Jashore University of Science and Technology

Department of Physics

Bachelor of Science with Honours in Physics

1st semester of 1st year

Course no.: PHY 1105 **Course title: Vector Analysis**

Class test no.: 02 **Date: May 17, 2022**

1. Evaluate (a) $\nabla^2(\ln r)$ [5]

2. Evaluate $\nabla \times (\mathbf{r}/r^2)$. [5]

3. Prove $\nabla \cdot (\mathbf{A} \times \mathbf{B}) = \mathbf{B} \cdot (\nabla \times \mathbf{A}) - \mathbf{A} \cdot (\nabla \times \mathbf{B})$. [5]

4. Prove $\nabla f(r) = \dfrac{f'(r)\mathbf{r}}{r}$. [5]