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| Reg No.:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **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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