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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 NAXumaxMoment of resistanceSelf weightCentral 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 VucAsv, VusShear strength contribution by bent up barshear strength  | (3)(3)(3)(1) |
| 3 | a) | Selfweight, total load, factored load,Shear ForceNominal shear stresspt, permissible shear strengthVus, svCheck for max spacing of stirrupsDetailing | (3)(1)(2)(2)(1)(1) |
|  | b) | Explanation 2.5x2 | (5) |
| **PART B**  |
| ***Answer any two full questions, each carries 15 marks.*** |
| 4 |  | DimensionsLoad/m , SF, BMMu limitArea of steelCheck for min and max steelShear Design- Nominal shear stressPt, Permissible shear stressVus, svMax spacing of stirrupsCheck for deflectionDetailing | (1)(2)(1)(2)(1)(1)(1)(1)(1)(2)(2) |
| 5 |  | Dimensions, Depth of slabDesign load, Bending Moment, Shear ForceMu limAst, spacingMin steel/Distribution steelCheck for spacingCheck for deflectionCheck for shearDetailing | (2)(2)(1)(2)(1)(2)(2)(1)(2) |
| 6 | a) | Equivalent shearTotal shear forceNominal shear stressPt, permissible shear stressVus and spacing of stirrupsMin shear reinforcementMax spacingDetailing | (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 loadMoment coefficients, Design moments and Ast-shorter spanMoment coefficients, Design moments and Ast-longer spanMin steelEdge stripTorsion reinforcementCheck for shearCheck for deflectionDetailing | ( 2)(4)(4)(1)(2)(2)(1)(2)(2) |
| 8 |  | Factored load,Dimensions, check for short columnPercentage steel&AscCheck for min/max steelDesign of Helical reinforcementDetailing | (5 )(4)(2)(6)(3) |
| 9 | a) | Explanation 2 x 2 | (4) |
|  | b) | Depth of neutral axisMoment of Inertia of transformed sectionStress at the level of given pointStrain valuesCrack width | (2)(2)(2)(3)(3) |
|  | c) | Explanation  | (4) |
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