

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
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. Which of the following dc machine is most suitable for traction purpose? **1**
(a) Shunt dc machine (b) Series dc machine
(c) Both (a) and (b) (d) None of these
- ii. Which of the following relay is used for the protection of transformers? **1**
(a) Buchholz relay (b) Distance relay
(c) Differential relay (d) None of these
- iii. The power rms frequency voltage, which appears across the circuit breaker after the final current zero (arc extinction) is known as- **1**
(a) Restriking voltage (b) Restoring voltage
(c) Both (a) and (b) (d) None of these
- iv. Which of the following is a symmetrical fault? **1**
(a) L-L-L fault (b) S-L-G fault
(c) L-L-G fault (d) None of these
- v. Which of the following range of currents is considered as the painful shock? **1**
(a) 1mA or less (b) 1 mA to 3mA
(c) 3mA to 10mA (d) None of these
- vi. According to the classes of insulation the insulation which withstand up to 180°C and above are- **1**
(a) Class A type insulators (b) Class B type insulators
(c) Class C type insulators (d) Class F type insulators

P.T.O.

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- vii. Industrial safety management is that branch of management which is concerned with _____ hazards from the industries. **1**
 (a) Reducing (b) Controlling
 (c) Eliminating (d) All of these
- viii. Check list for Job Safety Analysis (JSA) **1**
 (a) Work area, material, machine, tools.
 (b) Men, machine, material, tools.
 (c) Men, machine, work area, tools.
 (d) Men, work area, material, tools
- ix. Which of the following classification of fire involves the electrical fire as per the European standards? **1**
 (a) Class D (b) Class A (c) Class B (d) Class C
- x. The grounding of equipment is done for the- **1**
 (a) Safety of personals (b) Safety of electrical equipment
 (c) Both (a) and (b) (d) None of these
- Q.2 i. Explain the working principal of transformer with circuit diagram. **2**
 ii. What is the necessity of protective relay in a power system? Write down the characteristics of protective relay. **3**
 iii. Write down the working principle of DC machine also explain its different types and uses. **5**
- OR iv. What do understand by distance relay? Describe its types with circuit diagram. **5**
- Q.3 i. Explain the phenomenon of recovery voltage and restriking voltage. **2**
 ii. What do you understand by a fuse? What the types of fuses? **3**
 iii. Why circuit breaker are used in power system? Explain different types of circuit breaker with their uses. **5**
- OR iv. Explain the necessity of grounding. Define different types of grounding used in power system. **5**
- Q.4 i. Enlist the effect of electric field and magnetic field on human safety aspect. **2**
 ii. Explain how electrical current and voltage adversely affect the human body. **3**

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- iii. What is an electrical shock? Describe the effect of step potential and touch potential with necessary diagrams. **5**
- OR iv. Write a note on different classes of insulation with their applications. **5**
- Q.5 i. State the unsafe conditions during the installation. **4**
 ii. Describe the safe sequences in installing the power plant. **6**
- OR iii. Mention the risk during the installation of power plant and electrical equipment. Explain each point in brief. **6**
- Q.6 Attempt any two
- i. What do you understand by Hazard zones? Classify and explain the different hazardous Zones. **5**
- ii. What are the safety procedures or precautions should be taken in care while doing electrical maintenance? **5**
- iii. Explain the term electrical hazards also explain the safety aspects of electrical hazards. **5**

Marking Scheme

FT3CO11 Electrical Technology & Safety in Electrical System

Q.1	i.	Which of the following dc machine is most suitable for traction purpose? (b) Series dc machine	1
	ii.	Which of the following relay is used for the protection of transformers? (a) Buchholz relay	1
	iii.	The power rms frequency voltage, which appears across the circuit breaker after the final current zero (arc extinction) is known as- (b) Restoring voltage	1
	iv.	Which of the following is a symmetrical fault? (a) L-L-L	1
	v.	Which of the following range of currents is considered as the painful shock? (c) 3mA to 10mA	1
	vi.	According to the classes of insulation the insulation which withstand up to 180°C and above are- (c) Class C type insulators	1
	vii.	Industrial safety management is that branch of management which is concerned with _____ hazards from the industries. (d) All of these	1
	viii.	Check list for Job Safety Analysis (JSA) (a) Work area, material, machine, tools.	1
	ix.	Which of the following classification of fire involves the electrical fire as per the European standards? (d) Class C	1
	x.	The grounding of equipment is done for the- (c) Both (a) and (b)	1
Q.2	i.	Working principal of transformer Circuit diagram.	1 mark 1 mark 2
	ii.	Necessity of protective relay in a power system Characteristics of protective relay	1 mark 2 marks 3
	iii.	Working principle of DC machine Types and uses.	2 marks 3 marks 5
OR	iv.	Definition of distance relay Its types with circuit diagram.	2 marks 3 marks 5

Q.3	i.	Recovery voltage Restriking voltage.	1 mark 1 mark 2
	ii.	Definition of fuse Types of fuses	2 marks 3 marks 3
	iii.	Circuit breaker are used in power system Definition Types of circuit breaker with their uses	2 marks 3 marks 5
OR	iv.	Definition of necessity of grounding Types of grounding used in power system.	2 marks 3 marks 5
Q.4	i.	Effect of electric field Effect of magnetic field	1 mark 1 mark 2
	ii.	Electrical current and voltage adversely affect the human body. Reason Effect	1 mark 2 marks 3
	iii.	Definition of electrical shock Effect of step potential Effect of touch potential	2 marks 1.5 marks 1.5 marks 5
OR	iv.	Classes of insulation with their applications.	5
Q.5	i.	Unsafe conditions during the installation 1 mark for each point	(1 mark * 4) 4
	ii.	Safe sequences in installing the power plant. Explanation	3 marks 3 marks 6
OR	iii.	Risk during the installation of power plant Explanation	3 marks 3 marks 6
Q.6		Attempt any two	
	i.	Definition of Hazard zones Explanation	2 marks 3 marks 5
	ii.	Safety procedures or precautions should be taken in care while doing electrical maintenance 1 mark for each step	(1 mark * 5) 5
	iii.	Electrical hazards Safety aspects of electrical hazards.	2 marks 3 marks 5
