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

Q.31 Describe methods of post tensioning concrete and their suitability.

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

Q.33 Define the following terms.

i) Tendon
ii) Pretensioning
iii) Proof stress

Q.34 Write a short note on Hoyer system of pre-stressing.

Q.35 A pre tensioned beam of overall size '400mm x 600 mm has a pre stress of 1200 kN. The beam carries a udl of 4kN/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 250 mm wide and 500 mm deep is prestressed by Eight high tensile wires of 8 mm diameter located at 100 mm from the soffit of the beam. If the wires are tensioned to a stress of 1200 N/mm^2 calculate the percentage loss of stress due to elastic deformation assuming the modules of elasticity of concrete and steel as 35.5kN/mm^2 and 250 kN/mm^2

Q.37 Explain various types of material used in prestressing.

Q.38 Explain basic pilling methods for various types of Piles.

Roll No. .....

5th Sem / Civil, Constr. Mgmt.

Subject:- Pre-stressed Concrete

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 For Prestressed Concrete, which code is to be used?

a) IS 456: 2000 b) IS 1343 : 1980
c) IS 10262 : 1982 d) IS 3370 : 1965

Q.2 In prestressed concrete structures the prestressing of the concrete is done to compensate the stresses caused by

a) Dead load b) working loads
c) Live loads d) dynamic loads

Q.3 Prestressing can be efficiently used for the following members

a) Columns and struts b) ties
c) Beams and pipes d) wall panels

Q.4 The net effect due to prestressing is prestressed concrete beams is usually

a) Tension
b) Compression
c) bending and tension
d) bending and compression

Q.5 Minimum grade of concrete used for design of pre tensioned concrete structure.

a) M20 b) M25
c) M30 d) M40

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

Q.7 The purpose of reinforcement in prestressed concrete.
a) to provide adequate bond stress
b) to resist tensile stress
c) to impart initial compressive stress in concrete
d) All the above

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 The bursting stresses in prestressed concrete members are developed at
a) maximum bending moment zone
b) maximum shear zone
c) anchorage zone
d) bond zone

Q.10 According to IS383 manufactured aggregates shall not be permitted for use in
a) Plain cement concrete
b) Reinforced cement concrete
c) Prestressed concrete
d) None of these

SECTION-B

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

Q.11 Define Creep in Concrete.

Q.12 Define Anchorage.

Q.13 The shear force on a prestressed concrete element is proportional to_____.

Q.14 Strain in concrete at zero stress is called_____.

Q.15 In axially prestressed members, the concrete is under_____.

Q.16 Deflection of a beam with parabolic tendons is_____.

Q.17 Pre-stressing steel is generally used in the form of individual wires of high tensile strength called _____.

Q.18 Post tensioning method can be employed for either precast or cast-in-situ member. (True./False)

Q.19 Pre-stressing is uneconomical for members of long span. (True/False)

Q.20 Loss due to Relaxation of strands doesn't happen in Prestressed concrete. (True/False)

SECTION-C

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

Q.21 What is the need of high strength steel and concrete in pre-stress members?

Q.22 What is the basic concept of prestressed concrete?

Q.23 Enlist any five advantages of prestressed concrete as compare to RCC.

Q.24 Write any five difference between straight and parabolic profile of tendons.

Q.25 Explain the concept of load balancing.

Q.26 Explain stress strain behavior of high strength steel.

Q.27 Define concentric and eccentric tendons?

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

Q.29 Define Pre-stressing with their five advantages.