# Study Mania Scenario Examiner

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**Time Allowed: 360 minutes**

## Other

### Constants / Useful Information

No subject-specific constants required for this paper.

### Examination Rules

1. Attempt all questions.
2. Avoid unnecessary noise or distractions in the exam room.
3. Use a non-programmable calculator only where applicable.
4. Write clearly and present your work in an organized way.
5. Follow every instruction in each task carefully.
6. Manage time well and leave a short review window at the end.
7. Support your conclusions with evidence from the scenario.
8. Do not use unauthorized materials or external assistance.

# Scenario Items

## Item 1: Roles of the Building Team

### The Mukono Modern Mall Project

A private developer in Mukono District intends to construct a five-storey commercial complex. The developer has secured funding but lacks technical expertise. A team consisting of an Architect, a Quantity Surveyor, a Structural Engineer, and a Main Contractor has been assembled. During the initial meeting, a dispute arises regarding who is responsible for the final cost estimation, the structural integrity of the reinforced concrete slabs, and the day-to-day management of labor on-site. The school debate team presents three evidence sources on Roles of the Building Team, and each source supports a different explanation for the same event. A district official, a teacher, and student leaders provide conflicting claims that must be weighed against documented dates, actions, and outcomes.

Task A: As a student of Other, evaluate the specific roles of the Quantity Surveyor and the Structural Engineer in ensuring the financial and physical viability of the Mukono Modern Mall.

Task B: As a student of Other, justify the importance of the Architect as the lead consultant in coordinating the communication flow between the developer and the technical team.

Task C: As a student of Other, analyze how a conflict of interest between the Main Contractor and the Quantity Surveyor might affect the quality of materials used on the project.

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## Item 2: Factors Considered when Selecting a Site

### Industrial Expansion in Namanve

A manufacturing company wants to relocate its factory to the Namanve Industrial Park. Two plots are available: Plot X is located on a steep slope with firm rocky ground, while Plot Y is on flat terrain but was formerly a swampy area. The factory requires heavy machinery that generates significant vibrations and needs easy access for heavy-duty trailers (HDVs). The school debate team presents three evidence sources on Factors Considered when Selecting a Site, and each source supports a different explanation for the same event. A district official, a teacher, and student leaders provide conflicting claims that must be weighed against documented dates, actions, and outcomes.

Task A: As a student of Other, discuss the socio-economic and technical factors the company must consider before deciding between Plot X and Plot Y.

Task B: As a student of Other, 5 gamma B N_gamma$, explain why the soil composition of Plot Y might increase the initial construction costs compared to Plot X.

Task C: As a student of Other, assess the impact of 'Ease of Access' and 'Availability of Utilities' on the long-term operational efficiency of the factory at the chosen site.

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## Item 3: Site Preliminary Works

### Preparing the Ground for the New Gulu Hospital Wing

Before the actual construction of the new Gulu Hospital wing begins, the site is covered in thick vegetation, several old dilapidated structures, and uneven mounds of earth. The site boundary is not clearly defined, and there is no temporary shelter for workers or storage for expensive cement deliveries. The project manager must organize preliminary works to transform this raw land into a construction-ready site. The school debate team presents three evidence sources on Site Preliminary Works, and each source supports a different explanation for the same event. A district official, a teacher, and student leaders provide conflicting claims that must be weighed against documented dates, actions, and outcomes.

Task A: As a student of Other, develop a logical sequence of three preliminary works that must be executed before the excavation of foundations can commence.

Task B: As a student of Other, explain the technical necessity of 'Site Hoarding' and 'Setting Out' in the context of site security and legal boundary management.

Task C: As a student of Other, calculate the total area to be cleared if the hospital wing measures 40 m by 25 m, and a working space of 2 m is required on all sides. Express your answer in $m^2$.

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## Item 4: Site Investigation and Soil Testing

### Foundation Failure in Kansanga

A residential building in Kansanga has developed deep diagonal cracks only six months after completion. Preliminary investigations suggest that the developer skipped the sub-soil investigation phase to save costs. The area is known for having 'expansive clays' that shrink and swell depending on moisture content. The school debate team presents three evidence sources on Site Investigation and Soil Testing, and each source supports a different explanation for the same event. A district official, a teacher, and student leaders provide conflicting claims that must be weighed against documented dates, actions, and outcomes. The final recommendation will be sent to the head teacher, so the response must defend one position clearly while addressing at least one strong counterargument from the scenario evidence.

Task A: As a student of Other, argue the case for performing a 'Trial Pit' or 'Borehole' test as part of preliminary works to prevent the structural issues seen in the Kansanga building.

Task B: As a student of Other, explain how the moisture content omega = W_w/W_s × 100\% of the soil influences the choice of foundation type in areas with high clay deposits.

Task C: As a student of Other, propose two remedial measures the building team could take to stabilize the existing structure and prevent further sinking.