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C14-C–402

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DEE - FOURTH SEMESTER EXAMINATION

THEORY OF STRUCTURES

Time : 3 hours] [*Total Marks* : 80

PART—A

4×5=20

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **four** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define *(a)* compression member and *(b)* axial loading.

2. Define a dam and sketch the typical cross-section of the dam.

3. List out the forces acting on a dam section.

4. Define the middle third rule.

5. Define the term ‘retaining wall’.

6. Differentiate between statically determinate and indeterminate structures.

7. What is meant by propped cantilever?

8. State merits and demerits of continuous beams.

9. Classify the frames.

10. Mention any two methods of analysis for frames.

PART—B

15×4=60

Instructions : (1) Answer *any* **four** questions.

(2) Each question carries **fifteen** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Calculate the least radius of gyration for the following :

(a) Square section of 60 mm side

(b) Rectangle of 50 mm wide and 100 mm deep

12. State the Euler's formulae for crippling load and calculate Euler's crippling load for a column 4m long both ends hinged. Flexural rigidity $EI = 3 \times 10^{12}$ Nmm^2.

13. State the formulae for maximum and minimum stresses at the base of a trapezoidal dam with vertical water face and name the terms. Sketch a neat diagram.

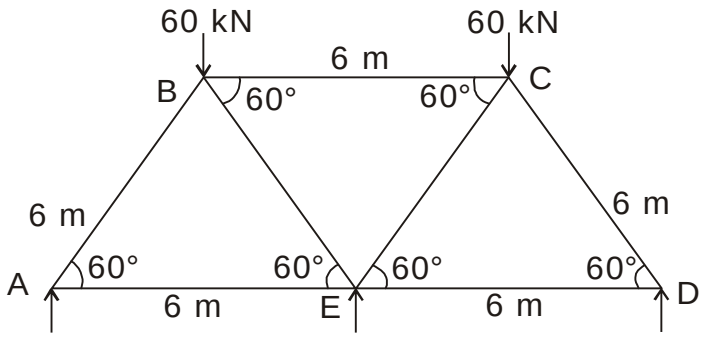
14. List the conditions for the stability of a dam and define minimum base width of a dam.

15. What are the general structural elements that are observed in a building? State their functions.

16. Calculate the prop reaction for a propped cantilever of span 4 m propped at the free end when it is subjected to a central point load of 30 kN.

17. Calculate the fixed end moments for a fixed beam of span 6 m subjected to a udl of 20 kN/m over the entire span.

18. Analyse the frame shown in figure given below by method of joints :



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