

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY



FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRONIC ENGINEERING

PROJECT MANAGEMENT (TEE 5155)

Final Examination Paper

February 2022

Time Allowed : 3 hours
Total Marks : 100
Examiner's Name : Mr Bhekisisa Nyoni

INSTRUCTIONS

1. This examination paper consists of ~~7~~ printed pages
2. Answer ANY 4 QUESTIONS of your choice.
3. Each question carries 25 marks
4. Show all your steps clearly in any calculation (Use of calculators is permissible)
5. Start the answers for each question on a fresh page.

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
TOTAL	100

Question 1

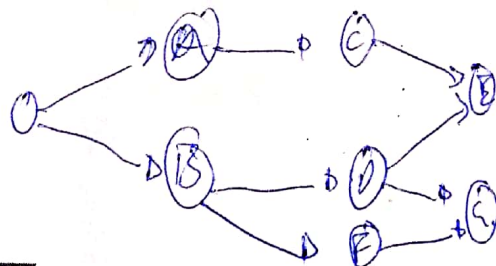
- a) Advertele Soft Dev is working on the NUST Ceremonial Hall Access System (NUSTCHAS) project. Table Q1 lists the project activities

Activity	Description	Immediate Processors	Duration (days)
A	Hardware design	-	7
B	Draft Software specifications	-	12
C	Hardware assembly and test	A	3
D	Back-end development	B	4
E	Hardware installation	C, D	5
F	Front-end development	B	3
G	Software test & installation	D, F	6

Table Q1 NUSTCHAS Project Information

The project has to be implemented as quickly as possible. It is considered complete when Activity E and Activity G are complete. As the designated Project Manager;

- Construct a network diagram for the project using the activity-on-node method. [10]
- How long will it take to complete all the hardware activities? [1]
- How long will it take to complete the software development activities only? [1]
- Define and determine the critical path. [2]
- Calculate the project completion time in weeks (Assuming a 5 day working week) [2]
- Determine the float (free slack) on activities B, C, E and G. [4]
- If activity E increases from 5 to 7 days, what is the critical path and what its length? [5]



DBE 5155

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C C C → Yellow T-shirts

Question 2

- a) Monitoring and Evaluation (M&E) is important when managing projects. Differentiate between monitoring and evaluation. [3]
- b) Below are specific factors that lead to the creation of projects. Give one specific example for each factor.

	Specific Factor	Example
i)	Political changes	
ii)	Market demand	
iii)	Economic changes	
iv)	New technology	
v)	Competitive forces	
vi)	Customer request	
vii)	Legal requirement	
viii)	Business process improvements	
ix)	Strategic opportunity or business need	
x)	Social need	
xi)	Environmental Considerations	

Question 3

- a) State the **title** of your Final Year project. [1]
- b) Come up with a three level coded work breakdown structure (WBS) for this project and the WBS Dictionary of the second level only of that WBS. [12]
- c) Identify a threat and an opportunity associated with your project. [2]
- d) Discuss the risk response strategies for the threat and opportunity identified in (b). [4]
- e) Write short notes on (or define): [6]
- Project
 - Project Triple constraints
 - Project charter

Question 4

Impacto Tech is a startup at NUST which is working on a project to manufacture smart face masks that have microphone to enable audible communication during meetings and lectures. On behalf of the Project Manager, **complete** the table to **summarise** the *interest* and *influence* of the various stakeholders in the project, the *strategy of managing them* that the project manager should use, their *communication needs*, and the *communication strategy* that should be used.

(Note: There is no need to reproduce the sample first row in your answer)

[25]

Stakeholders	Role(s)	Interest	Influence	Management Strategy	Communication Requirements	Communication Strategy
NUST Management Unit	Approval of project, provision of funds, and proposing necessary changes in line with prevailing forces	High	High	<ul style="list-style-type: none"> Seek their opinion and explain the milestones in the project. 	<ul style="list-style-type: none"> They require constant updates about the progress of the project. They need to be informed about every major milestone in the project and success achieved. 	<ul style="list-style-type: none"> Regular face-to-face communication between the project manager and the top managers
M Eng & M Sc Students / Employees						
Customers						
Suppliers						
Government						



Question 5

- a) You are building a 4-sided fence. Each side is of equal length and you estimate that each side will contain the same material and labor costs as well as take the same amount of time to complete. You estimate that the project will take 4 days to complete and your budget, including a contingency reserve is \$4,000. At the end of 3 days, you are asked to prepare an Earned Value calculation in order to determine how the project is progressing. You determine that as of the end of day 3, total costs incurred are \$3,500 and 70% of the project is completed. Calculate the following:

- i. BAC
- ii. EV
- iii. PV
- iv. SPI
- v. SV
- vi. CPI
- vii. CV
- viii. EAC
- ix. VAC
- x. ETC

[10]

- b) State 5 selection criteria for project management software.

[5]

- c) With the aid of a diagram or illustration, explain the activities involved in the five (5) phases of the project life cycle

[10]

Question 6

- a) Distinguish between these schedule compression techniques 'fast tracking' and 'crashing'.
[4]
- b) Read the brief case on page 7 of this paper and attempt the questions below:
- i. 'A project is a problem scheduled for solution.' Discuss this assertion in light of the proof in the case.
[2]
 - ii. What is project failure attributed to in the case?
[3]
 - iii. Identify some of the stakeholders to the energy projects from the given case
[4]
 - iv. Suggest some of the reasons that may have driven the initiation of these energy projects when Zimbabwe has power generation plants already.
[6]
 - v. Are there costs that are incurred before the implementation phase of projects such as these energy projects in the case study? Justify your answer using evidence from the case as well as other reasons.
[4]
 - vi. What does the term 'risk averse' mean? Is there evidence of such in the case?
[2]