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Daffodil International University

Department of Electrical and Electronic Engineering
Faculty of Engineering
Final Examination, Summer – 2025

Course Code: EEE 0223-121
Section: A, B, C, D
Full Marks: 40

Course Title: Art of Living & Engineering Ethics
Level-Term: L2-T2
Exam Date: August 24, 2026

Teacher's Initial: MW, AS
Time: 2 Hours

All questions are compulsory. The second rightmost column indicates the corresponding Course Outcomes (COs) along with their respective Bloom's Taxonomy levels, and the rightmost column indicates the allocated marks for each question.

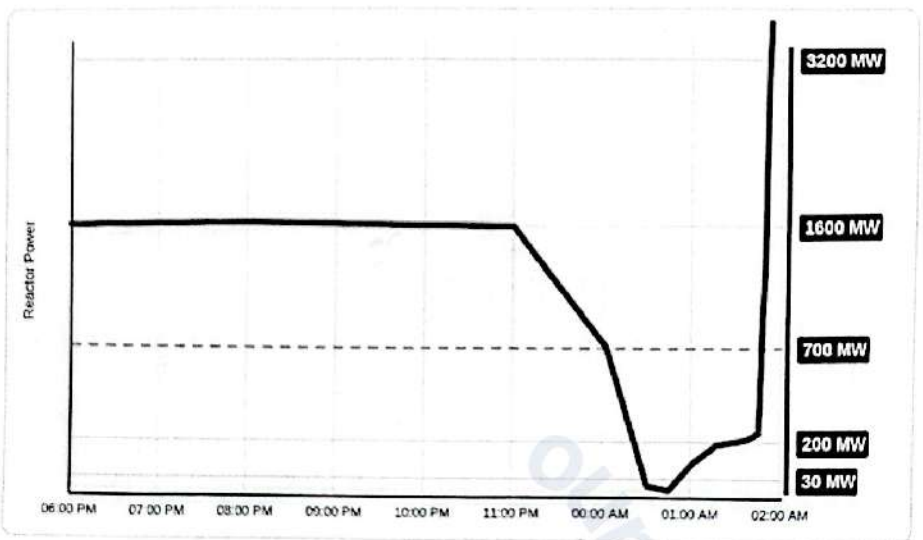
Q1. A proposal suggests launching a city-wide autonomous drone network to deliver blood, vaccines, and emergency medicines between hospitals across Dhaka. Battery-powered drones would fly pre-approved low-altitude corridors, coordinated by a central control platform that automatically reroutes or grounds aircraft when weather, battery charge, or airspace conflicts approach safety limits, and uses priority-based dispatch during peak demand. The system integrates mobile ordering and payment, real-time flight monitoring, and remote override of drones over telecom networks, aiming to cut delivery times, ease road congestion, and improve emergency healthcare access. **Discuss** the risk-benefit analysis and decide whether this project should be implemented or not, considering sustainability and impact of engineering decision/work on society and environment. — CO-3, C-5 — 8

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Q2. (a) **Explain** any three models of professional roles for engineers. (b) What is utilitarianism? **Distinguish** between act utilitarianism and rule utilitarianism. (c) How does duty ethics differ from utilitarianism? — CO-1, C-3 — 8

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Q3. (a) **Interpret** what happened to the reactor power at each stage of the graph: the steady operation near 1600 MW, the sudden fall to about 30 MW, the partial recovery to about 200 MW, and the final spike above 3200 MW. (b) **Explain** design flaw of control-rods that triggered the final power spike during the test in Chernobyl Nuclear Reactor-4. — CO-2, C-4 — 8

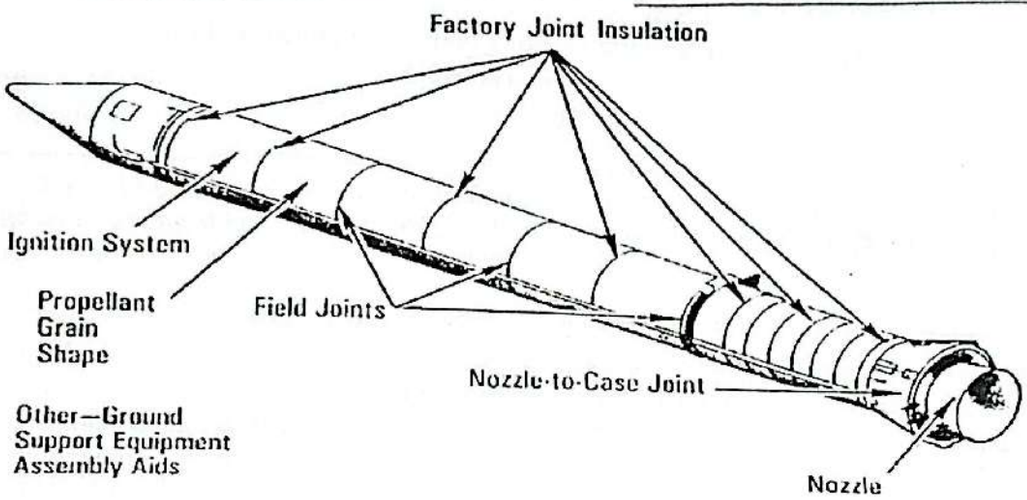


A

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Q4. Factory joints are permanently mated and insulated under controlled warehouse conditions during manufacturing, while field joints are mechanically connected and sealed on-site at the launch facility which was used in challenger mission. (a) Identify the technical cuases of the challenger disaster. (b) Explain the ethical issues in this scenario. (c) Describe how this disaster could've been avoided. CO-1 C-3 8



Q5. The world is changing rapidly, and keeping up with new technologies alongside your studies is a major challenge. (a) What are the three categories of 21st-century skills? Name the skills under each. (b) Why is life-long learning necessary in the broadest context of technological change? (c) Why are communication skills important for an engineer? CO-1 C-3 CO-4 C-3 8

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