PI18-112(T1)

OCT. 2018 / IN - SEM (T1) **F. Y. M. TECH. (CIVIL-Structures) (SEMESTER - I)**
COURSE NAME: Critical Review of Design of Concrete Structures **COURSE CODE:** CVPB11182
Time : [1 Hour] **(PATTERN 2018)** [Max. Marks : 20]

MARKING GUIDANCE & SOLUTIONS

Ans.1) [10 marks]
Bulleted description of any hands-on cases shall include, but not limited to: Preface/Title & Key-words [1], Objectives [1], Discussions [3], Interpretations [2], Flow-Chart/Sketches [2], and Conclusions [1].

Ans. 2) [10 marks]
Bulleted description may include, but not limited to the following points; Basic Loads on RCC building i.e. Gravity loads (DL/LL/SLL/CL); Wind Loads, Snow/Ice/Rain/Water Loads; Earthquake Loads, Impact, Moving loads etc. [5]. Own Self-Pressure is about 0.01MPa i.e. 10 kN/sq.m. | a) 5 persons; b) 6 persons; c) 8 persons. [2] Comment on each case [3]

Ans. 3) [10 marks]
Bulleted description may include, but not limited to the following points on following figures and report observations, and interpretations on any two figures. Present your thoughts in bulleted description on the following points; Key-words & Key Observations [1,1], Thoughts & Discussions [2,2], Interpretations [1,1], and Conclusions [1,1].

Ans. 4) [10 marks]
a) Explain with suitable sketch/s the importance of Neutral-Axis: (Define [1], Reference Points – Composite action, Concrete-to-Rebar Bond, Compressive & Tensile Stresses, and Crack propagation) [3], Sketches [2]
b) Service State checks the STIFFNESS/CRACK RESISTANCE; while Ultimate State checks for the STRENGTH CAPACITIES of structural element. [2]. Examples [1] + Explanation [1].

QUESTION BANK:

Explain with sketch the various loads on a RCC building. What are Transient Loads? Give at least two examples of Transient Loads? [4]

Explain in short with sketches – Stability of an object.

How rate of strain in loads affect the response of the material resisting the imparted loads?

Study the following clause and present your thoughts in bulleted description including, but not limited to the following points; Preface/Title & Key-words [1], Thoughts & Discussions [3], Interpretations [2], Flow-Chart/Sketches [2], and Conclusions [2]. [10]

Inspect the following figure and report your observations, and interpretations. Present your thoughts in bulleted description including, but not limited to the following points; Key-words & Key Observations [3], Thoughts & Discussions [3], Interpretations [2], and Conclusions [2]. [10]

Study the information presented below. Discuss your thoughts with the following points; Title & Key-words [1], Key Observations [3], Thoughts & Discussions [4], Interpretations [2], and Conclusions [2].

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Unit-C.O.-Question Mapping

Q. No	UNIT	Total Marks	Degree of Difficulty	CO- Que. Mapping	Cognitive Level
1	1	10	Medium	1/2/4	Recall, Analysis, Critical Thinking, Describe, Sketch, Conclude, Recommend, Reporting, Hands-on Training, Judgment.
2	1	10	Medium	1 & 2	Adv. Knowledge, Apply, Calculate, Rationalize, Review, Present, Interpretation, Appraise, Understanding, Describe, Judge
3	2	10	Difficult	1, 2, & 5	Observe, Identify, Critical Thinking, Describe, Review, Adv. Knowledge, Comprehend, Apply, Rationalize, Interpretation, Decide, Conclude, Reporting, Deduce, Judgment, Visualize.
4	2	10	Easy	1 & 2	Core Knowledge, Recall, Apply, Critical Thinking, Rationalize, Understanding, Compare, Examine, Justify, Compose, Visualize, Describe, Illustrate

<u>**C.O.s:**</u> Students will be able to … …

1) Demonstrate the performance requirements for the design of the RC elements considered by IS code
2) Appraise the flexure design using working stress method
3) Establish and demonstrate the various performance states on M-phi curve (serviceability, cracking, yielding, ultimate)
4) Demonstrate the limit state of serviceability design for flexure member
5) Demonstrate the limit state method of shear design for flexure member
6) Establish the P-M curve for the column under uniaxial load case

Course Objectives:
✓ To appraise the basics of reinforced concrete design .
✓ To comprehend and apply the knowledge of composite behavior
✓ To solve design problem

Unit I : Preliminary considerations
Stress strain curve (characteristics and design) for concrete, steel and composite (RGC elements). Performance requirements – compressive strength, tensile strength, flexural strength, modulus of rupture, modulus of elasticity (initial, secant and tangent), Ductility and durability aspects. Various failure modes (axial, flexure, shear, torsion and combinations), Loads, load combinations for various limit states.
Hands On Demonstrations, Drawing Sketches, Interactions with Experts on specific course content

Unit II : Working Stress Method
Introduction and assumptions, Transformed section philosophy, Plot the working stresses in steel and concrete and marked WSM limits specified by IS 456, Design procedure for flexure (singly and doubly)
Hands On Discussion based on technical video/documentaries for understanding the concept of modular ratio, illustrative examples

Bloom's → LOTS/HOTS Taxonomy Considered:
Knowledge, Adv. Knowledge, Analysis, Synthesis, Comprehension, Applying, Critical Thinking, Observation, Interpretation, Appraise, Understanding, Describe, Judge, Evaluate, Examine, Core knowledge, Compare, Recalling, Critique, Rationalize, Relate, Decide, Review, Summarize, Illustrate, Sketch, Solve, Deduce, Interpret, Recommend, Measure, Assess, Rate, Compose, Inspect, Visualize, Imagine, Present