

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- Oct 2018

B.Tech V Semester

COURSE CODE: 10B11CE512

MAX. MARKS:25

COURSE NAME: Design of Concrete Structures

COURSE CREDITS: 3

MAX. TIME: One Hour Thirty Minutes

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**Note:** All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. All questions carry equal marks.

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1. An R.C.C. beam 250 mm x 400 mm effective is carrying a uniformly distributed load of 16 kN/m. The beam is reinforced with 4 bars of 22 mm diameter. The clear span of the beam is 4 m. Design the shear reinforcement. Use M20 concrete and plain mild steel bars.
2. A simply supported beam 300 mm x 600 mm (effective) is reinforced with 5 bars of 25 mm diameter. It carries a uniformly distributed load of 80 kN/m (including its own weight) over an effective span of 6 m. Out of the 5 main bars, two bars can be bent up safely near the supports. Design the shear reinforcement of the beam. Use M20 grade of concrete and Fe 415.
3. A simply supported singly reinforced rectangular beam 400 mm deep (effective) carries a uniformly distributed load of 40 kN/m over a clear span of 2.5 m. It is reinforced with 9-25 diameter bars, out of which 4 bars are bent up near the support of 300 mm thick brick wall. Check for development length at the support and provide suitable anchorage length. Use M15 grade concrete.
4. Design a simply supported slab supported on masonry wall with clear span of 4 m, line load of 3000 N/m<sup>2</sup>. Assume modification factor of 1.4 and permissible nominal shear stress of 0.3 N/mm<sup>2</sup>.
5. Design a reinforced concrete slab for a room of clear dimensions 4 m x 5 m. The slab is supported on walls of width 300 mm. The slab is carrying a live load of 4kN/m<sup>2</sup> and floor finish 1kN/m<sup>2</sup>. Use M20 concrete and Fe 415 steel. The corners of the slab are held down.