Assignment/Quiz
Subject: PRC Design-I (CE-325)

Note: Attempt all questions. Answer of the given questions must be uploaded within 24 hours after uploading of assignment/quiz. No answer/solution will be considered after given time period.

Q No 1: CLO-2 (C-6, PLO-3) (10)

A rectangular beam that must carry a service live load of 2.47 kips/ft. and a calculated dead load of 1.05 kips/ft. (without self-weight) on an 18-ft. simple span is limited to 10 inches width and 20 inches total depth for architectural reasons. If f_y = 60000 psi and f'_c = 4000 psi. What steel area must be provided? Draw sketch of your final design.

Q No 2: CLO-1 (C-2, PLO-1) (02+02+02+02+02)

a) Briefly describe Bond stress and Development length.
b) In which conditions doubly reinforced beam can be used?
c) Differentiate between T-beam analysis and rectangular beam analysis.
d) Write short note on the effect of strength reduction factor on flexural strength.
e) Briefly describe design methods, which one of them can be best used for design of different structural members and why?

Q No 3: CLO-2 (C-6, PLO-3) (10)

A concrete floor system consists of parallel T beams spaced 10 ft. on centers and spanning 32 ft. between supports. The 6-inch-thick slab is cast monolithically with T beam webs having width b_w = 14-inch and total depth measured from the top of the slab, of h = 28 inch. The effective depth will be taken 3-inch less than the total depth. In addition to its own weight, each beam must carry a superimposed D.L of 50 psf and service live load of 225 psf. Material strengths are f_y= 60,000 psi and f'_c = 4000 psi. Determine the required tensile steel area and select the reinforcement needed for a typical member. Draw sketch of your final design.

"Good Luck"