**RECORD YOUR RESPONSE IN THE SPACE PROVIDED UNDER EACH SUBQUESTION**

**BQ3: Membrane separation: 10 Marks**

Experiments are being conducted to determine the suitability of a cellulose membrane 25 µm thick for use in an artificial kidney device. In an experiment at 37 °C using NaCl as the diffusing solute, the membrane separates the two components from an aqueous solutions of NaCl, where the concentration of NaCl in the retentate side is mol/cm3 and in the permeate side is mol/cm3. The mass transfer coefficients on each side of the membrane are equal and has been estimated to be m/s. Experimental data obtained gave the NaCl flux mol/m2.s at pseudo steady state conditions.

a) Determine the value of permeability in m/s. **5 Marks**

|  |
| --- |
| Response: |

b) Determine the value of in m2/s. **2 Marks**

|  |
| --- |
| Response: |

c) Determine the fraction of the diffusional resistance in the liquid film compared to the total resistance of the membrane system. **3 Marks**

|  |
| --- |
| Response: |

**END OF QUESTION BQ3 (Go to next page)**