NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF APPLIED CHEMISTRY
BACHELOR OF SCIENCE HONOURS DEGREE
END OF FIRST SEMESTER EXAMINATIONS – FEBRUARY 2010
PROJECT DEVELOPMENT AND MANAGEMENT – SCH 4210
TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES
Answer ***any four*** questions from the five provided. Start your answers to different questions on new pages. Each question carries 25 marks.

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1. The Department of Applied Chemistry at NUST has a choice to support four income generating investments by students as shown on the table below:

ITEM	Smart^5	T^{3}Pan	Chemsol	HotStuff
Initial Capital Cost $	250	150	120	150
Cashflow 1st Year $	828	719	1705	680
Cashflow 2nd Year $	1500	1250	2870	1140
Cashflow 3rd Year $	1700	1670	2630	1600
Cashflow 4th Year $	2300	2500	890	1750
Cashflow 5th ear $	3010	3250	560	2910
CBA Mark-up %	23	40	20	10
Market share %	5	1	10	2.5
Location	NUST & CBD	CBD	NUST LAB	NUST
Business strategy	Loss leader	Differentiation	Speed-to-Market	differentiation
Quality Requirements	stringent	modest	Deciding factor	stringent
Environment & Hygiene	modest	N/A	Modest	stringent
PB				
ROI				
IRR				
NPV				

Major Constraints	- high Competition -novice	-time -high competition	- Inadequate equipment -novice	-Equipment -Permit -novice -high competition

a) Copy and complete the table for PB, ROI, NPV and IRR. The inflation rate is projected to be 5% over the entire project duration. Taking into consideration all the factors on the table advise the Department which project to support. (25 marks)

2. a) A company has to make a choice between two projects, because the available resources in money and kind are not sufficient to run both at the same time. Each project would take 9 months and would cost $250,000.

i) The first project is a process optimization which would result in a cost reduction of $120,000 per year. This benefit would be achieved immediately after the end of the project.

ii) The second project would be the development of a new product which could produce the following net profits after the end of the project:

1	year:	$ 15,000
2	Year:	$ 125,000
3	Year:	$ 220,000

Assumed is a discount rate of 5 % per year. Looking at the present values of these projects' revenues in the first 3 years, which of the two will be the most viable? (12 marks)

b) Describe the four stages of team development (8 marks)

c) What are the elements of a project charter? (5 marks)

3. a) Explain the four different leadership styles stating where each style is suited for application. (8 marks)

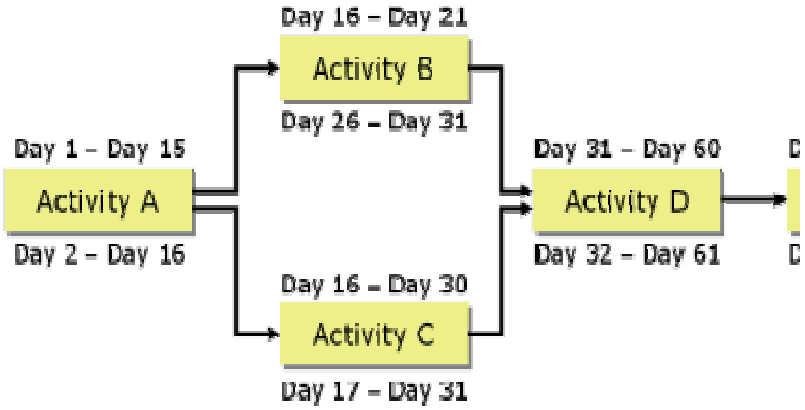
b) During execution of a project which is performed for a customer on a T&M (Time and Material) contract base a new project manager is taking over the assignment. He discovers that two members assigned to the project have charged time without performing any work. Upon further investigation, he determines that this occurred

because there were no other project assignments available for these people. The customer is unaware of these facts.

What should the project manager do? (5 marks)

c) In the following network logic diagram start dates are defined as early morning, finish dates are evening.

Tasks are scheduled to begin at early start date.



i) Calculate the free float and total float of activities A, B, C and D (8 marks)

ii) Identify the critical activity path (4 marks)

4. a) A project manager performs Earned Value Analysis and finds the following values:

EV: 100,000; PV: 125,000; AC: 100,000. What does this tell the project manager? (3 marks)

b) During a project the scope of product purchased on a cost reimbursable contract has increased. In the contract the contractor‘s indirect costs are calculated as 20 % of the direct costs. What is most likely to happen? (4 marks)

c) You are assigned as the project manager in a project with an aggressive schedule. During a recent meeting your team complained about the high pressure applied and the many hours of overwork time. How will you respond? (6 marks)

d) What are SMART objectives? Give examples from your mini project. (6 marks)

e) The output of the resource planning process is a document "resource requirements". This is a description of what types of resources are required in what quantities for each element at the lowest level of the work breakdown structure. Discuss the link between resource planning and WBS. (6 marks)

5. Write short notes on the following giving relevant examples from your mini project:

- Management by objectives (MBO)
- Learning curve
- Resource leveling
- Strategic fit
- Project cost estimation
- Scope definition
- Responsibility assignment matrix
- Project residual risks
- Delphi technique
- Global literacy (25 marks)

End of question Paper!!!