

23CE503: STRUCTURAL ENGINEERING – I (RCC)
DESIGN OF BEAMS USING LIMIT STATE METHOD
UNIT I

Part A: Objective Questions (MCQs)

1. The characteristic compressive strength of concrete is defined as:

- A) Mean strength
- B) Minimum strength
- C) Strength below which not more than 5% results fall
- D) Average cube strength

Answer: C

2. Partial safety factor for concrete in limit state design is:

- A) 1.0
- B) 1.15
- C) 1.5
- D) 1.25

Answer: C

3. Working stress method is based on:

- A) Ultimate loads
- B) Elastic theory
- C) Plastic theory
- D) Limit state concept

Answer: B

4. In RCC, steel is used because:

- A) Cheap
- B) Strong in compression
- C) Strong in tension
- D) Corrosion resistant

Answer: C

5. Dead load includes:

- A) Wind load
- B) Earthquake load
- C) Self weight of structure
- D) Live load

Answer: C

6. Modular ratio is defined as:

- A) E_s/E_c

- B) E_c/E_s
 - C) f_{ck}/f_y
 - D) f_y/f_{ck}
- Answer: A

7. Limit state of serviceability includes:

- A) Collapse
- B) Cracking
- C) Failure
- D) Yielding

Answer: B

8. Stress block parameters are defined in:

- A) IS 800
- B) IS 456
- C) IS 875
- D) IS 1893

Answer: B

9. Ultimate strain in concrete in bending is:

- A) 0.002
- B) 0.0035
- C) 0.001
- D) 0.004

Answer: B

10. Load factor for DL+LL is:

- A) 1.0
- B) 1.5
- C) 2.0
- D) 1.2

Answer: B

Part B: Fill in the Blanks

1. RCC stands for _____. Answer: Reinforced Cement Concrete
2. IS code for RCC design is _____. Answer: IS 456
3. Concrete is weak in _____. Answer: Tension
4. Steel is strong in _____. Answer: Tension
5. Dead load is _____ load. Answer: Permanent
6. Limit state method ensures _____ and serviceability. Answer: Safety
7. Modular ratio = _____. Answer: E_s/E_c

8. Partial safety factor for steel is _____. Answer: 1.15

9. Characteristic strength is denoted by _____. Answer: f_{ck}

10. Yield strength is denoted by _____. Answer: f_y