

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
Second Semester (2021-22)
COMPREHENSIVE EXAMINATION
PART-A (CLOSED BOOK)

Course No. CE G618
Course Title: Design of Multi-Storeyed Structures

Date: 09/05/2022
Max Marks: 20
Duration: 45 min.

Q.1a) The sag of the transmission line was found to be 2 m when there is a span of 100 m between two level supports. Without any change in other conditions, if the length of the span is increased to 120 m, then what is the sag?

b) A 132 KV transmission line has the following data:

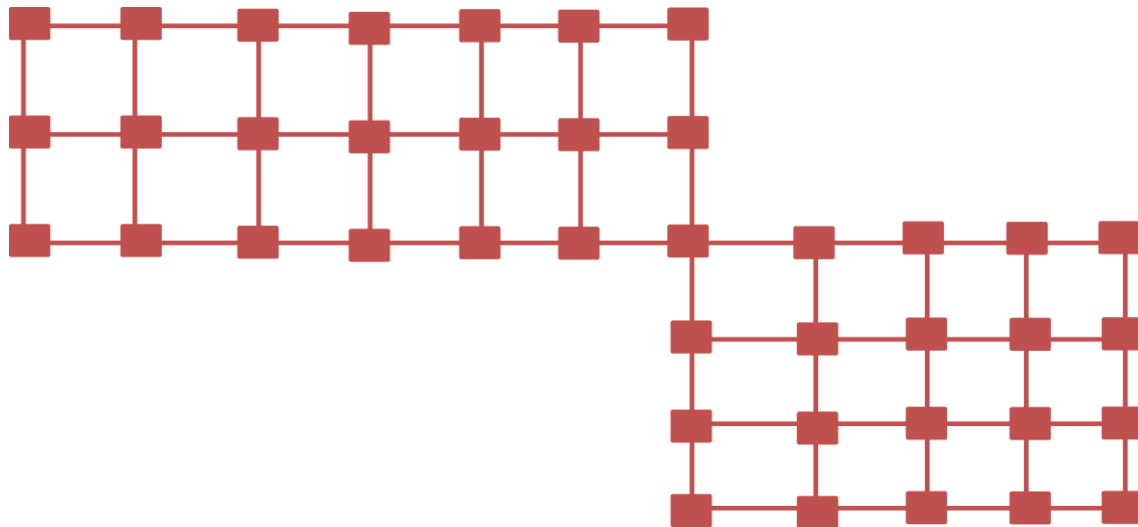
Weight of the conductor = 680 Kg/KM
Ultimate tensile strength = 3100 Kg

Weight span=wind span = 200 m
Factor of safety = 2

Calculate the height of the ground at which conductor should be supported, if the ground clearance required is 10 m.

c) Sag of the conductors of a transmission line is 2 m, when the span is 200 m. Now if the height of the supporting towers is increased by 25%, what will be the change in sag value? [6]

Q.2 For the plan shown below, compute the rigidities of bents in both the directions. [4]



Q.3 If the overall rigidity of the frame shown below is 9.9710, find the value of X? [3]

10	15	10		
10	X	10		
12	16	16	12	
12	16	16	16	12
14	18	18	18	14

- Q.4 a) How do you categorize transmission line towers? [2]
b) With neat sketch, show the effect of force that is not acting at the center of rigidity of a floor diaphragm. [1]
c) Why shear wall is necessary in multistoried buildings of more 15 storey's? [1]
- Q5. Suggest a suitable structural system for following structures. Explain briefly the reasons for selecting a structural system. [3]
a) Four Storey residential building
b) Electric substation
c) Fifteen storey commercial complex situated in Chennai