Enrolment No._____ Seat No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BArch- SEMESTER– 3 EXAMINATION – SUMMER 2016

Subject Code: 1035003 **Date: 12-05-2016**

Subject Name: Structure III

Time: 02.30PM – 04.30PM **Total Marks: 50**

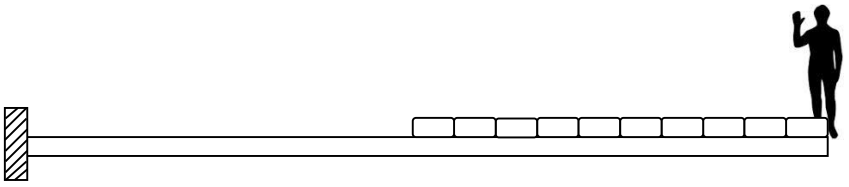
Instructions:

1. **Attempt all questions.**
2. **Make suitable sketches wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(A)** i) Define Radius of gyration **05**

ii) Define Crippling Load, Buckling Load, Critical Load

(B) 0.1 m long cement bag of 200 kg have equally spread over the end half span of a 2 m long cantilever bridge due to some accident. Assume there is no space between those bags and they are laid down immediately one after another. A thousand kg wrestler is standing at the end of the cantilever. Find slope and deflection at free end. Cross section of beam is 100 mm width X 180 mm depth. E= 200 GPa **10**



Q.2 **(A)** Derive effective length for the cantilever **05**

(B) A short column has rectangular section of 0.25 m width and 0.2 m. At a point 0.05 m from longer side and 0.01 m from shorter side, A scare crow of 4,00,000 N is kept. Find maximum and minimum stresses in the column. **10**

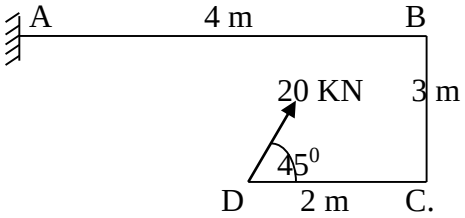
OR

(B) 8000 mm long column, an 'I' section, has 0.26 m depth and 120 mm width. Thickness of flange and web is 1 cm. It is used as a column with one end fixed and other hinged. Determine safe load with Euler's formula keeping factor of safety as 6. E = 2 x 10^5 N/mm^2. **10**

Q.3 **(A)** Define Strain energy and Resilience **05**

(B) Advantages and disadvantages of indeterminate Structures **05**

(C) i) Draw SFD, BMD, AFD, FBD for given figure **08**



ii) Define Long Column and short column. **02**

OR

C) A fixed beam of 6 m span carries U.D.L of 25 kN/m over its entire span and 80 KN at centre. Draw S.F and B.M diagrams for the beam. Also find point of Contra flexure. **10**

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