

SECTION A (ANSWER IN THE GREEN BOOKS)**TOTAL Marks for Section A: 60 Marks****Answer all 5 questions in this section.****QUESTION 1 (Ms Sunjka)**With reference to the NEW HORIZONS Case study, handed out before this exam:

1.1 Conduct a Short Cycle analysis (3 marks)

1.2 Conduct a Long-Cycle analysis (12 marks)

TOTAL: 15 Marks**QUESTION 2 (MULTIPLE CHOICE - Ms Sunjka)****Instructions:****1 Mark will be deducted for a wrong answer.****Enter your answers to this question on the attached multiple choice sheet.****Detach the sheet and place it inside your GREEN answer book.****Equations**

$$Z = \frac{X - \mu}{\sigma}$$

$$t = (a + 4m + b)/6$$

$$v = [(b - a)/6]^2$$

A company must perform a maintenance project consisting of seven activities. The activities, their predecessors, and their respective time estimates are presented below.

Answer questions 2.1 and 2.2 using this data:

<u>Activity</u>	<u>Designation</u>	<u>Immediate Predecessor</u>	<u>Time in Days</u>
Break down both machines	A	None	3
Clean machine 1	B	A	3
Clean machine 2	C	A	3
Re-set machine 1	D	B	4
Re-set machine 2	E	C	2
Re-calibrate both machines	F	D and E	1
Final test	G	F	2

QUESTION 2 CONTINUES OVERLEAF/....

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- 2.1 Using the Single Time Estimate CPM procedure, which activities make up the critical path?
A. A, B, D, F, G
B. A, C, E, F, G
C. A, C, B, F, E
D. A, D, E
E. None of the above (4 marks)
- 2.2 Using the Single Time Estimate CPM procedure, what is the Latest Finish Time for the last activity in this project (i.e., the total time to complete the project)?
A. 9 days
B. 10 days
C. 11 days
D. 12 days
E. 13 days (1 mark)
- 2.3 You have just performed a Single Time Estimate CPM analysis and have found that more than one path through the project network has zero slack values. What can you conclude?
A. You have incorrectly performed the analysis
B. You have multiple critical paths
C. Only one path is optimal
D. More than one path is optimal
E. The project will not be completed by the desired time (1 mark)
- 2.4 You ask your subordinates how long it will take to complete the job they are working on. The subordinates say, “If everything goes right it will take 6 hours, most likely it will take 8 hours, and if everything goes wrong it will take until the end of tomorrow or another 16 hours.” Since this job is a part of a larger project you must estimate the expected time it will take to complete the job. Using the three activity time estimation procedure for CPM, what is the expected time for this job?
A. 8 hours
B. 9 hours
C. 10 hours
D. 11 hours
E. 12 hours (2 marks)

QUESTION 2 CONTINUES OVERLEAF/....

- 2.5 If the pessimistic duration of an activity is 24, the most likely duration is 15 and the optimistic duration is 6, what is the variance for the activity time when using CPM analysis?
- A. 6
B. 8.333
C. 9
D. 10.4
E. 12
- (2 marks)
- 2.6 You are working on a project that has 12 activities and want to perform a CPM analysis on the project. You determine the critical path consists of only five activities. You then compute the variances for the five critical path activities and these variances are 3, 4, 2, 1, and 6 days. If the desired completion date for the project is 50 days and the expected completion date for the project is 40 days, what is the probability that the project will be completed by the desired completion date?
- A. 0.99379
B. 0.99180
C. 0.99772
D. 0.91924
E. 0.67364
- (3 marks)

Below are the data for a Time-Cost CPM Scheduling model analysis. The time is in days and the costs include both direct and indirect costs.

Answer questions 2.7 and 2.8 using this data:

	Immediate	Normal	Crash	Normal	Crash
<u>Activity</u>	<u>Predecessor</u>	<u>Time</u>	<u>Time</u>	<u>Cost</u>	<u>Cost</u>
A	None	3	2	R200	R400
B	A	4	3	R300	R600
C	A	1	1	R200	R200
D	B and C	3	2	R500	R550
E	D	2	1	R500	R900

- 2.7 What are the total time of this project and total normal cost?
- A. Total time is 13 days, total cost is R1200
B. Total time is 12 days, total cost is R1700
C. Total time is 11 days, total cost is R1600
D. Total time is 10 days, total cost is R1750
E. Total time is 9 days, total cost is R1700
- (4 marks)

QUESTION 2 CONTINUES OVERLEAF/....

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- 2.8 If you crash this project to reduce the total time by four days, what is the total time of the project and total cost?
- A. Total time is 10 days, total cost is R2500
 - B. Total time is 9 days, total cost is R2300
 - C. Total time is 8 days, total cost is R2750
 - D. Total time is 8 days, total cost is R1850
 - E. Total time is 9 days, total cost is R2350
- (2 marks)
- 2.9 You have just been assigned to oversee a series of projects. Functional areas will loan you personnel for each project and separate project managers will be responsible for separate projects. These project managers will report to you. Which project management structure is being used?
- A. Pure Project
 - B. Task force
 - C. Matrix Project
 - D. Functional Project
 - E. PERT
- (1 mark)

TOTAL: 20 MARKS

QUESTION 3 (Archetypes - Mr Hartmann)

The scenarios in the following examples all represent one of the ten “system archetypes” as proposed by Peter Senge in his seminal work “the fifth discipline”. For each one of these examples, simply write down which of these archetypes is present.

1. Limits to Growth
2. Shifting the Burden
3. Eroding Goals
4. Escalation
5. Success to the Successful
6. Tragedy of the Commons
7. Fixes that Fail
8. Growth and Underinvestment
9. Accidental Adversaries
10. Attractiveness Principle

QUESTION 3 CONTINUES OVERLEAF/....

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Scenario A

Rhonda is building a house. After some consideration she decided to personally do the construction work, as she felt that contractors and builders were generally not to be trusted (this is Rhonda's own view and does not necessarily represent the views of the university or the school).

One day, whilst pushing her favourite wheelbarrow across the bumpy ground of construction, Rhonda heard the wheel squeaking loudly. Alarmed by this, and aware that a squeaky wheel leads to a broken one, rapidly. Rhonda immediately set about trying to fix this situation. The first thing she tried was to squirt water on the axle, which immediately fixed the problem, and the wheel, now lubricated, stopped squeaking at once.

The next morning when Rhonda started working, she first observed that a thin red layer had formed on the axle, and when she started moving the wheelbarrow, again it squeaked, this time louder than before. Savvy to the whines of noisy wheels now, Rhonda quickly sprayed water on the axle again which again solved the problem.

Over the next few weeks, Rhonda found that she had to increasingly spray more and more water on the axle. Eventually, the axle seized and no amount of water would let it spin freely again.

(2 marks)

Scenario B

At birth, fairies bestowed upon Margaret and Kate equal sporting prowess. Both had it within her gift to be an extraordinary sportswoman. For many years, both Maggie and Kate practised hard in the cutthroat sport of table tennis. One Wednesday, both ladies received an invitation to participate in regional trials, at which the winner would receive a placement to the prestigious "Hamlet Academy of Advanced Ping Pong" and the opportunity for sponsorship by the local property tycoon, Mike Ribeck.

When the big tournament day arrived, hundreds of excited young people squeezed into the community centre hall where they were fighting it out for final honours.

Margaret and Kate played valiantly and dispatched challenger after challenger. Until in the end there were only two. Margaret and Kate began their final match under the watchful eye of those whom they had dispatched, but as with any sport, there has to be a winner and a loser – so Maggie set off to the sports academy, whilst Kate slunk home to her poor nutrition and training against her brother.

When next the two met at the table, Kate was rapidly beaten, and Maggie scored another sponsorship. A trend that continued for some time.

Margaret is today a household name, whilst Kate these days insists that she is an amateur and only plays table tennis from time to time because she "loves it".

(2 marks)

QUESTION 3 CONTINUES OVERLEAF/....

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Scenario C

The year is 1950, and the superpowers that have emerged out of the second world war are looking around for new games to play. Enter stage left, the capitalist and democratic United States, and stage right, the communist, and certainly according to their detractors oppressive Soviet Union.

The USSR and the Americans both have nuclear capability and build bombs and all sorts of military hardware. Whenever the Americans build something, the Russians soon after build two. Whenever the Russians achieve something, the Americans do it too – just better. And so, tit for tat, the world's two competing superpowers build up their arsenals and military readiness to a point where conflict would likely lead to the annihilation of the human species. And so it went on; one-up-manship and expansion.

The year is 1990. The Soviet Union is bankrupt and falls. In a desperate bid to keep the remnants of the Union from decending into anarchy, atop the greatest arsenal in world history, the global community helps to make the landing as soft as possible.

(2 marks)

TOTAL: 6 Marks

QUESTION 4 (System Dynamics - Mr Hartmann)

- 4.1 Sketch a system dynamic model that shows the relationship between your bank balance and interest earned. Assume for this question that any interest earned is reinvested. (3 marks)
- 4.2 Is this a reinforcing loop, or a balancing loop? (1 mark)
- 4.3 Comment on whether the idea holds when your bank balance is negative. (1 mark)
- 4.4 Comment whether the type of loop changes if you don't reinvest the interest earned (2 marks)

TOTAL: 7 Marks

QUESTION 5 (Business decision making frameworks - Mr Hartmann)

The PESTLE framework is a useful tool to direct the mind in problem solving, particularly when deciding whether or not to invest in a new business opportunity.

You work for a South African Junior mining company that has recently bought the mining rights for a Manganese deposit from the Syrian Government. The deposit is located very near the border with Iraq and has the potential to yield 700 Megatons (MT) over an estimated mine life of 45 years. The deposit is 70 metres below ground and initial ideas are to create one of the world's largest open pit mines.

QUESTION 5 CONTINUES OVERLEAF/....

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- 5.1 Using the PESTLE system, evaluate the wisdom of investing in this opportunity. Structure your answer as follows:

P - #write down what P stands for#

In no more than 3 lines, write (in bulleted form) your ideas about the wisdom or otherwise of this investment in view of P

Do the above for each letter in the PESTLE Mnemonic.

(9 marks)

- 5.2 Write down your recommendation to the board of your organisation. Should you or should you not invest in this opportunity? Write down your 2 most critical reasons.

(3 marks)

TOTAL: 12 Marks

SECTION B (ANSWER IN THE YELLOW BOOKS)

TOTAL Marks for Section A: 40 Marks

Answer all 3 questions

With reference to the **Case Study: Ford Gambles on Jaguar**, handed out prior to the exam, answer the following questions:

QUESTION 1 (Strategic Planning – Prof. Brierley)

- 1.1 State your vision for Jaguar operating as a subsidiary company of the overall corporate Ford Motor Company. (2 marks)
- 1.2 Identify three strengths, three weaknesses, three opportunities and three threats related to Jaguar operating as part of the Ford Motor Company. Number them S1, S2, S3, W1 etc. (6 marks)
- 1.3 State the generic or grand strategy that you believe Ford should follow for the next 3 years and give 3 reasons for selecting this strategy. (4 marks)
- 1.4 Develop one strategic objective to build on one of the strengths, one to address one of the weaknesses, one to capitalize on one of the opportunities, and one to overcome one of the threats. Cross-reference each objective to the relevant strength, weakness, opportunity or threat. (8 marks)

TOTAL: 20 Marks

SECTION B CONTINUES OVERLEAF/....

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QUESTION 2 (Organisation – Prof. Brierley)

Ford only made minor changes in personnel after the takeover (final paragraph).

- 2.1 Define 5 actions you would have taken in line with the strengths, weaknesses, opportunities and threats you defined in D1, 3. X-reference each action and explain your thinking in less than 4 lines per action.
(5 marks)
- 2.2 Identify 3 areas would you put Ford personnel into and state your reasons?
(3 marks)
- 2.3 Would you bring personnel over from Ford in America or personnel from their European plants? Explain your reasons.
(2 marks)

TOTAL: 10 Marks

QUESTION 3 (Leadership – Prof. Brierley)

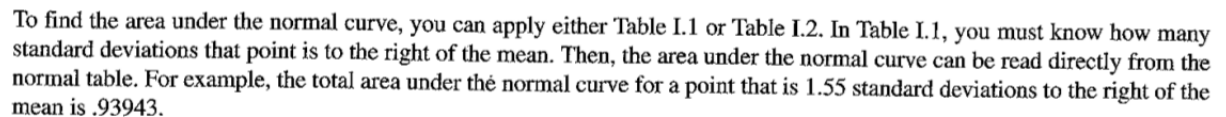
John Egan built up Jaguar in the early 1980's but the profits levelled off and began to decline from 1985 even though sales (in thousands of cars) continued to grow until 1988.

- 3.1 Where would you position John Egan on Blake and Mouton's Management grid? Give 3 reasons from the case study for choosing this position.
(4 marks)
- 3.2 Although John Egan applied some good strategies for Jaguar, particularly in the area of industrial relations, he also applied short term strategies that were to have a bad long term effect. List 3 strategies that you perceive were good and 3 which you think were bad and explain in less than 40 words your reasons for selecting them.
(6 marks)

TOTAL: 10 Marks

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APPENDIX I NORMAL CURVE AREAS



	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586
.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535
.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409
.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173
.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793
.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240
.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490
.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524
.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327
.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891
1.0	.84134	.84375	.84614	.84849	.85083	.85314	.85543	.85769	.85993	.86214
1.1	.86433	.86650	.86864	.87076	.87286	.87493	.87698	.87900	.88100	.88298
1.2	.88493	.88686	.88877	.89065	.89251	.89435	.89617	.89796	.89973	.90147
1.3	.90320	.90490	.90658	.90824	.90988	.91149	.91309	.91466	.91621	.91774
1.4	.91924	.92073	.92220	.92364	.92507	.92647	.92785	.92922	.93056	.93189
1.5	.93319	.93448	.93574	.93699	.93822	.93943	.94062	.94179	.94295	.94408
1.6	.94520	.94630	.94738	.94845	.94950	.95053	.95154	.95254	.95352	.95449
1.7	.95543	.95637	.95728	.95818	.95907	.95994	.96080	.96164	.96246	.96327
1.8	.96407	.96485	.96562	.96638	.96712	.96784	.96856	.96926	.96995	.97062
1.9	.97128	.97193	.97257	.97320	.97381	.97441	.97500	.97558	.97615	.97670
2.0	.97725	.97784	.97831	.97882	.97932	.97982	.98030	.98077	.98124	.98169
2.1	.98214	.98257	.98300	.98341	.98382	.98422	.98461	.98500	.98537	.98574
2.2	.98610	.98645	.98679	.98713	.98745	.98778	.98809	.98840	.98870	.98899
2.3	.98928	.98956	.98983	.99010	.99036	.99061	.99086	.99111	.99134	.99158
2.4	.99180	.99202	.99224	.99245	.99266	.99286	.99305	.99324	.99343	.99361
2.5	.99379	.99396	.99413	.99430	.99446	.99461	.99477	.99492	.99506	.99520
2.6	.99534	.99547	.99560	.99573	.99585	.99598	.99609	.99621	.99632	.99643
2.7	.99653	.99664	.99674	.99683	.99693	.99702	.99711	.99720	.99728	.99736
2.8	.99744	.99752	.99760	.99767	.99774	.99781	.99788	.99795	.99801	.99807
2.9	.99813	.99819	.99825	.99831	.99836	.99841	.99846	.99851	.99856	.99861
3.0	.99865	.99869	.99874	.99878	.99882	.99886	.99889	.99893	.99896	.99900
3.1	.99903	.99906	.99910	.99913	.99916	.99918	.99921	.99924	.99926	.99929
3.2	.99931	.99934	.99936	.99938	.99940	.99942	.99944	.99946	.99948	.99950
3.3	.99952	.99953	.99955	.99957	.99958	.99960	.99961	.99962	.99964	.99965
3.4	.99966	.99968	.99969	.99970	.99971	.99972	.99973	.99974	.99975	.99976
3.5	.99977	.99978	.99978	.99979	.99980	.99981	.99981</			

MULTIPLE CHOICE ANSWER SHEET**QUESTION 2**

Detach and place inside your **GREEN** answer book.

Student Number: _____

Question No.	Answer
2.1	
2.2	
2.3	
2.4	
2.5	
2.6	
2.7	
2.8	
2.9	