NARSIMHA REDDY ENGINEERING COLLEGE
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Work sheet(Unit wise Objective)

UNIT-V: Influence Lines for Indeterminate Beams

PART A: Multiple Choice Questions (MCQs) with Answers

1. Influence lines are primarily used for analyzing:

A) Dead loads
B) Temperature loads
C) **Moving loads**
D) Wind loads

Answer: C) Moving loads

2. An influence line represents the variation of:

A) Material strength
B) Deflection only
C) **A response quantity due to a moving unit load**
D) Span length

Answer: C

3. Influence lines are commonly used in the design of:

A) Retaining walls
B) Water tanks
C) **Bridges**
D) Chimneys

Answer: C

4. The principle commonly used to draw influence lines for indeterminate structures is:

A) Maxwell's Theorem
B) Clapeyron's Theorem
C) **Muller-Breslau Principle**
D) Castigliano's Theorem

Answer: C

5. An influence line diagram for bending moment is obtained by releasing the:

A) Shear restraint
B) Axial restraint
C) **Moment restraint**
D) Torsional restraint
Answer: C

6. A propped cantilever beam is:

A) Fixed at both ends
B) Simply supported at both ends
C) **Fixed at one end and simply supported at the other**
D) Free at both ends

Answer: C

7. The degree of static indeterminacy of a propped cantilever beam is:

A) 0
B) **1**
C) 2
D) 3

Answer: B

8. Influence line diagrams are drawn for:

A) Density
B) Temperature
C) **Shear force, bending moment and reactions**
D) Unit weight

Answer: C

9. In a continuous beam with constant EI, the influence line depends on:

A) Load magnitude only
B) **Support conditions and span lengths**
C) Material density only
D) Cross-sectional area only

Answer: B

10. When the moments of inertia of spans are different, the influence line becomes:

A) Straight
B) Symmetrical
C) **Unsymmetrical**
D) Circular

Answer: C

11. Muller-Breslau Principle is based on:

A) Stress analysis
B) **Deflected shape of the released structure**
C) Material failure
D) Hooke's law

Answer: B

12. Influence line ordinates represent:

A) Member length
B) Support settlement
C) **Magnitude of the response due to a unit moving load**
D) Elastic modulus

Answer: C

13. Influence lines are useful for structures subjected to:

A) Static concentrated loads only
B) Uniform loads only
C) **Moving wheel loads**
D) Thermal loads only

Answer: C

14. Railway bridges are designed using:

A) Column analogy
B) Slope-deflection method
C) **Influence line diagrams**
D) Moment area method

Answer: C

15. In a propped cantilever, one end is:

A) Hinged
B) Roller only
C) **Fixed**
D) Free

Answer: C

16. Influence line diagrams help determine:

A) Soil properties
B) **Maximum shear and bending moments**
C) Concrete mix
D) Bearing capacity

Answer: B

17. The influence line for shear is obtained by applying:

A) Unit moment
B) Unit rotation
C) **Unit shear**
D) Unit torsion

Answer: C

18. Which of the following is not an application of influence lines?

A) Highway bridges
B) Crane girders
C) Railway bridges
D) **Foundation settlement analysis**

Answer: D

19. Influence lines for indeterminate structures depend on:

A) Span length only
B) Load position only
C) **Structural stiffness**
D) Material density only

Answer: C

20. Influence line diagrams are especially important in the analysis of:

A) Stationary loads
B) **Moving loads**
C) Self-weight only
D) Thermal expansion

Answer: B

PART B:Fill in the Blanks with Answers

1. Influence line diagrams are used to analyze _____ loads. **(Answer: Moving)**
2. An influence line represents the variation of a structural response due to a _____ load. **(Answer: Unit)**
3. Influence lines are widely used in the design of _____. **(Answer: Bridges)**
4. The _____ Principle is used for drawing influence lines of indeterminate structures. **(Answer: Muller-Breslau)**
5. A propped cantilever beam is fixed at one end and _____ supported at the other. **(Answer: Simply)**
6. The degree of static indeterminacy of a propped cantilever beam is _____. **(Answer: One (1))**
7. Influence lines can be drawn for _____ force and bending moment. **(Answer: Shear)**
8. The influence line for bending moment is obtained by releasing the _____ restraint. **(Answer: Moment)**
9. In a continuous beam, the influence line depends on the beam _____. **(Answer: Stiffness)**
10. When the moments of inertia are different, the influence line becomes _____. **(Answer: Unsymmetrical)**
11. The ordinates of an influence line indicate the _____ caused by a unit moving load. **(Answer: Response)**
12. Railway bridges are commonly analyzed using _____ line diagrams. **(Answer: Influence)**
13. Muller-Breslau Principle is based on the _____ shape of the released structure. **(Answer: Deflected)**
14. Influence line diagrams help determine the maximum _____ force. **(Answer: Shear)**
15. Influence lines are useful for _____ loads rather than stationary loads. **(Answer: Moving)**
16. Highway bridges are designed using _____ line diagrams. **(Answer: Influence)**
17. The influence line for shear is obtained by applying a unit _____. **(Answer: Shear)**
18. The influence line for bending moment is obtained by applying a unit _____. **(Answer: Rotation)**
19. Influence lines are important in the analysis of _____ girders. **(Answer: Crane)**
20. Influence line diagrams are used to determine the maximum structural _____ due to moving loads. **(Answer: Response)**