UNIVERSITY OF JOHANNESBURG

PROGRAM	:	NATIONAL DIPLOMA *ENGINEERING : CIVIL*
SUBJECT	:	**MANAGEMENT: CIVIL II**
CODE	:	**CEM2211**
DATE	:	WINTER EXAMINATION – **SUPPLENTARY EXAM** 18 JULY 2018
DURATION	:	(SESSION 2) 11:30 - 14:30
WEIGHT	:	40 : 60
TOTAL MARKS	:	100

ASSESSOR	:	Mr R LOTZ
MODERATOR	:	Mrs S MANYUMWA
NUMBER OF PAGES	:	5 PAGES, 6 ANNEXURES

INSTRUCTIONS	:	ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE USED.
REQUIREMENTS	:	NONE.

INSTRUCTIONS TO STUDENTS

PLEASE ANSWER ALL QUESTIONS.

QUESTION 1

You have won a tender to renovate 6 similar offices for a company.

Your company work a 5 day week and 10 hour day. All activities follow each other. Indicate how the work can be completed in 19 days.

All trades/activities must be done continuously, except for activity 6 (installing air-conditioning) that can be dived up. You can visit the activity twice to complete the activity.
Complete the table and line of balance. Use **ANNEXURE A** and **ANNEXURE B** for your answers.

No	Activity	Man hours / Activity	Team size
1	Fit new window frames	40	4
2	Fix and prepare walls for painting	100	5
3	Fit new celings	30	3
4	Painting of walls	50	5
5	Install new lights	150	5
6	Fit ne carpets	40	4
7	Cleaning	60	2

(15)

QUESTION 2

You have won the contract to build the new ablution facilities for an exhibition centre.

Use the table below and do a critical path network (CPN). Use **ANNEXURE C** to draw your CPN.

Answer all the questions that follows in your exam script booklet.

Activity	Duration	Predecessors
A	5	-
B	6	-
C	3	A
D	7	A
E	6	B
F	10	B
G	8	C
H	2	D, E
I	3	F
J	7	H
K	5	G, J
L	3	I

2.1 What is the duration of the project? [10]

2.2 What is the critical activities in the project? [7]

2.3 What is the float for the activities not on the critical path (CP)? [5]

2.4 What impact will the following delay have on the duration of the project if activity F starts 5 days after the earliest start day for F? [3]

(25)

QUESTION 3

The following activities occur in a construction sequence. Use information given and **Annexure D** to prepare a precedence diagram. Indicate the total duration, float and critical path for this contract.

Activity	Duration	Relationship
A	3	First activity
B	6	Starts after A
C	7	Starts 3 days after A has ended
D	8	Starts after B
E	9	Starts 2 days after B has ended
F	4	Starts after C
G	5	Starts after E, must start at leats 2 days after the start of D
H	7	Starts after E, F
I	2	Starts 1 day after F has ended
J	3	Starts after G, H
K	8	Starts after H, I
L	6	Starts after J, K

(20)

QUESTION 4

The table below indicates the duration and cost of three different options on a construction site. Use **ANNEXURE E and ANNEXURE F** to calculate the following:

4.1 Total duration and cost using option A. [7]

4.2 Total duration and cost using option B. [6]

4.3 Determine the optimum cost and duration for the project [8]

Activity	Option A		Option B		Option C	
	Time (wks)	Cost	Time (wks)	Cost	Time (wks)	Cost
1 - 2	7	R 15,000	6	R 17,000		
2 - 4	5	R 28,000	4	R 30,000		
1 - 3	11	R 21,000	10	R 22,000		
3 - 4	3	R 58,000	2	R 60,000		
4 - 5	4	R 25,000	3	R 27,000		
4 - 6	4	R 11,000	3	R 12,000		
5 - 7	7	R 32,000	5	R 33,000		
6 - 7	10	R 57,000	8	R 59,000		
7 - 8	6	R 46,000	5	R 48,000		
OVERHEADS PER WEEK	R 1500		R 1900		R 1700	

(20)

QUESTION 5

5.1 Name 3 items you can include under the Pre-Contract phase for a construction project? [3]

5.2 Name 3 factors that can influence your decision to tender when conducting a site visit? [3]

5.3 Explain briefly what a method statement is for a construction project? [3]

5.4 When you want to tender and need quotations from sub-contractors, you need to specify certain items/things to them. Name 3 of the items you need to supply to the sub-contractors. [3]

5.5 Name 3 preliminary and general items (P & G's) for a project? [3]

5.6 What role does management have on labour relations? [2]

5.7 What is the purpose of the Occupational Health and Safety ACT (1993) have in the workplace? [3]

(20)

TOTAL = 100

ANNEXURE A (Line of Balance)

STUDENT SURNAME & INITIALS _____

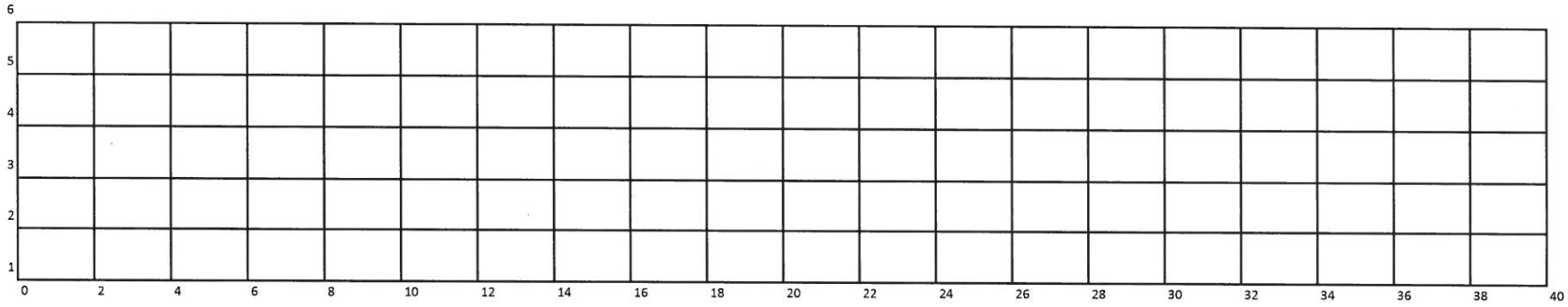
STUDENTNUMBER _____

No	Activity	Man hours / Activity	Team size	Team hrs	Teams days per unit	Duration of all units
1	Fit new window frames	40	4			
2	Fix and prepare walls for painting	100	5			
3	Fit new celings	30	3			
4	Painting of walls	50	5			
5	Install new lights	150	5			
6	Fit ne carpets	40	4			
7	Cleaning	60	2			

ANNEXURE B (Line of balance)

STUDENT SURNAME & INITIALS _____

STUDENT NUMBER _____



ANNEXURE C

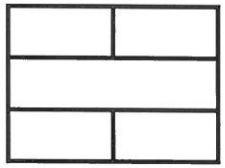
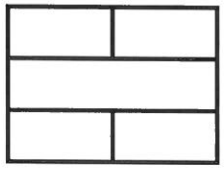
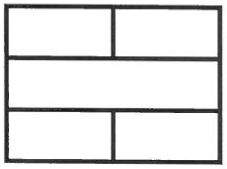
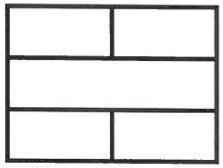
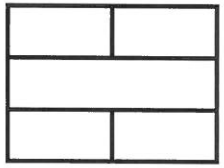
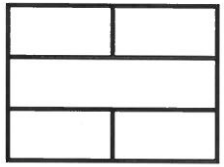
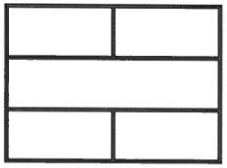
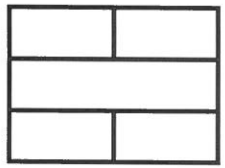
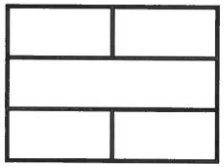
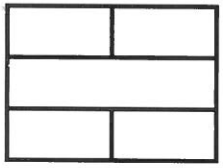
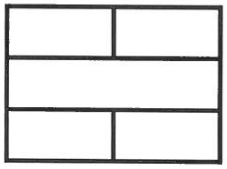
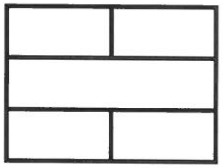
STUDENT SURNAME & INITIALS _____

STUDENT NUMBER _____

ANNEXURE D (Presidence diagram)

STUDENT SURRNAME & INITIALS _____

STUDENT NUMBER _____

ANNEXURE E (Crash cost)

STUDENT SURNAME & INITIALS _____

STUDENT NUMBER _____

Activity	Option A		Option B		Option C		Time saved	Added cost	Cost slope	Rank	Float
	Time (wks)	Cost (rand)	Time (wks)	Cost (rand)	Time (wks)	Cost (rand)					
1-2	7	15000	6	17000							
2-4	5	28000	4	30000							
1-3	11	21000	10	22000							
3-4	3	58000	2	60000							
4-5	4	25000	3	27000							
4-6	4	11000	3	12000							
5-7	7	32000	5	33000							
6-7	10	57000	8	59000							
7-8	6	46000	5	48000							
Overheads per week	1500		1900		1700						

ANNEXURE F (Crash Cost)

STUDENT SURNAME & INITIALS _____

STUDENT NUMBER _____