



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 5 Examination in Engineering: May 2023

Module Number: CE5254 **Module Name: Building Information Modelling for Project Management**

[Three Hours]

[Answer all questions. Each question carries 10 marks]

- Q1. A well-reputed contractor has recently been awarded the construction of a 12-story private hospital building in Colombo. The building has several functional spaces including an operation theatre, a specialized patient treatment facility, a pharmacy, a few laboratories, a vehicle parking area, a restaurant and an emergency ward with installed specialized equipment. The designer/engineer has started working on the designs/3D models. The owner's representative has scheduled regular meetings with the designer and contractor.
- (a) What would be the appropriate project delivery method suitable for the above project? Briefly describe the reasons for your answer.
[3.0 Marks]
- (b) Would you recommend using BIM at this stage of the project? Explain why in detail. Your answer should include specific reasons applicable to this project.
[4.0 Marks]
- (c) The contractor has insisted that the sub-contractors be invited to regular meetings even though the designer is not seeing any benefits. Would you support the contractor's request? Include the specific reasons for your opinion.
[3.0 Marks]
- Q2. (a) Planning/designing is considered as one of the five main stages of a project life cycle. Identify the remaining FOUR stages.
[2.0 Marks]
- (b) BIM is becoming popular in construction industry as it is proven to be delivering multiple benefits to stakeholders. Identify how BIM implementation is beneficial at different stages of a building construction project.
[4.0 Marks]
- (c) Discuss the current challenges of BIM implementation in Sri Lanka. What would you recommend to overcome each of these challenges?
[4.0 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-story 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 in order to transform the project to a BIM-implemented project? Explain your rationale.
[2.0 Marks]
- ii) Explain the steps you would follow to implement 4D BIM in the project. State clearly the resources you may need.
[4.0 Marks]
- (c) Discuss in detail the benefits that the project can get through 4D implementation of BIM.
[2.0 Marks]
- Q4. (a) BIM can be identified as "an intelligent simulation of architecture". To facilitate achieving integrated delivery, this simulation must exhibit six key characteristics. Identify the key characteristics and describe briefly why each of these are necessary.
[4.0 Marks]
- (b) Discuss why many professionals use Autodesk Revit as one of the main BIM tools in the AEC industry. Your answer should include various commands and operations within the software application that supports the purpose of BIM implementation.
[4.0 Marks]
- (c) Identify ONE software that can be integrated with Autodesk Revit to support broader BIM applications. Explain briefly the extended benefit you can expect from the identified software.
[2.0 Marks]