

**ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)**  
**ORGANISATION OF ISLAMIC COOPERATION (OIC)**

**Department of Computer Science and Engineering (CSE)**

**MID SEMESTER EXAMINATION**

**WINTER SEMESTER, 2017-2018**

**DURATION: 1 Hour 30 Minutes**

**FULL MARKS: 75**

**SWE 4101: Introduction to Software Engineering**

**Programmable calculators are not allowed. Do not write anything on the question paper.**

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

1. a) Give a brief discussion on the areas of application of computer or computing system. List the characteristics of a computer. 10
- b) Write down the stages of compilation process of a program. Explain with necessary examples. 12
- c) **"Programming Language C is a compiled Language"** – Verify this statement with explanation. 3
2. a) Convert any four of the following numbers: (show the steps of calculation) 16
  - i.  $(Your\ Student\ ID)_{10} = (?)_{11}$
  - ii.  $(1011\ 0101\ 0010\ 1101\ 1001\ 111)_2 = (?)_{16}$
  - iii.  $(1011\ 0101\ 0010\ 1101\ 1001\ 111)_2 = (?)_8$
  - iv.  $(123)_4 + (567)_8 = (?)_{16}$
  - v.  $(1903.2018)_{10} = (?)_2$  (Calculate upto 4 digits after fraction point)
- b) Give a brief description on the stages of program development cycle. List all the components of the documentation for any program. 9
3. a) Give a brief description on the basic organization of a computer system. 10
- b) A program allows a person to enter values for the number of days, hours, minutes and seconds and outputs the total number of seconds to the screen. 5+5+5
  - i. Write down the problem definition with IPO chart.
  - ii. Write down the data dictionary for the above problem.
  - iii. Write down the flowchart of the algorithm for the above problem.
4. A palindrome number is such a number that the reverse of that number is equal to the original number. For example: 8, 11, 101, 1221 etc. A program allows the user to give input an integer number. It will check whether the number is palindrome or not and print a message to show the findings. [Hints: First reverse the number then compare]
  - a) Write the Pseudo code for the above problem. (Put the line number of the pseudo-code and necessary comments) 8
  - b) Write down the NS diagram for the above problem. 8
  - c) Write down the desk check for the **value 12321** following the pseudo code of Question no. 4(a). 9