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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- October -2019

B.Tech V Semester

COURSE CODE: 10B11CE512

MAX. MARKS: 25

COURSE NAME: Design of Concrete Structures

COURSE CREDITS: 04

MAX. TIME: 1Hour 30 Minutes

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. All questions carry equal marks. IS:456:2000 is permitted.

1. A reinforced concrete beam is 200 mm x 450 mm effective depth is reinforced with 6-20 mm Fe 415 bars at mid span and 3-20 mm bars are curtailed at support section. Determine the spacing of 8 mm two legged stirrups at support section for a factored shear force of 150 kN. Assume M20 mix and tor steel stirrups.
2. What do you understand by development length. Derive an expression to find the development length of bars in tension. Also write short notes on splicing of bars, curtailment of bars and bond.
3. An reinforced concrete beam 250 mm x 500 mm has a clear span of 5.5 m. The beam has 2-20 mm \varnothing bars going into the support. Factored shear force is 140 kN. Check for development length if Fe 415 and M 20 grade of concrete is used.
4. Design a reinforced concrete slab for a room measuring 5 m x 6 m. The slab is simply supported on all the four edges, with corners held down and carries a superimposed load of 3000 N/m², inclusive of floor finishes. Use M 20 and Fe 415 steel and use IS code method.
5. Design a simply supported slab on masonry wall with clear span of 4m and loaded with a line load of 3000 N/m². Assume a modification factor of 1.4 and assume permissible shear stress of 0.3 N/mm². Use M20 and Fe 415 steel.