

Total No. of printed pages = 2

EE 181601

Roll No. of candidate

27/7/22

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BINA CHOWDHURY  
(GIMT & G.P.O.)  
Azara, Hatkhowapara,  
Guwahati-781017

2022

B.Tech. 6<sup>th</sup> Semester End-Term Examination

POWER SYSTEM - III

(New Regulation & New Syllabus)

Full Marks - 70

Time - Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *Four* from the rest.

1. Answer the following (Fill in the blanks) : (10 × 1 = 10)
- The main goal of deregulation is to \_\_\_\_\_
  - Entities in the restructured environment are \_\_\_\_\_
  - A 3 phase fault is called a \_\_\_\_\_ type of fault
  - A protective relay which can anticipate or prevent the occurrence of fault unlike other relays is the \_\_\_\_\_
  - The basic requirements of a protective system are \_\_\_\_\_
  - A fuse is a \_\_\_\_\_ device
  - Safe voltage of current for human body is given by the equation \_\_\_\_\_
  - The cold lightning stroke is a \_\_\_\_\_
  - Insulation Coordination means \_\_\_\_\_
  - DC links are classified as \_\_\_\_\_
2. (a) What is deregulation? What are the reasons for it? What are the characteristics of a regulated electric industry? (5)
- (b) What is a substation? what are its classifications based on function? Give a list of equipment are encountered a substation. Give details of the busbar arrangements you would prefer for large important substations with relevant figures and advantages. (10)

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3. (a) What materials would be used for fuses and why? Define minimum fusing current, rated current and fusing factor. Give the different classes of fuses used. (5)
- (b) Describe the construction and operation of an HRC fuse with a neat sketch. What are its advantages and disadvantages. (10)
4. (a) Show how the velocity of propagation of the travelling waves is found to be equal to the velocity of light. (5)
- (b) Define Arc voltage, Restriking voltage and Recovering voltage. Find the expression for RV, RRRV and max RRRV. (10)
5. (a) Write a short note on current chopping with relevant figure. (5)
- (b) Write briefly on the arc extinction process in a (i) SF6 CB (ii) Vacuum CB. (10)
6. (a) What are the strategic points in a power system where reactors are used? Give details. (5)
- (b) Define (i) Wet Flashover Voltage (ii) Dry Flashover Voltage (iii) Impulse Flashover Voltage (iv) Basic Impulse Insulation Level (v) Volt-time curve. (5)
- (c) Write briefly on Shielding methods for external over-voltage protection. Give relevant sketches. (5)
7. (a) Describe all the equipment used for HVDC transmission with neat sketches. (7)
- (b) Describe the construction, operation, location and classes of a valve type Lightning Arrestor. (8)

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