



C16-C-402

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**BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER-2018
DCE-FOURTH SEMESTER EXAMINATION**

THEORY OF STRUCTURES

Time : 3 Hours]

[Total Marks: 80

PART-A

3X10=30

Instructions :

1. Answer **All** questions.
2. Each question carries **Three** marks.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define active earth pressure and passive earth pressure.
2. What is MIDDLE THIRD RULE?
3. Write the conditions for most economical trapezoidal, rectangular and triangular cross sections of dams.
- * 4. State the stability conditions of the dam.
5. List any three indeterminate beams.
6. Write the three conditions of static equilibrium.
7. State the merits of fixed beams over simply supported beams.
8. Differentiate between statically determinate and Indeterminate structures.
9. Differentiate between method of joints and method of sections.
10. Differentiate between perfect frame and imperfect frame with one example for each.

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PART-B

10X5=50

Instructions :

1. Answer any **Five** questions.
2. Each question carries **ten** marks.
3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. A trapezoidal masonry dam 12m high retains water on the vertical side to its full height, the dam section has a rear batter of 1 in 4, Determine the top and bottom widths of the dam for no tension at the base.

Specific weight of masonry = 22kN/m^3 and Specific weight of water = 10kN/m^3 .

12. A retaining wall is 3m wide at top and 8m wide at bottom and is 18m high. It is subjected to earth pressure on its vertical back. The weight of masonry is 24kN/m^3 and that of earth is 16kN/m^3 . The angle of repose of earth is 30° and the top of the earth is level up to top of wall. Find the maximum and minimum intensities of pressure at the base and draw the pressure diagram.

13. A fixed beam of span 6m carries two point loads of 25kN and 40kN at 2m from fixed end. If the beam is propped at the free end to the level of fixed end, find the prop reaction and construct Shear force Bending moment diagrams.

14. A horizontal Cantilever 6m long carries a UDL of 5kN/m over a length of 2m from fixed end. If the beam is propped at the free end to the level of fixed end, find the prop reaction and construct shear force and Bending moment diagrams.

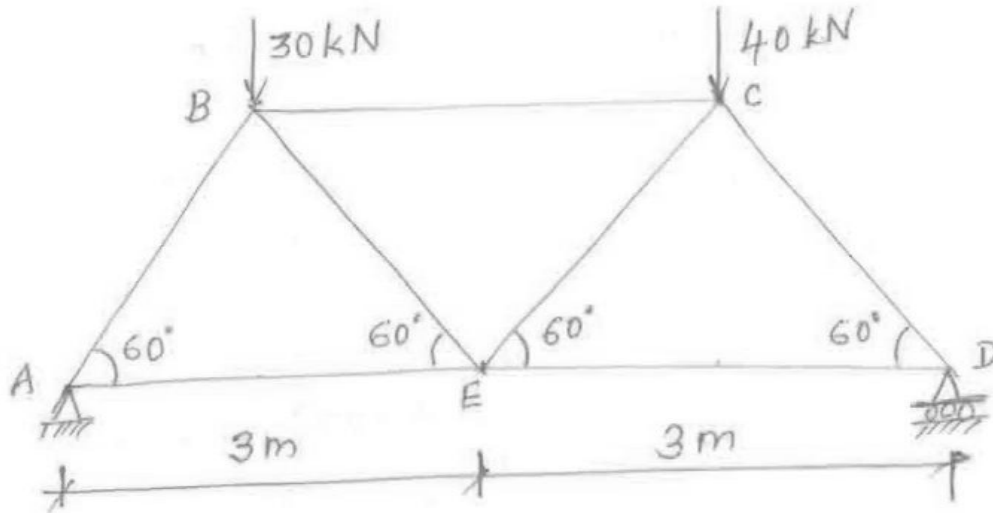
15. A continuous beam ABC is simply supported at A,B&C. spans AB and BC are 6m and 5m respectively. The beam is loaded with point loads of 8kN and 10kN at centre of spans AB and BC respectively. Find the support moments at B and the reactions at A,B & C. Draw Shear force and Bending moment diagrams.

16. A masonry trapezoidal dam is 5m high, 1m wide at its top and 3m wide at its bottom. It retains water on its vertical face. What are the maximum and minimum stresses at the base when the reservoir is full and when the reservoir is empty. Specific weight of masonry is 22kN/m^3 and specific weight of water is 10kN/m^3 .

17. A continuous beam ABC consists of two spans AB and BC of length 5m and 7m. All the three supports are freely supported and are at the same level. Span AB carries a point load of 20kN at mid span and span BC carries a UDL of 15kN/m over entire

span BC. Find the support moments by the method of moment distribution and draw Bending moment diagram. Assume the beam has uniform cross section and made up same material.

18. Find the forces in all the members of a Truss shown below by the method of joints and indicate the nature of forces in each member.



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