Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **18ME3032** | **Duration :** | **3hrs** |
| **Sub. Name :** | **COMPUTATIONAL FLUID DYNAMICS** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain the mass balance in fluid element with neat sketch. | CO1 | 4 |
| b. | Derive the steady state three dimensional mass conservation equation for a compressible fluid. | CO1 | 12 |
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| 2. |  | Classify the Partial differential equations and give the practical applications for each type of PDE’s. | CO2 | 16 |
|  |  |  |  |  |
| 3. |  | What are the properties of discretization scheme in convection diffusion problem? Explain in detail. | CO2 | 16 |
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| 4. |  | Identify the basic algorithm to solve a fluid flow problem and explain in detail with a flow chart. | CO3 | 16 |
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| 5. |  | Write a short notes with neat sketches on   1. Hexahedral mesh. 2. Cartesian mesh. 3. Adaptive mesh. | CO6 | 16 |
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| 6. |  | Summarise the common boundary conditions in the discretized equation and explain any two conditions in detail. | CO4 | 16 |
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| 7. | a. | What is turbulence? | CO5 | 3 |
| b. | Explain in detail about k-ε turbulence model. | CO5 | 13 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. |  | Explain the simple chemical reaction system in detail with examples. | CO5 | 20 |