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| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  SIXTH SEMESTER B. TECH DEGREE EXAMINATION, MAY/JUNE2019 | | | | | | | | | | |
| **Course Code: ME302** | | | | | | | | | | |
| **Course Name: Heat and Mass Transfer** | | | | | | | | | | |
| Max. Marks: 100 | | | | | |  | | Duration: 3 Hours | | |
| **PART A** | | | | | | | | | | |
|  |  | | ***Answer any three full questions, each carries 10marks.*** | | | | | | | Marks |
| 1 | a) | | Mechanisms of Heat Transfer -2 Marks, Comparison – 3 Marks | | | | | | | (5) |
|  | b) | | Calculation of the rate of heat flow– 5 Marks | | | | | | | (5) |
| 2 |  | | Sketch – 2 Marks Derivation – 8 Marks | | | | | | | (10) |
| 3 | a) | | velocity boundary layer – 2.5 Marks; thermal boundary layer – 2.5 Marks | | | | | | | (5) |
|  | b) | | Significance Nusselt number and Prandtl number –2.5 Marks each | | | | | | | (5) |
| 4 |  | | Calculation –2 Marks each | | | | | | | (10) |
| **PART B** | | | | | | | | | | |
| ***Answer any three full questions, each carries 10 marks.*** | | | | | | | | | | |
| 5 |  | | rate of heat loss – 5 Marks, fin efficiency – 5Marks | | | | | | | (10) |
| 6 |  | | Sketch – 2 Marks Derivation – 8 Marks | | | | | | | (10) |
| 7 |  | | Sketch – 2 Marks Derivation – 8 Marks | | | | | | | (10) |
| 8 |  | | heat flow calculation, effectiveness and the heat transfer area – 5 Marks each | | | | | | | (10) |
| **PART C** | | | | | | | | | | |
| ***Answer any four full questions, each carries 10 marks.*** | | | | | | | | | | |
| 9 | a) | | Irradiation and Radiosity –1.5 Marks each | | | | | | | (3) |
|  | b) | | Statement –1.5 Marks; Explanation–1.5 Marks | | | | | | | (3) |
|  | c) | | Comparison – 2 Marks each | | | | | | | (4) |
| 10 |  | | Sketch – 2 Marks Derivation – 8 Marks | | | | | | | (10) |
| 11 |  | | Calculation of the heat exchange by radiation – 10 Marks | | | | | | | (10) |
| 12 | a) | | Statement – 2 Marks; Explanation– 2 Marks | | | | | | | (4) |
|  | b) | | Any four – 6 Marks | | | | | | | (6) |
| 13 | a) | | Explanation on Modes– 3 Marks Examples– 3 Marks | | | | | | | (6) |
|  | b) | | Explanation – 2 Marks Examples– 2 Marks | | | | | | | (4) |
| 14 | a) | | i) Definition and Explanation – 2 Marksii) Definition and Explanation – 2 Marks | | | | | | | (4) |
|  | b) | | mass transfer co-efficient calculation– 6 Marks | | | | | | | (6) |
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