

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF MECHANICAL AND PRODUCTION ENGINEERING

Mid-Semester Examination

Summer Semester, A.Y. 2021-2022

Course No. IPE 4671

Time : 1½ hours

Course Title: Reverse Engineering

Full Marks : 75

There are 3 (Three) Questions. Answers to all the questions are compulsory.
Marks in the margin indicate the full marks.

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1. a) Why do you require “Application specific geometric model development” phase of generic reverse engineering process? Explain. (05)
(CO1)
(PO1)
- b) Briefly explain three approaches to control illumination in an active Illumination 3D Stereo with a proper illustration. (10)
(CO2)
(PO2)
- c) What is the occlusion problem with a sheet-of-light scanner? How can you overcome this problem? (10)
(CO2)
(PO2)
2. a) Briefly describe the contact methods of reverse engineering hardware with necessary diagrams, examples, advantages, and disadvantages (08)
(CO1)
(PO1)
- b) Explain the following procedures: (10)
i. Transforming a range image into a 3D point cloud. (CO1)
ii. Mesh reconstruction procedure of a laser range scanner. (PO1)
- c) Classify Reverse engineering software based on application; mention main functions and a few examples. (07)
(CO2)
(PO2)
3. a) Explain the Transitive and Destructive techniques of reverse engineering with necessary diagrams. (10)
(CO2)
(PO4)
- b) Explain how 2D image acquisition is made using the structured-light technique. (10)
(CO2)
(PO2)
- c) Explain the procedure of generating 3-D coordinate points using a coordinate measuring machine (CMM). Also, mention some significant drawbacks of CMM. (05)
(CO1)
(PO1)