) Explain the principle of operation of inductor motor. (7M)
6. a) Explain the operation of a half wave rectifier with neat waveform (7M)
- b) Explain the operation of OP – AMP as an Integrator (7M)

Code No: R1621012

R16

SET - 1

7. a) Explain in detail how a transistor can be used as an amplifier (7M)
- b) Compare and contrast between PNP and NPN transistors (7M)

www.FirstRanker.com

Code No: R1621012

R16

SET - 2

II B. Tech I Semester Regular Examinations, October/November - 2017
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com to CE & PE)

Time: 3 hours

Max. Marks: 70

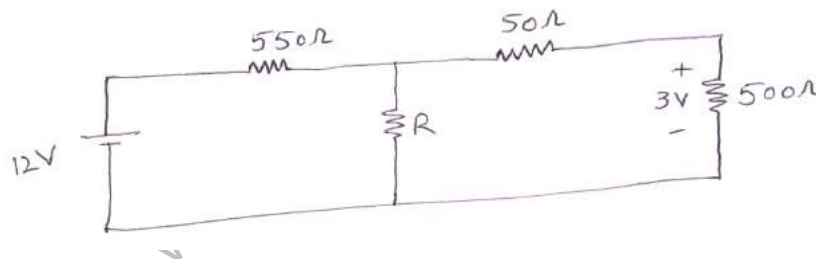
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
- ~~~~~

PART -A

1. a) State and explain Ohm's law (2M)
- b) What do you mean by separately excited generator (2M)
- c) Explain why transformer core is laminated (2M)
- d) Write the applications of induction motor (3M)
- e) What do you understand by Depletion region in a diode (2M)
- f) Explain the effect of variation of operating point in the output characteristics of a transistor (3M)

PART -B

2. a) Distinguish between Active and passive elements (7M)
- b) What is the value of unknown resistor for the following circuit: (7M)



3. a) Explain the concept of back emf of a dc motor (7M)
- b) Derive the emf equation of a dc generator (7M)
4. a) Explain how the regulation of transformer is determined (7M)
- b) The number of turns of primary and secondary of a single phase transformer is 800 and 2000 respectively. Voltage per turn is 0.5V. Calculate i) Secondary voltage on no load ii) maximum value of flux density if the area of cross section is 55 cm² and frequency is 50 Hz (7M)
5. a) Explain the synchronous impedance method to determine the regulation of alternator (7M)
- b) Distinguish between squirrel cage Induction motor and Slip ring induction motor (7M)

Code No: R1621012

R16

SET - 2

6. a) Explain how an OP-AMP work as an integrator (7M)
b) Explain the operation of full bridge rectifier (7M)
7. a) Explain in detail the operation of a P – N – P Transistor (7M)
b) Explain the frequency response of CE amplifier (7M)

www.FirstRanker.com

Code No: R1621012

R16**SET - 3**

II B. Tech I Semester Regular Examinations, October/November - 2017
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) Explain the principle of a DC generator (2M)
- c) Distinguish between ideal and practical transformer (2M)
- d) Explain the term Slip and its importance (2M)
- e) List the different applications of OP-AMP (3M)
- f) What do you mean by forward and reverse bias of a transistor (3M)

PART -B

2. a) Explain star-delta transformation with an example (7M)
- b) A 100 W , 250 V bulb is put in series with a 60 W, 250 v bulb across a 500 V Supply. What will be the power consumed by each bulb (7M)
3. a) State the functions of i) Armature windings ii) Field system and iii) Commutator of a DC Machine (7M)
- b) An 8 -pole , dc generator has a lap wound armature, when driven at a constant speed of 420 rpm .If it generates 220V with 50 slots in armature. The flux per pole is 12mWb. Find the number of conductors per slot. (7M)
4. a) Distinguish between core type and shell type transformer (7M)
- b) A single phase, 30 kVA, 2200/220V transformer has iron loss is 385W and full load copper loss is 560W. Calculate the efficiency at unity power factor on full load and half load? (7M)
5. a) Compare between Salient pole and non-Salient pole type synchronous machines (7M)
- b) Explain slip-torque characteristics of an induction motor (7M)
6. a) Explain with a neat diagram the operation Half wave rectifier with necessary waveforms (7M)
- b) Explain the following terms w.r.t rectifiers: (7M)
i)Ripple factor ii)Peak Inverse Voltage iii)Regulation
7. a) Compare the important characteristics between CE,CB and CC configurations (7M)
- b) Explain in detail about the frequency response of amplifier (7M)

Code No: R1621012

R16

SET - 4

II B. Tech I Semester Regular Examinations, October/November - 2017
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**

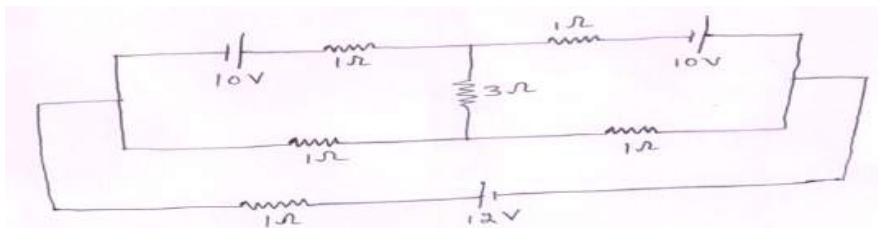
3. Answer any **FOUR** Questions from **Part-B**

PART -A

1. a) Distinguish between Independent and dependent sources (2M)
- b) List and explain the main components of a dc machine (3M)
- c) What is meant by transformation ratio of a transformer (2M)
- d) List the advantages and applications of three phase induction motors (3M)
- e) Explain the importance of Transformer Utility factor (TUF) in a rectifier (2M)
- f) Draw frequency response of a CE amplifier (2M)

PART -B

2. Determine the currents in various elements for the circuit shown below: (14M)



3. a) Explain the full control method used in the speed control of dc motor (7M)
- b) Derive the torque equation of a transformer (7M)
4. a) Derive the emf equation of a transformer (7M)
- b) The following test results were obtained on a 60 KVA, 2200/220 V transformer:
Open circuit test (Instruments on l.v. side): $I = 8.67$ A, $V = 160$ V, $W = 410$ W.
Short circuit test (Instruments on h.v. side): $I = 26.8$ A, $V = 78$ V, $W = 900$ W.
Determine the efficiency and voltage regulation at $\frac{3}{4}$ th of full load, 0.77 Power factor lagging (7M)
5. a) Explain the construction features of an Alternator (7M)
- b) Explain how the regulation can be found by Synchronous impedance method for an alternator (7M)
6. a) Explain the working of full wave bridge rectifier with a neat circuit diagram and relevant waveforms (7M)
- b) Explain the different characteristics of operational amplifiers (7M)

Code No: R1621012

R16

SET - 4

7. a) Explain in detail about common emitter configuration and draw its input and output characteristics (7M)
- b) Explain with a neat block diagram about the basic feedback system (7M)

www.FirstRanker.com