No. of Printed Pages : 4 180755B
Roll No. .....

5th Sem / Branch : Civil Engineering, Constr. Mgmt.
Sub.: Pre-stressed Concrete

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 Prestressed Concrete helps in avoiding
a) Crack formation b) Excessive deflection
c) Diagonal tension d) All of the above

Q.2 Loss of prestress is maximum due to
a) Creep in Concrete
b) Shrinkage of Concrete
c) Friction d) All of the above

Q.3 Total amount of losses in pre tensioning method are approximately
a) 10-18% b) 18-20%
c) 20-25% d) 25-30%

Q.4 In pre stressed concrete, it is recommended to use
a) High strength concrete and low strength to use
b) High strength concrete and high strength to use
c) Low strength concrete only
d) None of these

Q.5 Which of these method is suitable for factory production
a) Pre tensioning method
b) Post tensioning method
c) Both of the above
d) None of the above

Q.6 Minimum grade of concrete used for design of post tensioned concrete structure
a) M20 b) M25
c) M30 d) M40

Q.7 Water cement ratio of concrete used in pre stressing should be about
a) 0.20 b) 0.35
c) 0.45 d) 0.60

Q.8 Which of the following losses occurs only in post tensioned prestress concrete
a) Shrinkage of concrete
b) Creep of concrete
c) Elastic shortening of concrete
d) Loss due to friction

Q.9 Post tensioning method is best suitable for production of
a) Bridges b) Railway sleepers
c) Electric poles d) All of these

Q.10 Total amount of losses in post tensioning method are approximately.
a) 15-18% b) 18-20%
c) 20-25% d) 25-30%

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Define Shrinkage of Concrete.

Q.12 Define friction loss.

Q.13 Single wires used as steel reinforcement are called as _____.

Q.14 The initial application of stresses in a structural member are called_____.

Q.15 Methods in which steel is tensioned before casting of concrete is called_____.

Q.16 The Deflection of a beam with parabolic tendons is _____.

Q.17 The major loss of pre-stress is caused due to _____.

Q.18 Pre tensioning method is cheaper than post tensioning method. (True/False)

Q.19 Mild steel is used as reinforcement in pre stressing. (True/False)

Q.20 Loss of prestress is more in Pre tensioning method (True/False)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain the term prestressed concrete.

Q.22 What are the assumption made in design of prestressed concrete.

Q.23 Explain advantages and disadvantages of prestressed concrete as compare to RCC.

Q.24 Comparison between straight and parabolic profile of tendons.

Q.25 Describe different systems used in prestressing.

Q.26 Explain the various type of losses of prestress.

Q.27 What do you mean by concentric and eccentric tendons?

Q.28 What do you understand by circular pre-stressing?

Q.29 What is Pre-Stressing? Write its advantages in engineering applications.

Q.30 Explain concept for bending stress and shear capacity in simply supported beam?

Q.31 Explain the methods of post tensioning concrete and their suitability.

Q.32 What are the factors influencing the creep and shrinkage of concrete?

Q.33 Explain the terms.
a) Tendon b) Pretensioning c) Proof stress

Q.34 Explain Hoyer system of pre stressing with diagram.

Q.35 A pre tensioned beam of overall size 300mm x 600mm has a pre stress of 1500 kN. The beam carries a udl of 6kN/m over entire span. Compute the fibre stresses at mid span if eccentricity = 150 mm.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 A pretensioned concrete beam of rectangular cross-section 150mm wide and 300mm deep is prestressed by Eight high tensile wires of 8mm diameter located at 100mm from the soffit of the beam. If the wires are tensioned to a stress of 1100 N/mm^2 calculate the percentage loss of stress due to elastic deformation assuming the modules of elasticity of concrete and steel as 31.5 kN/mm^2 and 210 kN/mm^2.

Q.37 Comparison between pre-tensioning and post tensioning method with diagram.

Q.38 Explain the various type of losses of prestress.