CENTER REGIONAL MOCK
MOCK EXAMINATION

Advanced Level **March 2025**

Subject Title	BUSINESS MATHEMATICS
Subject Code	7020
Paper N^0 / Title	Paper 3 – STATISTICS

3 Hours

Answer any FIVE questions

All questions carry equal marks. You are allowed to use Calculators.

Candidates must show all the steps in their calculations.

Candidates are reminded of the necessity for good English and orderly presentation in their answers.

QUESTION 1

The sales figures of two days of the (Monday and Saturday) in millions of francs CFA are presented on the table below;

Monday(Xi)	57	60	52	49	56	46	51	63	49	57
Saturday(Yi)	86	93	77	67	81	70	71	91	62	82

REQUIRED

a) Represent the Data above on a graph
b) The regression line for Y on X
c) The regression line for X on Y
d) The product moment correlation coefficient
e) The coefficient of Determination and the unexplained variation

(20marks)

QUESTION 2

You are given the following set of numbers 2, 3, 6, 9.

(a) Calculate the mean and standard deviation
(b) Two numbers *a* and *b*, are to be added to this set of four numbers, such that the mean is increased by 1 and the variance is increased by 2.5. Find *a* and *b*.

(20marks)

QUESTION 3

The prices and quantities of food items sold varied as stated in the table below in the western region.

FOOD ITEMS	QUANTITIES(000)kg		Prices(FCFA)	
	2016	2017	2016	2017
MAIZE	350	402	1640	1930
GARI	64	92	1370	1590
RICE	96	86	2860	2590

REQUIRED; Calculate

a) The laspeyeres price and quantity indices
b) The paasche price and quantity indices
c) The Fishers' price and quantity indices
d) The global index

(20marks)

QUESTION 4

Two digit numbers are to be formed from the numbers 2, 5, 8, 6, 9. A digit can be repeated.

i) Show the sample space on a table
ii) Calculate the probability that the number formed is even and is divisible by four
iii) Calculate the probability that any number is divisible by two
iv) Calculate the probability that a number greater than 60 is formed.

(20marks)

QUESTION 5

The life of a certain make of electric light bulb is known to be normally distributed with a mean life of 2,000 hours and a standard deviation of 120 hours. Estimate the probability that the life of such a bulb will be

i. Greater than 2,150 hours,
ii. Greater than 1,910 hours,
iii. Within the range 1,850 hours to 2,090 hours.

(20marks)

QUESTION 6

A) In a binomial distribution consisting of 5 independent trials, the probability of 1 and 2 successes are 0.3915 and 0.1382 respectively, calculate:
   i) The mean
   ii) The variance
   iii) The mode

B) Find the probability that
   a) In 1 cm^2, there are no bacterial colonies
   b) In 2 cm^2, there are more than two bacterial colonies
   c) In 4 cm^2, there are six bacterial colonies

(20marks)

QUESTION 7

The following data shows the number of complaints received in a police station over a period of nine (9) weeks

Week	1	2	3	4	5	6	7	8	9
Complaints	36	45	81	90	108	144	150	175	180

Required:

(a) Plot the time series graph
(b) Calculate the moving averages of 3 and plot on the graph in (a).

(20marks)

QUESTION 8

Present the network for the following project, showing their earliest start times and latest start times and identify the critical path

Activity	Preceding activity	Time
A	-	4
B	-	6
C	-	12
D	A	5
E	A	14
F	BD	10
G	BD	6
H	CF	15
I	E	10

(20marks)

STANDARD NORMAL TABLES (Z-Tables): Entries representing $P(Z<z) = \phi(z)$.

Z	*0.00*	*0.01*	*0.02*	*0.03*	*0.04*	*0.05*	*0.06*	*0.07*	*0.08*	*0.09*
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6443	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9971	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9839	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9969	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	.09974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9987	0.9989	0.9980	0.9980
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9991	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9993	0.9994	0.9994	0.9994	0.9993	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9995	0.9995	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9998	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.7	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.8	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000