BIRLA INSTITUTE OF TECHNOLOGY
MESRA – 835215, RANCHI, INDIA

UG

Name: …… Roll No.: ……..

Branch: …… Signature of Invigilator: ……

Semester: IVth Date: 28/04/2022 (MORNING)

Subject with Code: **CE207 STRUCTURAL ANALYSIS - II**

	Section A (30)	Section B (20)	Total Marks (50)
Marks Obtained			

INSTRUCTION TO CANDIDATE

1. The booklet (question paper cum answer sheet) consists of two sections. First section consists of MCQs of 30 marks. Candidates may mark the correct answer in the space provided / may also write answers in the answer sheet provided. The Second section of question paper consists of subjective questions of 20 marks. The candidates may write the answers for these questions in the answer sheets provided with the question booklet.
2. The booklet will be distributed to the candidates before 05 minutes of the examination. **Candidates should write their roll no. in each page of the booklet.**
3. Place the Student ID card, Registration Slip and No Dues Clearance (if applicable) on your desk. All the entries on the cover page must be filled at the specified space.
4. Carrying or using of mobile phone / any electronic gadgets (except regular scientific calculator)/chits are strictly prohibited inside the examination hall as it comes under the category of unfair means.
5. No candidate should be allowed to enter the examination hall later than 10 minutes after the commencement of examination. Candidates are not allowed to go out of the examination hall/room during the first 30 minutes and last 10 minutes of the examination.
6. Write on both side of the leaf and use pens with same ink.
7. The medium of examination is English. Answer book written in language other than English is liable to be rejected.
8. All attached sheets such as graph papers, drawing sheets etc. should be properly folded to the size of the answer book and tagged with the answer book by the candidate at least 05 minutes before the end of examination.
9. The door of examination hall will be closed 10 minutes before the end of examination. Do not leave the examination hall until the invigilators instruct you to do so.
10. Always maintain the highest level of integrity. Remember you are a BITian.
11. Candidates need to **submit the question paper cum answer sheets before leaving the examination hall**.

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

CLASS: BE **SEMESTER : IV**
BRANCH: CIVIL **SESSION : SP/22**

SUBJECT: CE207 STRUCTURAL ANALYSIS II

TIME: 2:00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains Group A compulsory section of 15 MCQ questions each of 2 marks and total of 30 marks.
2. Candidates may attempt from Group B 4 questions maximum of 20 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1 Embedment length at fixed end equals to:- [2]
i. width of beam
ii. depth of beam
iii. half of depth of beam

Q.2 Flexibility influence coefficient δ_{iJ} is [2]
i. Due to unit load at J th node & displacement at I th node
ii. Due to unit displacement at j th mode and force at i th node
iii. None of the above

Q.3 Stiffens influence coefficient kij is [2]
i. Unit load at J th node & displacement at I th node
ii. Unit displacement at J th node 8 force at I th node
iii. None of the above

Q.4 Compatibility equation in flexibility method is [2]
i. $\delta_{11} x_1 + \Delta_1 = 0$
ii. $\delta_{11} \Delta_1 + x_1 = 0$
iii. $\delta_{11} \Delta_1 + x_1 = 0$
iv. $\delta_{11} + x_1 \Delta_1 = 0$

Q.5 To draw influence line diagram [2]
i. Displacement in given
ii. Force if given to produce Displacement
iii. Both (i) & (ii)

Q.6 For influence line diagram of B.M [2]
i. Displacement provided
ii. Rotation provided
iii. Both (i) & (ii)
iv. None of the above

Q.7 Degrees of freedom depends on [2]
i. Defection
ii. Rotation
iii. Both Defection & rotation

Q.8 How slope is found in a beam [2]
i. angle measured from original position of beam to the tangent drawn on deflected shape
ii. Angle measured from the tangent drawn on defected shape to the original position of beam.
iii. All the above

Q.9 Why fixed end moment is found in slope defection method [2]
i. For end moment
ii. To neutralize defection
iii. To neutralize rotation
iv. None of the above

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Q.10 What is the moment at junction of beam & column [2]
i. Equal
ii. Unequal
iii. Non of the above

Q.11 $\frac{4EI}{L}$ represents when
i. Far end fixed
ii. far end hinged
iii. both of them

Q.12 Width of beam is taken as-: [2]
i. Depth of beam
ii. Equal to depts of beam
iii. Half the Depth of beam
iv. None of the above

Q.13 Flexibility matrix depends on [2]
i. Displacement found
ii. Force found
iii. Both of them

Q.14 Stiffens matrix depend on [2]
i. Force found
ii. Displacement found
iii. Both of them

Q.15 What does μ indicate in horizontal thrust expression of two hinged arch-: [2]
i. free bending B.M
ii. Simply supported B.M
iii. Both of them

Q.16 Compute the vertical reaction at the roller support of the given system by flexibility method. Assume EI is unity. See fig (I) [5]

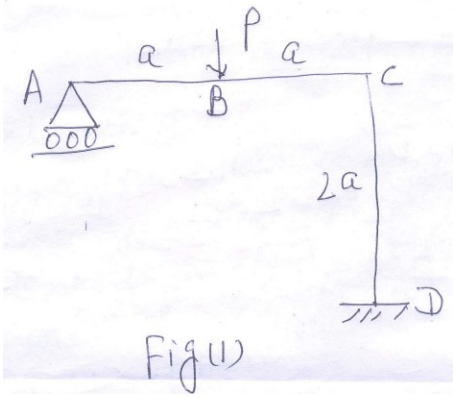

Fig (1)

Q.17 Find the degree of freedom of beam shown in fig(2) [5]

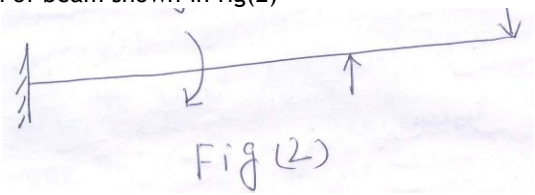
Fig (2)

Q.18 Find the end moment of the system shown in fig(3) USE moment distribution method. [5]

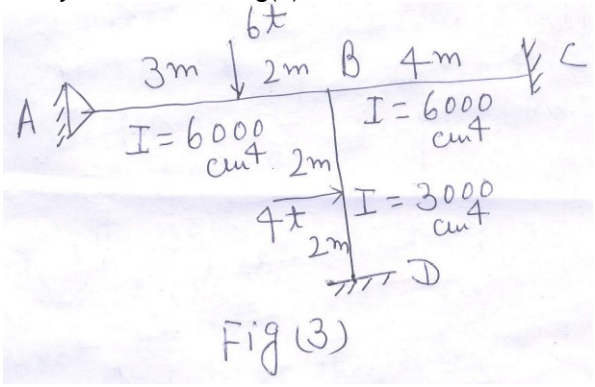

Fig (3)

Q.19 A parabolic arch hinged at the ends has a span of 30m and rise 5m. A concentrated load of 12KN acts at 10m from the left hinge. calculate the horizontal thrust at the hinges. [5]

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