No. of Printed Pages : 04

Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 0113   Roll No.

B. Arch. Examination 2019-20

(Odd Semester)

ARCHITECTURAL STRUCTURES - III

Time : Three Hours]   *[Maximum Marks : 50*

Note :– (i)   Question No. 1 is compulsory. Attempt any three of the following.

(ii) Marks are indicated against each question as part thereof.

(iii) Use of non-programmable electric calculated is permitted.

1.   Attempt any five parts of the following :   2×5=10

(a) Differentiate between statically determinate and statically indeterminate structures.

(b) Define principle of superposition.

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(c) Explain term carry over factor and carry over moment.

(d) Define Clepeyron's theorem of three moment.

(e) What is prop cantilever beam.

(f) Discuss principle of virtual displacement.

2. Attempt any two parts of the following :   2×5=10

(a) A beam ABC of length 2L rest on three supports equally spaced and is loaded with uniformly distributed load w/unit length throughtout the length of beam. Draw SF and BM diagrams for the beam.

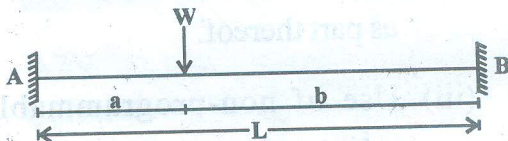(b) Analysis the beam shown in figure 2.1 and find fixed end moments :

Fig. 2.1

(c) Analysis the beam shown in figure (2.2) and draw BM diagram :
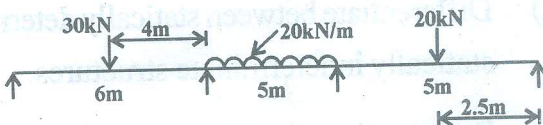

Fig. 2.2

3. Attempt any two parts of the following :   2×5=10

  (a)   Discuss and proof Castiglione's first theorem.

  (b)   Calculate the control deflection and slope at ends of simple supported beam carrying a UDL w/unit length over the whole spen by Castiglione's method.

  (c)   Proof that strein energy stored in flexural member is :

$$U = \int_0^L \frac{M^2 \, dx}{2EI}$$

4. Attempt any two parts of the following :   2×5=10

  (a)   A beam ABC 10 m long fixed at A and B is continuous over joint B and is loaded as shown in figure 4.1, using slope deflection method, compute the end moments end plot bending moment diagram :
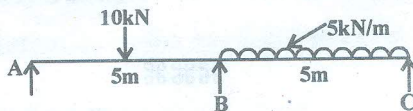

Fig. 4.1

(b) A continuous beam ABC is shown in figure (4.2). Calculate moment induced at the end if support B settle by 30 mm. Draw bending moment diagram and deflected slope of the beam :
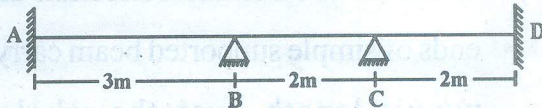

Fig. 4.2

(No load on beam) only support B sink by 30 mm.

(c) Explain the slope deflection methods for analysing of an indeterminate beam.

5. Attempt any two parts of the following :   2×5=10

(a) What are the merit and demerit of determine and underterminate structure?

(b) What do you mean by sinking of support? Correlate the design strength of indeterminate structure with sinking of support.

(c) Discuss different types of supports in structures with three reaction components.

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