

**PRAGATI ENGINEERING COLLEGE:  
SURAMPALEM(AUTONOMOUS)**

**I B.Tech I Semester Supplementary Examinations, July-2024  
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING  
(Common to CSE, CSE(AI ML), CSE(AI) and CSE(DS))**

Time: 3 hours

Max. Marks : 70

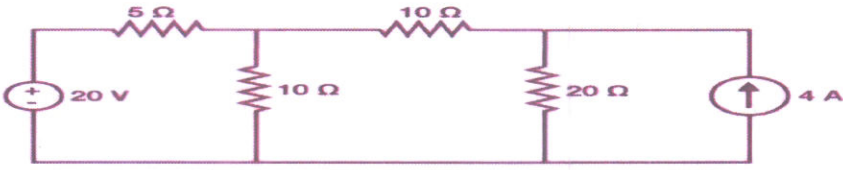
Answer all questions

**PART-A  
(BASIC ELECTRICAL ENGINEERING)**

Note::

- i. Question 1 shall contain 5 compulsory short answer questions such that each question carry 1 Mark.
- ii. In each of the questions from 2 to the last question, there shall be either/or type questions of 10 marks each. Student shall answer any one of them.

Max. Marks: 35

Q. No.	Questions	BTL	CO	Marks
1.	a) Define peak factor. b) Draw the circuit diagram of a Wheatstone bridge. c) State the working principle of a D.C generator. d) What are the applications of 3 phase induction machines. e) What is Conduit wiring?	K1 K2 K2 K2 K1	CO2 CO3 CO1 CO1 CO2	1M 1M 1M 1M 1M
<b>UNIT-I</b>				
2.	Derive the Average and RMS values of a sinusoidal waveform and hence find the form factor and peak factor values.	K3	CO1	10M
<b>OR</b>				
3.	Find the current flowing through $20\ \Omega$ using the superposition theorem. 	K3	CO2	10M
<b>UNIT-II</b>				
4.	Discuss types of 3-phase induction motor based on rotor construction and explain its working.	K2	CO1	10M
<b>OR</b>				
5.	With a neat sketch, describe construction and working of PMMC instrument.	K2	CO3	10M
<b>UNIT-III</b>				
6.	a) Write the difference Between Conventional and Non-conventional Sources of Energy b) Calculate the electricity bill amount for a month of 31 days, if the following devices are used as specified: i) 3 bulbs of 30 watts for 5 hours ii) 4 tube lights of 50 watts for 8 hours iii) 1 fridge of 300 watts for 24 hours Given the rate of electricity is 2 Rs. per unit.	K2 K3	CO2 CO3	5M 5M
<b>OR</b>				
7.	a) With neat diagrams, explain various types of fuses used in electrical wiring systems. b) What is the necessity of Earthing?	K2 K2	CO2 CO2	5M 5M

**PART-B**  
**(BASIC ELECTRONICS ENGINEERING)**

Note:

- i. Question 1 shall contain 5 compulsory short answer questions such that each question carry 1 Mark.
- ii. In each of the questions from 2 to the last question, there shall be either/or type questions of 10 marks each. Student shall answer any one of them.

**Max. Marks: 35**

Q. No.	Question	BTL	CO	Marks
1.	a) Mention the applications of PN-junction diode.	K1	CO4	1M
	b) Define Zener break down.	K1	CO4	1M
	c) List the types of Voltage Regulators.	K1	CO5	1M
	d) Compute the complement and dual for the given expression : (AB+BC+AC) (EF).	K5	CO6	1M
	e) Convert the binary number 11011101 to gray code.	K5	CO6	1M
<b>UNIT-IV</b>				
2.	a) Write the characteristics of p-n Junction diode	K2	CO4	5M
	b) Explain V-I characteristics of Zener diode.	K1	CO4	5M
<b>OR</b>				
3.	a) Give the analytical expressions for transistor characteristics.	K3	CO4	5M
	b) Compare CB, CC and CE configuration of a Bipolar transistor with respect to the current gain, voltage gain, input resistance and output resistance.	K4	CO4	5M
<b>UNIT-V</b>				
4.	a) Illustrate the common emitter (RC coupled) amplifier with its frequency response.	K2	CO5	5M
	b) Demonstrate dc power supply with neat block diagram.	K2	CO5	5M
<b>OR</b>				
5.	a) Analyze with circuit diagram and necessary waveforms about Bridge rectifier.	K4	CO5	5M
	b) Explain with neat block diagram about an electronic instrumentation system.	K1	CO5	5M
<b>UNIT-VI</b>				
6.	a) Convert the following numbers to Binary: (i) (27.315) <sub>10</sub> (ii) (58.BE) <sub>16</sub>	K1	CO6	5M
	b) Construct the following function using only NOR gates $F = a \cdot (b + c \cdot d) + (b \cdot c)$ .	K3	CO6	5M
<b>OR</b>				
7.	a) What do you mean by triggering? Explain the various triggering modes with examples.	K1	CO6	5M
	b) Sketch the logic diagram of a SR flip flop using NAND gates? Explain its Operation using truth table.	K3	CO6	5M