

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.**I Choose the correct alternative:**

1. A Cantilever beam carries a total u.d.l of 'W' over its entire length and a force 'W' acts at its free end upwards. The net deflection at the free end is []
A) Zero B) $5WL^3 / 24EI$ Upwards C) $5WL^3 / 24EI$ Downwards D) $WL^3 / 8EI$
2. A cantilever beam of rectangular cross-section carries a point load 'W' at its free end. If the depth of the beam is doubled, and the load halved, the deflection at the free end as compared to its original value will be []
A) 1/2 B) 1/4 C) 1/16 D) 2
3. The ratio of maximum deflections of a beam simply supported at its ends with (i) a central load of 'W' and (ii) a u.d.l over entire length of total 'W' is []
A) 8/5 B) 8/3 C) 3/2 D) 5/8
4. Method of sections is preferred in the analysis of plane frames if forces are required to be determined in []
A) One member only B) Two members only C) In a few members D) In all the members
5. A triangle is the geometric figure for a plane frame structure because it is []
A) Strong B) Rigid C) Flexible D) None
6. A framed structure of a triangular shape is _____ []
A) Perfect B) Imperfect C) Deficient D) Redundant
7. A thin cylindrical shell of diameter (d) length (l) and thickness (t) is subjected to an internal pressure (p). The longitudinal stress in the shell is []
A) pd/t B) $pd/2t$ C) $pd/4t$ D) $pd/6t$
8. In a thin cylindrical shell subjected to an internal pressure p, the ratio of longitudinal stress to the hoop stress is []
A) 1/2 B) 3/4 C) 1 D) 1.5
9. Lamé's theory is associated with []
A) Thin cylindrical shells B) thick cylindrical shells
C) Direct and bending stresses D) none of these
10. A thick cylindrical shell having r_o and r_i as outer and inner radii, is subjected to an internal pressure (p). The minimum tangential stress at the outer surface of the shell is..... []
A) $p(r_o^2 + r_i^2)/(r_o^2 - r_i^2)$ B) $p(r_o^2 - r_i^2)/(r_o^2 + r_i^2)$ C) $2pr_i^2/(r_o^2 - r_i^2)$ D) $(r_o^2 - r_i^2)/(2pr_i^2)$

II Fill in the blanks:

11. The ratio of maximum deflections of a cantilever beam of span 'l' with (i) a load 'w' at free end (ii) a u.d.l over entire length of total 'w' is given by_____
12. A cantilever beam of span 'L' is subjected to a point load of 'w' at mid span. The deflection at free end is _____
13. An over hanging beam of overall length 'L' and uniform flexural rigidity 'EI' is loaded by two concentrated loads of 'P' at the two ends. The beam is supported with overhang 'a' on each side. The vertical deflection at the centre of beam is given by_____
14. Hinged joints are used in frames to ensure _____forces in the members.
15. Area-Moment method is used to determine _____
16. The method of sections is known as the _____
17. A pressure vessel is said to be a thin shell when the ratio of wall thickness of the vessel to its diameter is_____1/10.
18. A thin spherical shell of diameter (d) and thickness (t) is subjected to an internal pressure (p). The stress in the shell material is_____
19. The maximum tangential stress in a thick cylindrical shell is always_____ the internal pressure acting on the shell.
20. In a thick cylindrical shell subjected to an internal pressure (p), the maximum radial stress at the inner surface of the shell is _____

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

II B.Tech. II Sem., II Mid-Term Examinations, April – 2014

MECHANICS OF SOLIDS

Objective Exam

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.**I Choose the correct alternative:**

- Method of sections is preferred in the analysis of plane frames if forces are required to be determined in []
A) One member only B) Two members only C) In a few members D) In all the members
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- A framed structure of a triangular shape is _____ []
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- A thin cylindrical shell of diameter (d) length (l) and thickness (t) is subjected to an internal pressure (p). The longitudinal stress in the shell is []
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A) 1/2 B) 1/4 C) 1/16 D) 2
- The ratio of maximum deflections of a beam simply supported at its ends with (i) a central load of 'W' and (ii) a u.d.l over entire length of total 'W' is []
A) 8/5 B) 8/3 C) 3/2 D) 5/8

II Fill in the blanks:

11. Hinged joints are used in frames to ensure _____ forces in the members.
12. Area-Moment method is used to determine _____
13. The method of sections is known as the _____
14. A pressure vessel is said to be a thin shell when the ratio of wall thickness of the vessel to its diameter is _____ 1/10.
15. A thin spherical shell of diameter (d) and thickness (t) is subjected to an internal pressure (p). The stress in the shell material is _____
16. The maximum tangential stress in a thick cylindrical shell is always _____ the internal pressure acting on the shell.
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