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**Question Paper Code: 42264**

M.E. DEGREE EXAMINATION, MAY 2015.

Second Semester

STRUCTURAL ENGINEERING

14PSE204 – EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

(IS codes are permitted)

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. A structure consisting of a number of members, connected to each other to support external loads, without going any geometrical distortion is known as  
(a) Beam                      (b) Truss                      (c) Lintel                      (d) Cable
2. Rate of change of angular velocity is called  
(a) Acceleration                      (b) Angular acceleration  
(c) Kinetic energy                      (d) Centrifugal force
3. Which of the following is most efficient member to increase stiffness to resist lateral force?  
(a) Column                      (b) Beam                      (c) In filled brick wall                      (d) Shear wall
4. The property of the member which allows it to deform continuously at slow rate without any further increase in stress is known as  
(a) Fatigue                      (b) Creep                      (c) Plasticity                      (d) Resilience
5. Which shape of building in plan more efficient to resist seismic force?  
(a) Rectangle in plan                      (b) Circular in plan  
(c) Triangle in plan                      (d) I shape in plan

PART - B (5 x 3 = 15 Marks)

6. Differentiate magnitude and intensity of an earthquake.
7. What are the objectives of earthquake resistant design of structures?
8. When do you perform the dynamic analysis?
9. Sketch a beam column junction of a reinforced cement concrete frames as per ductile detailing.
10. Differentiate between soft storey and weak storey.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Explain the working principle of seismograph with a neat sketch. (8)
- (ii) Explain in detail about the seismic zoning map of India. (8)

Or

- (b) (i) How characteristics is the strong Earth quake motion. (8)
  - (ii) Explain about Microzonation. (8)
12. (a) How do you evaluate earth quake forces as per codal provisions? (16)

Or

- (b) (i) Enumerate the salient features of response spectrum method. (8)
  - (ii) Explain about the effects of various irregularities in the seismic performance of the structures. (8)
13. (a) What are all the design consideration and guidelines to be followed while designing masonry structures to resist earthquake? (16)

Or

- (b) Explain about the types of building which are efficient. (16)

14. (a) Design a beam as per IS code for the following data

Span of the span = 6m

Moment due to seismic force = 12kN-m

Shear force = 25kN

Use M20 grade of concrete and Fe415 steel (16)

Or

(b) Explain the step by step procedure to determine the lateral forces and design with illustrative example of a RC building. (16)

15. (a) What are all the basic concept of seismic base isolation? (16)

Or

(b) Write seismic effects of vibration control techniques. (16)

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