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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 | | | | | |
| **Course Code: CE301** | | | | | |
| **Course Name: DESIGN OF CONCRETE STRUCTURES I** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
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| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | Depth of NA  Xumax  Moment of resistance  Self weight  Central concentrated load | | | (2)  (1)  (3)  (1 )  (2) |
|  | b) | Explanation with figures 3x2 | | | (6 ) |
| 2 | a) | Definitions and explanation 2.5x2 | | | (5) |
|  | b) | pt, Permissible shear strength from table and Vuc  Asv, Vus  Shear strength contribution by bent up bar  shear strength | | | (3)  (3)  (3)  (1) |
| 3 | a) | Selfweight, total load, factored load,Shear Force  Nominal shear stress  pt, permissible shear strength  Vus, sv  Check for max spacing of stirrups  Detailing | | | (3)  (1)  (2)  (2)  (1)  (1) |
|  | b) | Explanation 2.5x2 | | | (5) |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | |
| 4 |  | Dimensions  Load/m , SF, BM  Mu limit  Area of steel  Check for min and max steel  Shear Design- Nominal shear stress  Pt, Permissible shear stress  Vus, sv  Max spacing of stirrups  Check for deflection  Detailing | | | (1)  (2)  (1)  (2)  (1)  (1)  (1)  (1)  (1)  (2)  (2) |
| 5 |  | Dimensions, Depth of slab  Design load, Bending Moment, Shear Force  Mu lim  Ast, spacing  Min steel/Distribution steel  Check for spacing  Check for deflection  Check for shear  Detailing | | | (2)  (2)  (1)  (2)  (1)  (2)  (2)  (1)  (2) |
| 6 | a) | Equivalent shear  Total shear force  Nominal shear stress  Pt, permissible shear stress  Vus and spacing of stirrups  Min shear reinforcement  Max spacing  Detailing | | | (2)  (1)  (1)  (1)  (1)  (1)  (1)  (1) |
|  | b) | Detailing 2x3 | | | (6) |
| **PART C** | | | | | |
| ***Answer any two full questions, each carries20 marks.*** | | | | | |
| 7 |  | Dimensions and Design load  Moment coefficients, Design moments and Ast-shorter span  Moment coefficients, Design moments and Ast-longer span  Min steel  Edge strip  Torsion reinforcement  Check for shear  Check for deflection  Detailing | | | ( 2)  (4)  (4)  (1)  (2)  (2)  (1)  (2)  (2) |
| 8 |  | Factored load,Dimensions, check for short column  Percentage steel&Asc  Check for min/max steel  Design of Helical reinforcement  Detailing | | | (5 )  (4)  (2)  (6)  (3) |
| 9 | a) | Explanation 2 x 2 | | | (4) |
|  | b) | Depth of neutral axis  Moment of Inertia of transformed section  Stress at the level of given point  Strain values  Crack width | | | (2)  (2)  (2)  (3)  (3) |
|  | c) | Explanation | | | (4) |
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