SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING(23EE0201)
Course & Branch: B. Tech –Common to all
**Year & Semester:** I - B. Tech. & I-Semester   **Regulation:**R23

PART A: BASIC ELECTRICAL ENGINEERING

UNIT –I

DC AND AC CIRCUITS

1.	What are the passive elements?	**[L1][CO1][1M]**
2.	State ohm's law.	**[L1][CO1][1M]**
3.	State Kirchoff's laws.	**[L1][CO1][1M]**
4.	Define Active Power.	**[L1][CO1][1M]**
5.	Define Impedance.	**[L1][CO1][1M]**

1	a)	Explain about Electrical circuit elements.	**[L2][CO4][6M]**
	b)	State and Explain about the ohm's law	**[L1][CO1][4M]**
2	a)	State and explain Kirchhoff's laws?	**[L1][CO1][5M]**
	b)	Determine the current in branch A-B by using KVL	**[L3][CO2][5M]**
3	a)	Find equivalent resistance when three resisters are connected in parallel.	**[L3][CO2][4M]**
	b)	Find the equivalent resistance for the circuit shown below.	**[L3][CO2][6M]**
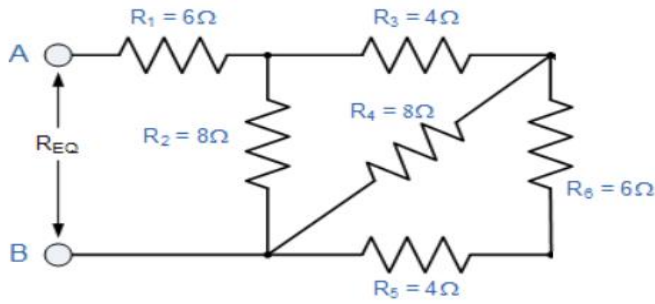
4	a)	Determine the Equivalent Capacitance when the Capacitors are connected in Series & Parallel.	**[L3][CO2][5M]**
	b)	Explain about Energy Sources.	**L2][CO4][5M]**
5	a)	State the Super position theorem.	**[L1] [CO2] [4M]**
	b)	By using superposition theorem find the current flowing through the 3 ohm resistor. 	**[L4] [CO2] [6M]**
6	a)	What are the equations of AC Voltage and Current	**[L1][CO2[2M]**
	b)	Define the following i)Waveform, ii) Time period, iii) frequency, iv) Amplitude	**[L1][CO2][8M]**
7	a)	Explain phase and Phase difference	**[L2][CO2][5M]**
	b)	Derive an expression for average value of sine wave form	**[L4][CO3][5M]**
8	a)	Derive an expression for RMS value of sine wave form.	**[L4][CO3][5M]**
	b)	Find the rms value for the following waveforms 	**[L3][CO3][5M]**
9	a)	Derive voltage and current relationship with Phasor diagram in resistive circuit.	**[L4][CO3][5M]**
	b)	Derive voltage and current relationship with Phasor diagram in inductive circuit.	**[L4][CO3][5M]**
10	a)	Define the following terms i)Impedance, ii)Active power, iii) Reactive power	**[L1][CO3][5M]**

	b)	Explain the Terms Apparent power and power factor	[L2][CO3][5M]

UNIT –II

MACHINES AND MEASURING INSTRUMENTS

1.	Define Faradays law.	[L1][CO2][1M]
2.	List any Five parts of a Transformer.	[L1][CO2][1M]
3.	Write any three applications of a DC Motor.	[L1][CO2][1M]
4.	Which instrument is used to measure the DC quantity?	[L1][CO2][1M]
5.	What are The types of MI instruments?	[L1][CO2][1M]

1		Draw and explain the construction of dc machine	[L4][CO2][10M]
2		Explain about the Working principle of a DC generator..	[L2][CO1][10M]
3		What is the working principle of dc motor? explain clearly	[L1][CO1][10M]
4		Draw and Explain the constructional diagram of a single phase transformer.	[L4][CO2][10M]
5		Explain the Working principle of single phase transformer.	[L2][CO1][10M]
6		Draw and Explain the constructional diagram of a three phase Induction motor.	[L4][CO2][10M]
7		Explain Working Principle of 3-Ø Induction Motor in detail.	[L2][CO1][10M]
8		Explain construction and Working Principle of 3-Ø Alternator	[L2][CO1][10M]
9		Explain construction and operating principle of Permanent Magnet Moving Coil (PMMC) instruments.	[L2][CO2][10M]
10	a)	Explain the operating principles of Moving Iron instruments	[L2][CO1][5M]
	b)	Determine the unknown resistance using Wheatstone bridge	[L3][CO3][5M]

UNIT –III
ENERGY RESOURCES, ELECTRICITY BILL & SAFETY MEASURES

1.	What are the Conventional Energy sources?	[L1][CO3][1M]
2.	What is the power rating of Air Conditioner and Fan?	[L1][CO3][1M]
3.	Define unit of Electrical Energy.	[L1][CO3][1M]
4.	What are the different types of Earthing?	[L1][CO3][1M]
5.	What is the function of Fuse?	[L1][CO3][1M]

1		Explain the Layout and operation of Hydel power generating station	[L2][CO3[10M]
2		How does a nuclear plant work ? Explain with neat sketch	[L3][CO3][10M]

3		What is solar power plant? Explain the operation with layout	[L1][CO3][10M]
4		Explain Layout and operation of Wind power generating station	[L2][CO3][10M]
5		Explain the Power ratings of household appliances	[L2][CO3][10M]
6		Define unit of electrical energy and explain the two-part tariff	[L1][CO3][5M]
7		Explain the calculation of electricity bill for domestic consumers	[L2][CO3][10M]
8	a)	What are the working principles of fuse and MCB?	[L1][CO1[4M]
	b)	Define Earthing and explain the types of earthing	[L1][CO4][6M]
9	a)	What are the functions of electric fuse?	[L1][CO4][5M]
	b)	What is an electric shock? How to prevent electric shock at home?	[L1][CO4]5M]
10	a)	What is pipe earthing? explain briefly	[L1][CO4][5M]
	b)	What are the advantages of earthing?	[L1][CO4][5M]

PART B: BASIC ELECTRONICS ENGINEERING

UNIT –I

SEMICONDUCTOR DEVICES

1.	What are conductors?	[L4][CO1][1M]
2.	What is meant by semiconductor?	[L4][CO1][1M]
3.	Define doping	[L1][CO1][1M]
4.	How PN diode is formed?	[L1][CO1][1M]
5.	Define biasing.	[L1][CO1][1M]

1,		What is a list of key milestones in the evolution of electronics from vacuum tubes to nanoelectronics and their impact on technology?	[L4][CO1][10M]
2.		Explain the operation of pn junction diode under forward bias and reverse bias conditions with the help of V-I characteristics curve.	[L5][CO1][10M]
3.	a	Define Zener diode and its characteristics	[L1][CO1][5M]
	b	What is Zener effect?	[L1][CO1][5M]
4.		Distinguish between PN Junction diode and Zener diode	[L3][CO1][10M]
5.		With the neat sketch ,Explain the operation of an NPN transistor and PNP transistor.	[L3][CO2][10M]
6.		what are the three transistor configuration ? compare the	[L4][CO2][10M]

7.		characteristics of three configuration	
7.		With a neat sketch Explain the input and output and current gain characteristics of a transistor in common base (CB) configuration	**[L1][CO2][10M]**
8.		With a neat sketch Explain the input and output and current gain characteristics of a transistor in common Emitter (CE) configuration.	**[L1] [CO2] [10M]**
9.		With a neat sketch Explain the input and output and current gain characteristics of a transistor in common Collector (CC) configuration.	**[L1][CO2][10M]**
10		Briefly explain the operation of a small signal CE amplifier.	**[L2][CO2][10M]**

UNIT-II
BASIC ELECTRONIC CIRCUITS AND INSTRUMENTATION

1.	What is the necessary of the coupling capacitor?	**[L4][CO2][1M]**
2.	Define amplifier.	**[L4][CO2][1M]**
3.	What is an emitter?	**[L1][CO2][1M]**
4.	What is a step-down transformer?	**[L3][CO2][1M]**
5.	The transducer used for?	**[L1][CO2][1M]**

1		Explain the Block diagram description of a dc power supply with a detailed explanation of all blocks.	**[L1][CO2][10M]**
2		Explain briefly about the following: I. A step down transformer II. A rectifier III. A DC filter IV. A regulator	**[L1][CO2][10M]**
3		Explain the working of a full wave bridge rectifier with a neat diagram with wave forms.	**[L1][CO2][10M]**
4		With the help of a neat diagram explain the operations of positive and negative half cycles.	**[L3][CO2][10M]**
5		What is a Capacitor Filter? How the Capacitor Filteracts as a Full Wave Rectifier?	**[L1][CO2][10M]**
6		What is a Voltage Regulator? How the Zener Diode works as a Voltage Regulator?	**[L1][CO2][10M]**
7		Draw the block diagram of Public Addressing System and explain the function of each block.	**[L3][CO2][10M]**
8		What is an Amplifier? What is a Common Emitter Amplifier?	**[L1][CO2][10M]**
9		Draw the block diagram of Electronic Instrumentation System and explain the function of each block.	**[L1][CO2][10M]**

10		Briefly explain the Working of Common Emitter Amplifier with proper circuit and wave forms.	[L1][CO2][10M]

UNIT –III

DIGITAL ELECTRONICS

1.	What is an Excess3 code?	[L1][CO3][1M]
2.	List the names of universal gates with symbols	[L4][CO3][1M]
3.	What is hamming code?	[L1][CO3][1M]
4.	Write the names of basic logical operators.	[L3][CO4][1M]
5.	What are the basic properties of Boolean algebra?	[L1][CO4][1M]

1	a)	What is number system? explain the different types of number systems	[L2][CO3][5M]
	b)	Convert the $(555)_{10}$ into binary, octal and Hexadecimal number systems.	[L1][CO3][5M]
2		Convert the following into binary to decimal, decimal into hexa decimal i) $(1101.1)_2$ ii) $(1100.001)_2$ iii) $(5386.34)_{10}$ iv) $(214.35)_{10}$	[L1][CO3][10M]
3		Explain about Logic gates with symbols and truth table.	[L1][CO3][10M]
4	a)	What is BCD codes and what are the various BCD codes	[L3][CO3][4M]
	b)	Perform the following Decimal addition to 8421 BCD code. i)48+58, ii)186+237	[L3][CO3][6M]
5	a)	Convert the following into Gray code. i) $(1001100)_2$ ii) $(110101110)_2$	[L3][CO3][5M]
	b)	What is Hamming code and how does it work?	[L2][CO3][5M]
6		Encode the binary word 1011 into seven bit even parity hamming code?	[L1] [CO3] [10M]
7		Explain Basic Theorems and properties of Boolean Algebra	[L1][CO3[10M]
8		Define combinational circuit? Explain Half Adder and Full Adder with truth table.	[L2][CO3][10M]
9		Define sequential circuit. And explain about Flip flops, registers, and counters.	[L4][CO3][10M]
10	a)	Explain differences between combinational and sequential circuits.	[L4][CO3][5M]
	b)	Perform the following addition using excess-3 code i)386+756 ii)12+38	[L4][CO3][5M]

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