BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE **SEMESTER: IV**
BRANCH: CIVIL **SESSION : SP/2019**

SUBJECT : CE4001 STRUTURAL NANALYSIS-I

TIME: 1.5 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 Discuss the stability and determinatens of the structures shown in fig.1 [2+3]

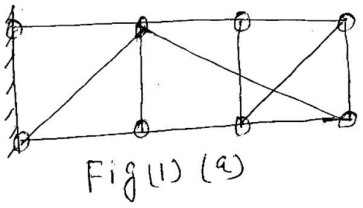
Fig (1) (a)

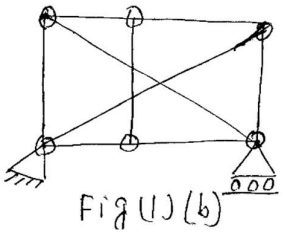
Fig (1) (b)

Q2 Analyse the frame shown in fig.2 [5]

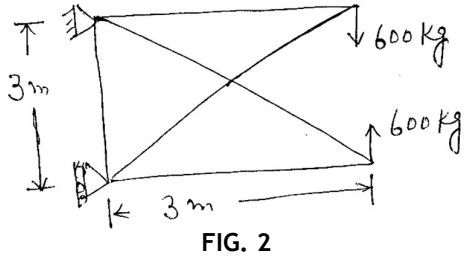

FIG. 2

Q3 A frame ABCD consists of two equilateral triangles hinged at A and supported on roller at D as shown in fig.3 All the members are of length l All tension members are of area a and compression members are of area 2a. determine the vertical deflection of C [5]

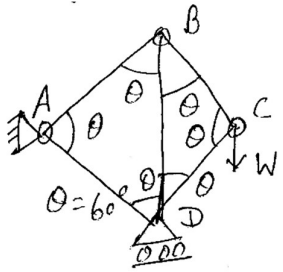

FIG.3

Q4 Compute the reaction components in the structure as shown in fig. 4 [5]

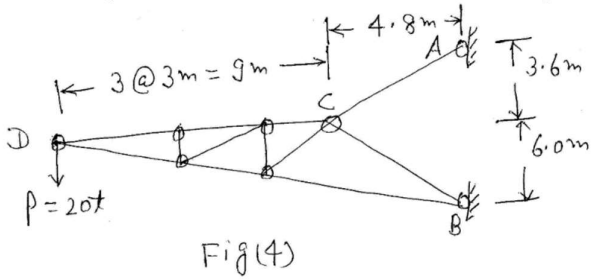

Fig (4)

PTO

Q5 Two wheel loads 80KN and 200KN spaced 2m apart move along a girder of span 16m. find the maximum positive and negative shear force at a section 4m from the left end. Any wheel load can lead the other. [5]

Q6 (a) Write down the steps involved to analyse the complex trusses by Hennerberg's bar exchange method. [3]

(b) Write down the principle of virtual work. [2]

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