Ministry of Education

Time: $1\frac{1}{2}$ hours

The experimental test for the third secondary stage in (Statistics)
In the academic year 2014 – 2015

يسمح باستخدام الالة الحاسبة (الاسئلة في صفحتين)

First: Answer the following question (mandatory):

First question:

(a) Complete the following statements to be correct:

1) *If the linear regression coefficient of X on Y is – 0.25 and the linear regression coefficient of Y on X is – 0.81, then the correlation coefficient between X and Y is ……*
2) *If x is a discreet random variable with range={ 2 , 3 } and the probability distribution function for the random variable X is f(x) = a X ,then a = ……..*
3) *If A and B are two mutually exclusive events in a sample space for a random experiment, then P (A ∩ B) = …….*
4) *If the arithmetic mean for a random variable equals 25, and its standard deviation equals 3 ,then the normal value that represents the value X = 40 is …….*
5) *If the slope of the regression line Y on X is positive, then the slope of the regression line X on Y is ……..*

(b) *If A and B are two events in a sample space for a random experiment where P(A)=0.5 , P(B) = 0.6 and P (A ∩ B) = 0.3 ,then Find the probability of the following events :*

i) The occurrence of one event at least
ii) The occurrence of one event at most
iii) The occurrence of only one even

Second: Answer only two of the following questions

Second question:

a) If X is a discreet random variable with probability distribution table:

X	0	1	2	3
f(x)	0.35	0.4	0.15	0.1

Find the mean and the standard deviation for the random variable X

b) From the following table that represents the relation between X and Y:

X	2	7	9	12	3	6
Y	5	7	9	8	11	19

Find : The correlation coefficient between X and Y

باقي الاسئلة في الصفحة التالية

Third question:

a) If $\sum X = 50$, $\sum Y = 60$, $\sum X^2 = 310$, $\sum Y^2 = 498$, $\sum XY = 361$ and $n = 10$

1) Find the person's correlation coefficient between X and Y

2) Find the equation of regression line Y on X

b) If the marks of the students in one school in the math exam is a normal random variable with mean 42 marks and standard deviation σ . If 26.11% of the students got more than 50 marks, find the value of σ

Fourth question:

a) If x is a continuous random variable its density function is f(x) where :

$$f(x) = \begin{cases} \frac{2X-1}{6} & for \quad 1 \le X \le 3 \\ Zero & otherwise \end{cases}$$

First: verify that: $P(1 \le X \le 3) = 1$, Second : Find $P(0 \le X \le 2)$

b) If x is a normal random variable with mean μ , standard deviation σ

Find : $P (\mu - \frac{1}{4}\sigma < x < \mu - \frac{1}{2}\sigma)$

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990