

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem Examination May-2023

FT3CO35

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. Assume suitable data if necessary. Notations and symbols have their usual meaning.

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|-----|------|--|---|
| Q.1 | i. | Which is not a part of dc machine? | 1 |
| | | (a) Field and armature winding (b) Brush | |
| | | (c) Commutator (d) Slip ring | |
| | ii. | Differential relay is used for protection of- | 1 |
| | | (a) Transmission line (b) Transformer | |
| | | (c) Alternator (d) Both (b) and (c) | |
| | iii. | In a circuit breaker the basic problem is to- | 1 |
| | | (a) Maintain the arc (b) Extinguish the arc | |
| | | (c) Transmit large power (d) Emit the ionizing electrons | |
| | iv. | The primary function of a fuse is to- | 1 |
| | | (a) Open the circuit | |
| | | (b) Protect the appliance | |
| | | (c) Protect the line | |
| | | (d) Prevent excessive currents from flow through the circuit | |
| | v. | Which class has the lowest and highest temperature? | 1 |
| | | (a) Class Y and Class C (b) Lass Y and Class H | |
| | | (c) Class H and Class C (d) Class B and Class H | |
| | vi. | Electric shock is- | 1 |
| | | (a) Always fatal (b) Never fatal | |
| | | (c) Sometimes fatal (d) Always disfiguring | |

P.T.O.

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- vii. If a machine guard is missing I should- **1**
 (a) Not use the machine
 (b) Put a temporary cover over the area
 (c) Tell my supervisor
 (d) Both (a) and (c)
- viii. Equipment interlocks are for- **1**
 (a) Preventing the machine from operating in an unsafe condition
 (b) Connecting two or more machines
 (c) Helping new employees operating machines safely
 (d) Management use to monitor equipment
- ix. You may only operate equipment- **1**
 (a) If you are sure, you will not get hurt
 (b) You are trained and authorized
 (c) If no one else knows the procedures
 (d) None of these
- x. Avoid working in _____ conditions for avoiding electrical hazards. **1**
 (a) Cold (b) Dry
 (c) Sunny (d) Wet
- Q.2 i. Define transformer with circuit diagram also write its application. **4**
 ii. Explain working principle and construction of DC machine. **6**
 OR iii. Why relay is required? Define differential and distance relay with circuit diagram and application. **6**
- Q.3 i. Define the term recovery and restriking voltage in circuit breaker. **4**
 ii. Explain fuse and its types. Also write advantage & disadvantage of fuse. **6**
 OR iii. Why grounding is required? Explain different types of grounding and their application **6**
- Q.4 i. Discuss effects of electric and magnetic field with aspect of the human safety. **4**
 ii. Draw and explain V-I characteristics of skin. **6**
 OR iii. Why electrical equipment are insulated? Classify different classes of insulation. **6**

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- Q.5 i. What are the different risks during the installation of equipment? **4**
 ii. Illustrate the different safety sequences to be followed during the installation of equipment in a plant. **6**
 OR iii. Describe some steps of safety during testing and commissioning of equipment. **6**
- Q.6 Write short note of any two:
 i. Indian electricity act & rules **5**
 ii. Safety procedures in electrical maintenance **5**
 iii. Selection of equipment's in hazardous area **5**

Marking Scheme

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Q.1	i)	Which is not a part of dc machine (d) slip ring	1
	ii)	Differential relay is used for protection of (d) both b and c	1
	iii)	In a circuit breaker the basic problem is to (b) Extinguish the arc	1
	iv)	The primary function of a fuse is to (d) Prevent excessive currents from flow through the circuit	1
	v)	Which class has the lowest and highest temperature (a) class Y and Class C	1
	vi)	Electric shock is (c) Sometimes fatal	1
	vii)	If a machine guard is missing I should (d) Both A and C	1
	viii)	Equipment interlocks are for (a) Preventing the machine from operating in an unsafe condition	1
	ix)	You may only operate equipment (b) You are trained and authorized	1
	x)	Avoid working in _____ conditions for avoiding electrical hazards. (d) wet	1
Q.2	i.	Define transformer: 2 marks circuit diagram : 1 mark application: 1 mark	4
	ii.	Explain working principle: 2 marks construction of DC machine: 4 marks	6
OR	iii.	Why relay is required: 1 mark Define differential : 2 marks distance relay : 2 marks	6

		application:	1 mark	
Q.3	i.	Define the term recovery : restriking voltage in circuit breaker :	2 marks 2 marks	4
	ii.	Explain fuse : and its types : advantage & disadvantage of fuse:	1 marks 2 marks 3 marks	6
OR	iii.	Why grounding is required: Explain different types of grounding: application:	2 marks 2 marks 2 marks	6
Q.4	i.	Discuss effects of electric : magnetic field :	2 marks 2 marks	4
	ii.	Explanation : V-I characteristics of skin.:	3 marks 3 marks	6
OR	iii.	Why electrical equipment are insulated: Classify different classes of insulation. :	3 marks 3 marks	6
Q.5	i.	What are the different risk during installation of equipment 1 mark each		4
	ii.	Illustrate different safety sequence to be followed during installation in plant		6
OR	iii.	Describe some steps of safety during testing of commercial equipment		6
Q.6		Write short note of any two		
	i.	Indian Electricity Act & Rules: five-point 1 mark each		5
	ii.	Safety procedures in electrical maintenance: five points 1 mark each		5
	iii.	Selection of equipment's in hazardous area : 1 mark each five point		5

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