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# B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

## January / February 2025 Semester End Main Examinations

**Programme: B.E.**

**Semester: VII**

**Branch: Institutional Elective**

**Duration: 3 hrs.**

**Course Code: 22EE7OE2HS**

**Max Marks: 100**

**Course: Holistic approach to Electrical Safety**

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any, may be suitably assumed.

			<b>UNIT - I</b>			
			<b>CO</b>	<b>PO</b>	<b>Marks</b>	
<b>Important Note:</b> Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.	1	a)	According to the IEEE Std. 80, determine the maximum safe shock duration for i) 62.5V ii) 125V ii) 500V Assume R = 1000 Ohms	CO1	PO2	<b>06</b>
		b)	It is important to avoid Hazardous activity at Industry. Illustrate & explain the hierarchy of controls for implementation of safety measures in industry	CO1	PO1	<b>08</b>
		c)	Enumerate the factors affecting the severity of electric shock	CO1	PO1	<b>06</b>
<b>OR</b>						
2	a)	Magnitude and duration of Current has major effect on the Human Body. Explain the effects experienced by human when coming in contact to electric shock at various current levels.	CO1	PO1	<b>06</b>	
	b)	Define i) Safety ii) Let-Go current. State and explain APELL	CO1	PO1	<b>08</b>	
	c)	Identify and list the basic Elementary First Aid to be given to a person experiencing shock	CO1	PO1	<b>06</b>	
			<b>UNIT - II</b>			
3	a)	Identify and list the various Power cutting Devices used to ensure electric safety.	CO2	PO2	<b>04</b>	
		Differentiate between ELCB & RCCB			<b>04</b>	
	b)	Enumerate the various effects of Lightning	CO2	PO1	<b>06</b>	
	c)	Define Earthing. List the Characteristics of Good Earthing	CO2	PO1	<b>06</b>	
<b>OR</b>						
4	a)	Explain briefly the common causes of power surges	CO2	PO2	<b>08</b>	
	b)	Differentiate between AFCI & GFCI	CO2	PO1	<b>06</b>	
	c)	Briefly explain the Limitations of RCCB	CO2	PO1	<b>06</b>	

<b>UNIT - III</b>						
5	a)	Define Lockout & Tag-out. Explain the basic steps of lockout/tagout procedures	CO6	PO2	<b>10</b>	
	b)	Define static electricity. What are the various causes of i) Operations Generating Static Charge ii) Machines generating static charge	CO6	PO2	<b>10</b>	
<b>OR</b>						
6	a)	According to IS.5572 how are the hazardous zones divided for the purpose of appropriate electrical installation?	CO6	PO2	<b>10</b>	
	b)	Enumerate the sequence to control static charge. Also identify and describe the specific control measures applied to control the static charge.	CO6	PO2	<b>10</b>	
<b>UNIT - IV</b>						
7	a)	According to you, what measures are to be taken for the following Case study? Case of 'Inadequate training': worker was injured when working in a live electrical panel. Describe the case. Mention the action taken and comment on negligence & precaution that could have been taken. What are the conclusion /Learning from this case study?	CO9	PO2	<b>10</b>	
	b)	Standard operating procedure documentation is important because it allows organizations to systematize their processes, keep all team members and other stakeholders on the same page at all times. Enumerate and justify the importance and challenges in framing and implementing SOP.	CO9	PO2	<b>10</b>	
<b>OR</b>						
8	a)	The Section 7B of the Factories Act 1948 specifies the general duties of manufacturers and suppliers. Enumerate the duties as per the Act. In line with this statutory requirement there are some obligations of supplier to adhere to. What are they?	CO9	PO2	<b>10</b>	
	b)	Explain the Standard Procedure of Safety Audit. Discuss the Objectives of Safety Audit.	CO9	PO2	<b>10</b>	
<b>UNIT - V</b>						
9	a)	Discuss about IS-14489-1998 and Safety Audit in Electrical Installations	CO12	PO2	<b>10</b>	
	b)	What are the regulations mandated by Central Electric Authority for testing of Electrical Equipments?	CO12	PO2	<b>10</b>	
<b>OR</b>						
10	a)	Write a note on National Electric Code and its salient mandates with respect to electrical safety	CO12	PO2	<b>10</b>	
	b)	Safety of the Public is an important aspect. What are your suggestions and ideas on making people aware of Safety matters in public places?	CO12	PO2	<b>10</b>	