Total No. of Questions – [09] Total No. of Printed Pages: 3

G.R. No.	

P118 – 112 (ESE)

DECEMBER 2018 / END-SEM

F. Y. M. TECH. (CIVIL-Structures) (SEMESTER - I)

COURSE NAME: Critical Review of Design of Concrete Structures **CODE:** CVPB11182

(PATTERN 2018)

Time: [**3 Hour**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, (Q.4 OR Q.5), (Q.6 OR Q.7), (Q.8 OR Q.9)**
2) **Figures in [ ] to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Explain how combinations of different failure modes are considered in design of RC elements [3]

OR

b) Discuss the performance requirements in RC members related to –
i) Ductility, & ii) Durability [3]

Q.2) a) Explain in brief – i) Singly, & ii) Doubly – RC beam. [3]

OR

b) Inspect the paragraph below and report your thoughts in bulleted description on the following points; Key-words & Key Observations [1], Thoughts & Discussions [1], and Conclusions [1]. [3]

> This was the traditional method of design not only for reinforced concrete, but also for structural steel and timber design. The conceptual basis of WSM is simple. The method basically assumes that the structural material behaves in a *linear elastic* manner, and that adequate safety can be ensured by suitably restricting the stresses in the material induced by the expected 'working loads' (service loads) on the structure. As the specified *permissible* ('allowable') stresses are kept well below the material strength (i.e., in the initial phase of the stress-strain curve), the assumption of linear elastic behaviour is considered justifiable. The ratio of the strength of the material to the permissible stress is often referred to as the *factor of safety*.

Q.3) a) State the three principles governing RC-composite structural design. [2]

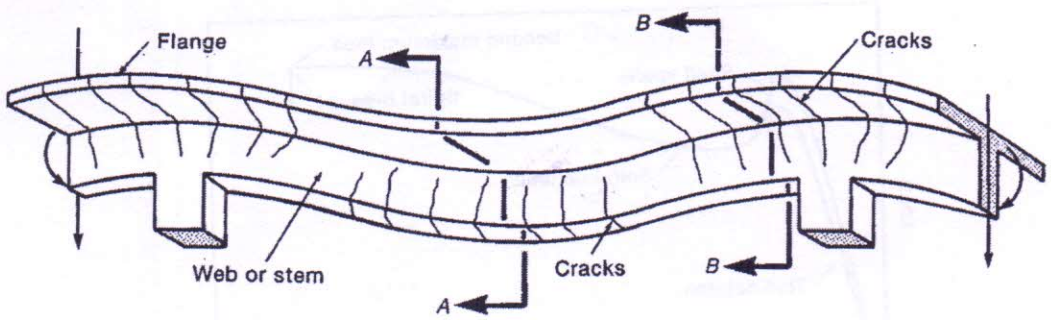
OR

b) List out the various performance states in M-Phi curve for a RC beam? [2]

Q.4) Explain *M-Phi Curve* in detail, & with figures. State the importance and use of M-Phi Curve. [14]

OR

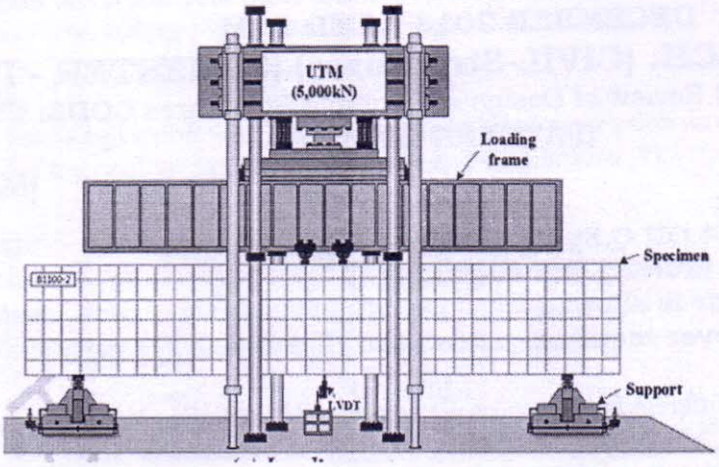
Q.5) Discuss the benefits and disadvantages of cracks in RC members [4]. Inspect the figure below and report your observations in bulleted description on the following points; Key-words [1] & Key Observations [3], Discussions [4], and Conclusions [2]. [14]

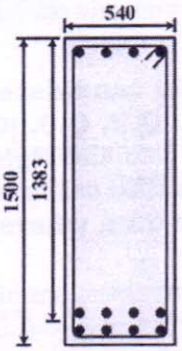


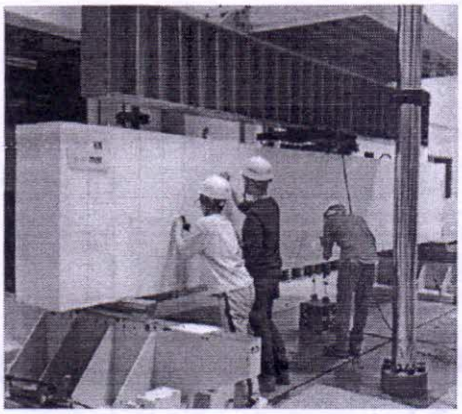
Q.6) What is shear stress? How one can enhance the shear capacity of RC element? Why shear failures are critical than flexural failures? Explain with sketches. [14]

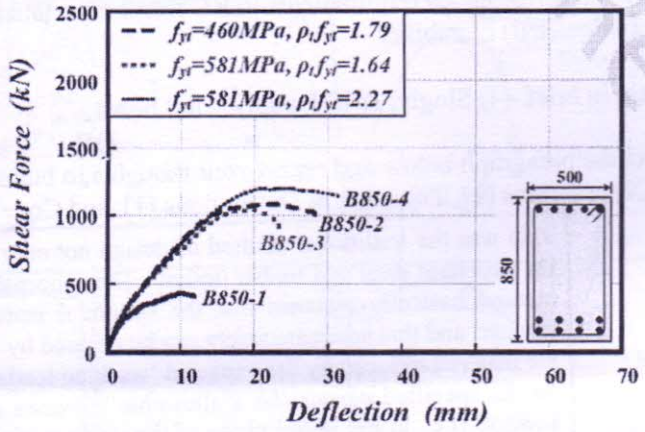
OR

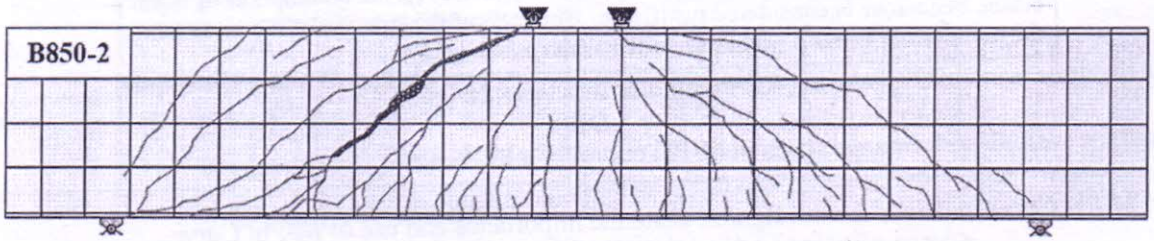
Q.7) Inspect the figure below and report your observations in bulleted description on the following points; Key-words [1] & Key Observations [4], Discussions [7], and Conclusions [2]. [14]











Q.8) Observe the figures below and report your observations in bulleted description on the following points; Key-words [1] & Key Observations [4], Discussions [7], and Conclusions [2]. [14]

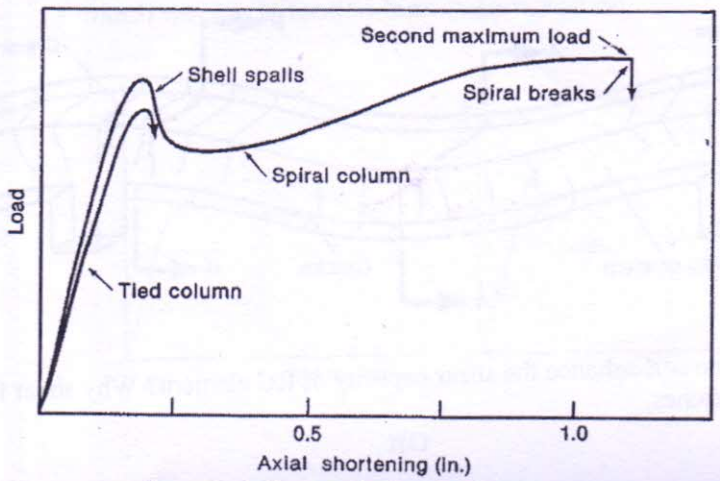


Fig. – Axially Loaded RC Column

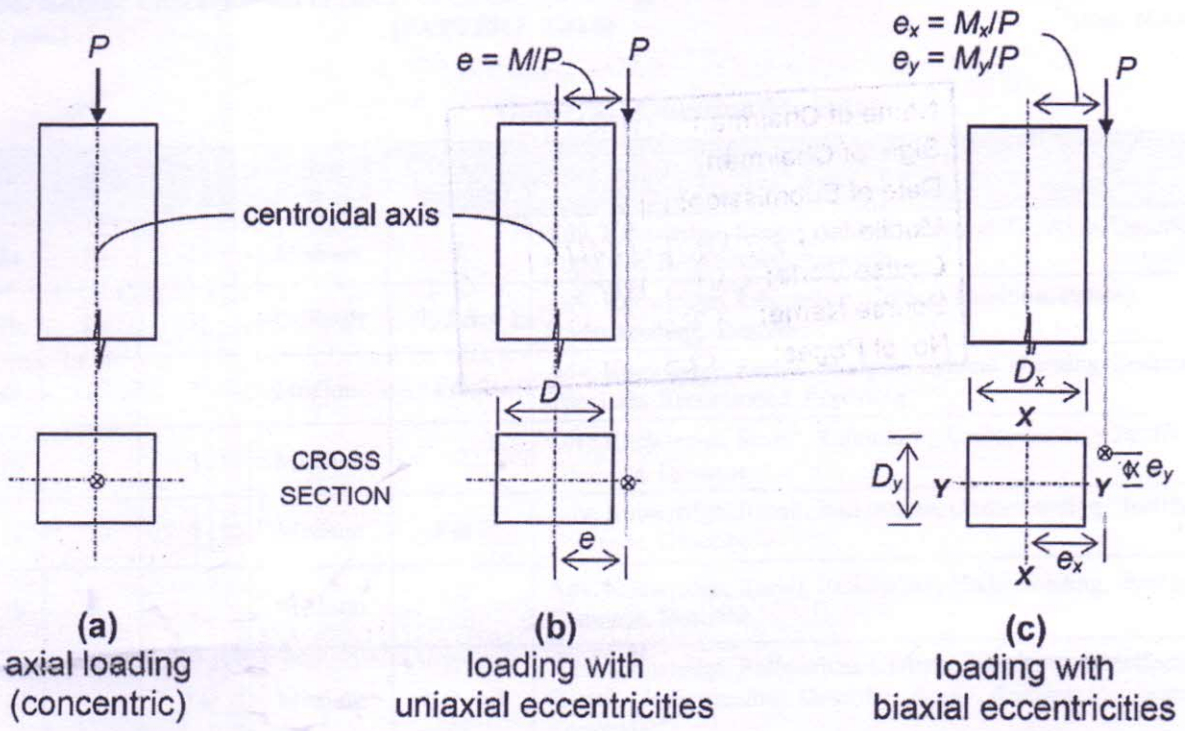


Fig. – Loading Conditions in RC Column

OR

Q.9) Explain with sketches the various types of "Ductility" in RC elements such as beams and columns. Present your answer in bulleted description including, but not limited to the following points; Definition [2], Types [3], Importance [1], Discussions [4], Sketches [2], and Conclusions [2]. [14]

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