

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2022
FT3CO11 Electrical Technology & Safety in Electrical
System

Programme: B.Tech.

Branch/Specialisation: FT

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1
- i. A transformer core is laminated to 1
 - (a) Reduce hysteresis loss
 - (b) Reduce eddy current losses
 - (c) Reduce copper losses
 - (d) Reduce all above losses
 - ii. For starting a D.C. motor, a starter is required because 1
 - (a) It limits the speed of the motor
 - (b) It starts the motor
 - (c) It limits the starting current to a safe value
 - (d) None of these
 - iii. Fuse wire should possess 1
 - (a) High specific resistance and high melting point
 - (b) High specific resistance and low melting point
 - (c) Low specific resistance and low melting point
 - (d) Low specific resistance and high melting point
 - iv. The size of the earth or ground wire is based on the: 1
 - (a) Maximum fault current carrying through the ground wire
 - (b) Rated current carrying capacity of the service line
 - (c) Depends on the soil resistance
 - (d) Both (a) and (c)
 - v. How many classes of insulating materials are there? 1
 - (a) 5
 - (b) 6
 - (c) 7
 - (d) 8
 - vi. Electric shock is 1
 - (a) Always fatal
 - (b) Never fatal
 - (c) Sometimes fatal
 - (d) Always disfiguring

P.T.O.

[2]

- vii Risk can be defined as the art and science of _____ risk factors **1**
 throughout the life cycle of a project.
 (a) Researching, reviewing, and acting on
 (b) Identifying, analyzing, and responding to
 (c) Reviewing, monitoring, and managing
 (d) Identifying, reviewing, and avoiding
- vii The grounding of equipment is done for ____ **1**
 (a) Safety of person
 (b) Safety of electrical equipment
 (c) Safety of person & electrical equipment
 (d) None of these
- ix. The Personal Protective Equipment that should be worn when there may be a risk of splashing includes **1**
 (a) Gloves
 (b) Gloves and apron
 (c) Gloves, apron and face mask
 (d) Gloves, apron, face mask and eye protection
- x. The hazard place in which explosive atmosphere is present but will not occur in normal operation, but if it does occur it will persist for a short period comes under **1**
 (a) Zone 0 (b) Zone 1 (c) Zone 2 (d) Zone 3
- Q.2 i. Why is Induction motor also known as an asynchronous motor? **2**
 ii. What is a relay? Where it is used and for what purpose. Give the names of different types of relays. **3**
 iii. Define transformer? Explain its working principle with diagram. **5**
- OR iv. Explain the different parts of a DC machine with diagram. **5**
- Q.3 i. What is the function of a switchgear? **2**
 ii. Compare restriking voltage and recovery voltage (Any three) **3**
 iii. What is the need of a fuse? Discuss different types of fuses. State the criteria for selecting a particular fuse. **5**
- OR iv. Why grounding is done? Explain different types of grounding and where are they used? **5**

[3]

- Q.4 i. State the effects of different levels of electrical current on the human body. **3**
 ii. Illustrate the safety precautions to be taken by a person while working in the electric and magnetic field. **7**
- OR iii. Why electrical equipments are insulated? Classify different classes of insulation. Explain the continuity test to be performed on an insulator. **7**
- Q.5 i. What are the different risks during the installation of equipment? **3**
 ii. Illustrate the different safety sequences to be followed during the installation of equipment in a plant. **7**
- OR iii. Explain with example, why and where the interlock system on relays is applied. **7**
- Q.6 i. How the hazardous area is classified for Flammable Gases and Vapours. **3**
 ii. Illustrate the selection criteria of equipment's in hazardous area **7**
- OR iii. What are the potential sources of static electrical discharge? List the different safety precautions to be taken. **7**

Marking Scheme

FT3CO11 Electrical Technology & Safety in Electrical System

Q.1	i.	A transformer core is laminated to (b) Reduce eddy current losses	1
	ii.	For starting a D.C. motor, a starter is required because (c) It limits the starting current to a safe value	1
	iii.	Fuse wire should possess (d) Low specific resistance and high melting point	1
	iv.	The size of the earth or ground wire is based on the: (d) Both (a) and (c)	1
	v.	How many classes of insulating materials are there? (c) 7	1
	vi.	Electric shock is (c) Sometimes fatal	1
	vii.	Risk can be defined as the art and science of _____ risk factors throughout the life cycle of a project. (a) Researching, reviewing, and acting on	1
	viii.	The grounding of equipment is done for ____ (c) Safety of person & electrical equipment	1
	ix.	The Personal Protective Equipment that should be worn when there may be a risk of splashing includes (d) Gloves, apron, face mask and eye protection	1
	x.	The hazard place in which explosive atmosphere is present but will not occur in normal operation, but if it does occur it will persist for a short period comes under (c) Zone 2	1
Q.2	i.	Induction motor also known as an asynchronous motor As per explanation	2
	ii.	Relay Use and purpose Names of different types of relays	3
	iii.	Definition of transformer Its working principle Diagram	5
	OR	iv.	
		Different parts of a DC machine Diagram	5

Q.3	i.	Function of a switchgear	2
	ii.	Any three compare restriking voltage and recovery voltage 1 mark for each (1 mark * 3)	3
	iii.	Need of a fuse Different types of fuses Selecting a particular fuse	5
	OR	iv.	
		Grounding is done for Different types of grounding They used	5
Q.4	i.	Effects of different levels of electrical current on the human body As per the explanation	3
	ii.	Safety precautions to be taken by a person while working in the electric and magnetic field As per the explanation	7
	OR	iii.	
		Electrical equipments are insulated Different classes of insulation Continuity test to be performed on an insulator	7
Q.5	i.	Different risks during the installation of equipment As per the explanation	3
	ii.	Different safety sequences to be followed during the installation of equipment in a plant As per the explanation	7
	OR	iii.	
		Reason for interlock system on relays is applied Explain with example, where	7
Q.6	i.	Hazardous area is classified for Flammable Gases and Vapours As per the explanation	3
	ii.	Selection criteria of equipment's in hazardous area As per the explanation	7
	OR	iii.	
		Potential sources of static electrical discharge Different safety precautions to be taken	7
