



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 5 Examination in Engineering: March 2022

Module Number: CE5254

**Module Name: Building Information Modelling for
Project Management**

[Three Hours]

[Answer all questions. Each question carries 10 marks]

- Q1. A private investor is considering a new investment on a 14-story building in close proximity to Galle City Centre with the intention of utilizing the space for a private hospital, a high-end restaurant, and a sports club. The hospital is to include an operation theatre, specialized patient treatment facility, and various laboratories with installed specialized equipment. Project manager (owner's representative) has recommended using BIM for this project.
- (a) Discuss the applicability of the Project Manager's recommendation of using BIM for this particular project giving consideration only to the Design Development Stage. [3.0 Marks]
- (b) Identify all key stakeholders of the construction project and, the role of each key stakeholder in implementation of BIM. [4.0 Marks]
- (c) Discuss the implications of using BIM to the constructability of the project? [3.0 Marks]
- Q2. (a) A recent research study conducted by the Faculty of Engineering, University of Ruhuna in collaboration with major construction companies in Sri Lanka has concluded that "Implementation of BIM in construction projects in Sri Lanka are very limited". Briefly discuss the reasons for the limited application of BIM in Sri Lankan construction industry based on your experience and knowledge. [3.0 Marks]
- (b) Identify all stages in a building construction project that will be benefitted from BIM implementation in general. Clearly state the benefits expected at each stage that you identify. [4.0 Marks]
- (c) Discuss the challenges of BIM implementation in Sri Lanka. What would you recommend to overcome each of these challenges? [3.0 Marks]

- Q3. (a) Explain what is referred to as "4D BIM" applications to construction projects.
[2.0 Marks]
- (b) Assume that you have been appointed as the BIM coordinator for an 8-storey building construction project (Design and Build) in Colombo recently. You have been allocated necessary resources including a team of BIM Designers/Modelers to carry out necessary tasks under the guidance of a Senior Project Planner of the contractor firm. Note that all 2-D drawings have been produced and some drawings have been approved prior to your appointment.
- i) What would you suggest that the team needs to be doing immediately? Explain your rationale.
[2.0 Marks]
- ii) Explain the steps you would follow to implement 4D BIM in the project. State clearly the software you may use.
[4.0 Marks]
- (c) What would you do to ensure that the implementation of BIM in future projects run smoothly?
[2.0 Marks]
- Q4. (a) State the key functions involved in management of a construction project.
[2.0 Marks]
- (b) Discuss the effects of BIM (if fully implemented) for the above functions and to the overall project sustainability.
[3.0 Marks]
- (c) Integrated Project Delivery (IPD) is considered as one of the best approaches in managing construction projects that involve many stakeholders.
- i) Briefly explain what is meant by "Integrated Project Delivery" and why it's becoming popular in the construction industry.
[2.0 Marks]
- ii) Discuss in detail the ways in which implementation of BIM supports IPD projects.
[3.0 Marks]