**Faculty of Mechanics and Mathematics**

**Department Mathematical Modelling and Simulation**

**PROGRAM of "TURBULENCE MODELLING TECHNICUES"**

**Final exam**

**for the specialty "­­­­ 8D06104-Mathematical and Computer Modelling "**

**(fall semester, 2021/2022)**

**Almaty 2021**

**DEVELOPED:**

**ABDIBEKOV UALIKHAN CEIDILDAEVICH – professor**

**EXAM TOPICS**

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| **RANS** | |
| 1 | The nature of turbulent flows |
| 2 | Averaging procedure for Navier-Stokes equation |
| 3 | Local similarity principle in turbulent transport theory |
| 4 | Equations for Reynolds Stress Velocity |
| 5 | Semi-empirical relations and hypothesesclosures for the equation of second moments |
| 6 | Pulsation structure of turbulentflows in a homogeneous medium |
| 7 | Influence of Archimedean forces on the structure of turbulence |
| 8 | Pulsation structure of turbulent flows in a stratified environment |
| 9 | Influence of temperature and concentration onthe structure of turbulent flow |
| 10 | Pulsation structure of turbulent transverse flows of the conducting liquid magnetic field |
| 11 | Pulsation structure of turbulent flows in a curved domain |
| 12 | Pulsation structure of turbulent admixture transfer in curved domain |
| 13 | The influence of rotation, stratification, and magnetic fields on turbulence |
| 14 | The influence of magnetic fields the MHD equations |
| 15 | Turbulence total energy balance |

1. MoninYaglom\_Ch1\_1965ru
2. MoninYaglom\_Ch2\_1967ru
3. Pierre\_Sagaut,\_Sebastien\_Deck,\_Marc\_Terracol\_Multiscale\_and\_Multiresolution\_Approaches\_in\_Turbulence\_\_2006
4. Кольман - Методы расчета турбулентных течений
5. Фрост-Турбулентность.Принципы и применения
6. Tennekes\_Lumley
7. ВВЕДЕНИЕ В СТАТИСТИЧЕСКУЮ ТЕОРИЮ ТУРБУЛЕНТНОСТИ
8. Hince1963ru
9. kniga-davidson

**CONSIDERED and APPROVED**

**at the meeting of the department from " " 2021, protocol №**