

Bihar Engineering University, Patna
End Semester Examination - 2022

Course: B.Tech.
Code: 110728

Semester: VII
Subject: Electrical Safety

Time: 03 Hours
Full Marks: 70

Instructions:-

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

Q.1 Choose the correct answer of the following (Any seven question only): **[2 x 7 = 14]**

- (a) Electrical hazards include shock, electrical arcs, blasts and _____ or faulty equipment.
 - (i) Broken
 - (ii) Double insulated
 - (iii) Secure
 - (iv) Polished
- (b) When a resistor R is connected to a current source, it consumes a power of 18W. When the same R is connected to a voltage source having the same magnitude as the current source, the power absorbed by R is 4.5 W. The magnitude of the current source and the value of R are
 - (i) 18A & 1 Ohm
 - (ii) 3A & 2 Ohm
 - (iii) 1A & 18 Ohm
 - (iv) 6A & 0.5 Ohm
- (c) Work performed on an electrical system within reaching distance of energized component is _____ work.
 - (i) Energized
 - (ii) Essential
 - (iii) Safe
 - (iv) Unavoidable
- (d) The purpose of a lock-out / tag-out procedure is to :
 - (i) Improve productivity on the job
 - (ii) Secure harmful energy sources to prevent injury
 - (iii) Slow down work so technicians are less stressed
 - (iv) Identify personal items to avoid theft the purpose
- (e) The very first thing you should do if you are the first to witness or discover an accident on the job site is to:
 - (i) Go find at least one co-worker to help you so you can work as a team
 - (ii) Go to the scene and help the person(s) injured
 - (iii) Find and fill out the necessary forms to documents the incident
 - (iv) Activate the emergency response system
- (f) There are _____ principles that are critical for a reliability centered maintenance program (RCM):
 - (i) One
 - (ii) Two
 - (iii) Three
 - (iv) Four
- (g) Which of the following colour is used for radiation hazard?
 - (i) Red
 - (ii) Orange
 - (iii) Green
 - (iv) Purple
- (h) What is medium voltage, according to IE Rule 28
 - (i) Voltage that does not exceed 11000 V under normal conditions
 - (ii) Voltage that does not exceed 440V under normal conditions
 - (iii) Voltage that does not exceed 650 V under normal conditions
 - (iv) Voltage that does not exceed 22000 V under normal conditions

P.T.O.

- (i) Specially designed PPE for electrical work includes ___ insulating gloves, matting, blankets and covers.
- (i) plastic (ii) rubber
(iii) steel (iv) wood
- (j) Gloves used for electrical protection must be electrically tested every _____
- (i) 3 months (ii) 6 months
(iii) 9 months (iv) Never

- Q.2** (a) What do you mean by flame resistance (FR)? Which types of cloth material are used to design the FR. [7]
- (b) What is primary and secondary hazards? [7]

- Q.3** (a) Why is Electrical Panel Labelling Important? [6]
- (b) Explain the six step safety methods. [8]

- Q.4** (a) Explain major cause of shock and its safety equipment. [7]
- (b) Define electrical shock. What factors influence the severity of electrical shock? [7]

- Q.5** What are the eight steps that should be at the heart of an electrical preventive maintenance program. [14]

- Q.6** (a) What are the effect of electrical current on human body? [7]
- (b) What is classification of equipment for Hazardous location? [7]

- Q.7** (a) What is objective of earthing? Differentiate between system grounding and neutral grounding. [7]
- (b) Explain the general requirements of electrical safety as per Indian electrical rules [7]

- Q.8** (a) Explain the various hazards area based on class 0, 1, and 2 categories. [7]
- (b) Explain about Pre-commissioning test of the transformer. [7]

- Q.9** (a) Write short notes any two of the following: [3.5x2]
- (i) What is Lockout tag?
- (ii) What is Electromagnetism?
- (iii) What are electrical safety measures?
- (iv) Define the terms arc and blast
- (b) What is need of flash and thermal protection? [7]

