University of Information Technology & Sciences
Faculty of Science and Engineering
Department of Computer Science and Engineering
Mid-term Examination, Autumn 2022
Course Title: Engineering Physics
Course Code: PHY 175

Marks: 20 (Answer all the **two** questions) **Time: 1 Hour**

1. **a)** Write down the conditions of interference. **[2]**

   b) Deduce the fringe separation for dark fringes in Young Double Slit interference. **[5]**

   c) Two coherent sources are 0.25 mm apart and the fringes are observed on a screen 1 m away. It is found that with a certain monochromatic source of light the fourth bright fringe is situated at a distance of 12 mm from the central fringe. Calculate the wavelength of the light. **[3]**

2. **a)** Establish the relation between phase difference and path difference. **[2]**

   b) Derive the expression for intensity of the bright fringes produced in Young Double Slit experiment and hence find out the intensity of a bright fringe. **[4]**

   c) Light of wavelength 5400 A° from a narrow slit is incident on a double slit. The overall separation of 4 fringes on a screen 180 cm away is 1 cm. Calculate the (i) fringe width, and (ii) the slit separation. **[4]**