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Question Paper Code: 52602

M.E. DEGREE EXAMINATION, MAY 2017

Elective

Structural Engineering

15PSE513 – DESIGN OF INDUSTRIAL STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. IS Code for industrial ventilation.

(a) IS : 3103 - 1975

(b) IS : 1646-1961

(c) IS : 3103 - 1977

(d) IS : 1646-1962

2. The Machine foundations are designed considering

(a) Dynamic Forces

(b) Kinematic Forces

(c) Static forces

(d) Both (b) and (c)

3. Which of the following is not a power plant organization in India.

(a) NSCL

(b) NHPC

(c) NPCL

(d) NTPC

4. The type of cooling towers with maximum heat transfer from air to water is

(a) Natural Draft

(b) Mechanical Draft

(c) Electrical Draft

(d) Both (a) and (b)

5. The foundations are designed considering

(a) shocks and vibrations

(b) vibrations

(c) shocks

(d) neither a (or) b

PART B - (5 x 3 = 15 Marks)

6. Define Ventilation.

7. What are the assumptions that are made in corbels according to Indian practice?

8. Differentiate between free vibration and forced vibration.
9. What are the transmission line towers?
10. Where are the cooling towers widely used?

PART C - (5 x 16 = 80 Marks)

11. (a) Discuss briefly how the planning for layout requirement is done for an industrial building. Supplement your answer with sketches. (16)

Or

- (b) State the important guidelines from factories act with reference to planning of industrial buildings. (16)
12. (a) Design a RCC corbel to carry a factored load of 500 kN at a distance 200 mm from the face of a 300 x 300 RCC Column. Use M35 concrete and Fe 415 steel. (16)

Or

- (b) An industrial building is to be provided with a hand operated 50 kN crane facility. The details of the building and the gantry girders are: Longitudinal spacing of columns = 6m, Centre to centre distance of gantry girders = 12m, Wheel spacing = 3m, Edge distance = 1m, Weight of crane girder = 40 kN, Weight of trolley car = 10 kN. Design the gantry girder for bending and shear. (16)
13. (a) Discuss the factors to be borne in mind while designing nuclear containment structures. (16)

Or

- (b) Explain about the construction methodologies and related aspects of power plant structures. (16)
14. (a) Under what circumstances testing of towers is necessary. (16)

Or

- (b) Explain the detail the testing of power transmission line towers. (16)
15. (a) Explain in detail different types of machine foundation. (16)

Or

- (b) How the foundation for towers be designed for various loads acting on it. (16)