Birla Institute of Technology & Science, Pilani
Hyderabad Campus

First Semester 2019-20
Comprehensive Examination

Course Name: Product Design | Course Code: DE G531
Date & Time: 12/12/2019 (14.00 – 17.00) | Weightage: 20% (40 Marks)

PART-A (Closed Book)

Note:
- Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
- All parts of a question should be answered consecutively. Each answer should start from a fresh page.
- Assumptions made if any, should be stated clearly at the beginning of your answer.

Q.1 (A) Mention the litigation criteria to decide defective and unreasonably dangerous nature of any product. What is the business procedure to minimize the risk in product liability? **[5]**

Q.1 (B) Discuss the technical and market risk involved Vs. cost of prototyping. Support your discussion with real time product examples. **[5]**

Q.2 (A) Why should a company commit resources for deploying a Design for Reliability (DFR) process? List down design activities to be involved in different stages of product development process for implementation of DFR process. **[5]**

Q.2 (B) A system has a unit with Mean Time Between Failures (MTBF) = 30,000 hours and a standby unit MTBF = 20,000 hours. If the system must operate for 10,000 hours, what would be the MTBF of a single unit without standby. Would have the same reliability as the standby system? Assume constant failure rate. **[5]**

Q.3 (A) Discuss in brief about Pros and cons of type of manual assembly methods used for Design for Assembly (DFA). **[5]**

Q.3 (B) What are the techniques used to reduce the early failures in a product? Discuss any one method. **[5]**

Q.4 (A) Which is the most flexible product architecture type. Justify with example. Discuss the major consideration factors for selection of appropriate product architecture. **[5]**

Q.4 (B) Discuss in brief about environmental conscious quality function deployment and its implementation during sustainable product development process. **[5]**