COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NMMS204: Quantitative analysis 2

END OF FIRST SEMESTER EXAMINATIONS

MAY/JUNE 2020

LECTURER: TARAMBAWAMWE P

DURATION: 48 HRS

INSTRUCTIONS

You are required to answer ONE question only

Credit will be awarded for logical, systematic and neat presentations

Q1a A manufacturer produces 1200 computers each week. After 1 week, he increases production by:
Scheme I: 80 computers each week
Scheme II: 5% each week

(i) Find the output in week 20 under each scheme. **[10 marks]**

(ii) Find the total output over the first 20 weeks under each scheme. **[10 marks]**

(iii)Find for both schemes I and II the week in which production first exceeds 8000. **[10 marks]**

Q1b
Using the information in Table 1, assuming that the project team will work a standard working week (5 working days in 1 week) and that all tasks will start as soon as possible:

Task	Description	Duration (Working Days)	Predecessor/s
A	Requirement Analysis	5	
B	Systems Design	15	A
C	Programming	25	B
D	telecoms	15	B
E	Hardware Installation	30	B
F	Integration	10	C, D
G	System Testing	10	E, F
H	Training/Support	5	G
I	Handover and Go-Live	5	H

(i) Draw a network diagram **[14 marks]**

(ii)Determine the critical path of the project **[3 marks]**

(ii) Calculate the planned duration of the project in weeks, **[3 marks]**

(iv) Identify any non-critical tasks and the float (free slack) on each. **[10 marks]**

Question 2a

i. After knee surgery, your trainer tells you to return to your jogging program slowly. He suggests jogging for 12 minutes each day for the first week. Each week thereafter, he suggests that you increase that time by 6 minutes per day. How many weeks will it be before you are up to jogging 60 minutes per day? **[10 marks]**

ii You complain that the hot tub in your hotel suite is not hot enough. The hotel tells you that they will increase the temperature by 10% each hour. If the current temperature of the hot tub is 75º C, what will be the temperature of the hot tub after 3 hours, to the *nearest tenth* of a degree **[10 marks]**

Question 2b

' I got the quarterly figures of salesmen's performance through yesterday and I thought I'd see if there is any connection between how far they travel and how many sales they make, so I put them through our computer package that does correlations, but I can't make sense of the bits at all- could you interpret, please.'

The information enclosed with the memo is as follows:

Salesman	Mileage(km)	No. of Sales	Time with Company(Months)
Smith	256	27	32
Adams	462	8	6
Williams	322	34	36
Green	211	25	28
Murphy	153	18	8
Evans	186	23	12
Newton	372	38	50
Sam	223	19	12

Regression equation for no. of sales on time with company is Y = 11.35 + 0.55X
Correlation coefficient: mileage and no. of sales = - 0.03. Regression equation for no. of sales on mileage is:

Y = 24.72 + 0.003X

i. Write notes to guide you in explaining to the sales manager what this information means, and how it should be interpreted in the light of the data. **[20 marks]**

ii. Calculate the coefficient of correlation and coefficient of determination of the time with the company and number of sales and interpret it **[20 marks]**

Question 3

a. A shrub of height 110 cm is planted. At the end of the first year the shrub is 120 cm tall. Thereafter the growth of the shrub each year is half of its growth in the previous year. Calculate the height of the shrub at the end of 9 years. **[10 marks]**

b. i. A coach must choose five starters from a team of 12 players. How many different ways can the coach choose the starters? **[5 marks]**

ii. In how many ways can the letters of the word ABACUS be rearranged such that the vowels always appear together **[10 marks]**

c How many 3 digit numbers can be formed from the digits 0, 1,2,3,4,5 where a digit can be repeated i. greater than 100 **[5 marks]**

ii. even numbers **[10 marks]**

iii.greater that 400 but divisible by 5. **[10 marks]**

d**.** How many permutations can you have with the letters from word **SCHEME**

i. without restrictions **[5 marks]**

ii when the Es are together **[5 marks]**