

Kingdom of Saudi Arabia

Ministry of Higher Education

Prince Sattam bin Abdulaziz University

Preparatory Year Deanship

Basic Sciences Department



Final Exam , Semester 2

Duration : 2 Hours

Biostatistics (Stat 106)

Date : 26 / 5 /2015

Total Score : 50 Points

Calculators are allowed. However, swapping or borrowing calculators is strictly prohibited.

Test Booklet - Form A

Question Number	Score
1	
2	
3	
4	
5	
Total	

Name:	
Student No:	
Section No:	
Group:	
Instructor's Name:	

Marker	Checker
.....

Q1) Write down True or False?

1. Biostatistics data obtain from medicine and biological science	()
2. $(1 - \alpha)100\%$ is the confidence coefficient	()
3. If $P(A \cap B) = 0$, then we say A and B are independent	()
4. For any events A and $B, P(A \cup B) = P(A) + P(B) - P(A \cap B)$	()
5. If the values of the variable are number then it's Qualitative	()
6. Normal distribution has bell-shaped curve	()
7. Mean is classified as a measure of central tendency	()
8. $\sigma^2 = \sum (X - \mu)P(X)$	()
9. The row material of statistics is population	()
10. There are only two possible outcomes in binomial experiment	()
11. If X is a discrete random variable then $\sum P(X) \leq 1$	()
12. Total Area under the curve of normal distribution equal one	()
13. If X is continuous random variable then $P(X = a) = \pm\infty$	()
14. $Cv = \frac{\text{standard deviaton}}{\text{mean}} \times 100$	()
15. We use true class interval in X axis to graph the histogram	()
16. Median is the value with highest frequency	()
17. In probability distribution: $-\infty \leq P(x) \leq \infty$	()
18. $\text{Relative frequancey} = \frac{\text{frequancey}}{n}$	()
19. $P(a \leq z \leq b) = \Phi(b) - \Phi(a)$	()
20. $\text{Midpoint} = \text{upper limit} + \text{lower limit}$	()

Q2) choose the best answer?

1. The number of students learning statistics is an example of..... Variable?

- (a) random (b) continuous (c) qualitative (d) discrete (e) none of them

2. If $P(Z \leq a) = 0.95053$, then $a = ?$

- (a) 1.15 (b) 1.65 (c) 1.64 (d) 2.58 (e) none of them

3. $P(A \cap B) = P(A)P(B)$ that means A and B are :

- (a) disjoint (b) dependent (c) same (d) independent (e) none of them

4. is arrangement of objects in which the order of the objects is not important.

- (a) permutation (b) combination (c) factorial (d) percent (e) none of them

5. is arrangement of objects in which the order of the objects is important.

- (a) permutation (b) combination (c) factorial (d) percent (e) none of them

6. If A and B are independent with $P(A) = 0.20$, $P(B) = 0.40$, then $P(B|A) =$

- (a) 0.20 (b) 0.08 (c) 0.60 (d) 0.40 (e) none of them

7. If A and B are independent with $P(A) = 0.20$, $P(B) = 0.40$, $P(A \cap B) =$

- (a) 0.20 (b) 0.08 (c) 0.60 (d) 0.40 (e) none of them

8. The factorial of number 5 is, $5! = ?$

- (a) 125 (b) 75 (c) 100 (d) 120 (e) none of them

9. Is the set of all possible out outcome of experiment?

- (a) probability (b) sample space (c) events (d) variable (e) none of them

10. Is simple description of some process:

- (a) experiment (b) probability (c) event (d) percent (e) none of them

Q3) (1) Given the following table: X is numbers of students in group 5.

Number of students X	Frequency f	xf	$x^2 f$	Cumulative frequency
1	5			
2	11			
3	7			
4	3			
5	2			$F(4)$
6	1			
7	1			
Sum				

a) Complete the table.

b) Mean=

- (a) 30.0 (b) 83.0 (c) 2.2501 (d) 2.767 (e) none of them

c) Median=

- (a) 2.2501 (b) 2.0 (c) 1.50003 (d) 3.0 (e) none of them

d) Mode =

- (a) 1.50003 (b) 2.767 (c) 2.225 (d) 0.0 (e) none of them

e) Variance =

- (a) 2.2767 (b) 1.50003 (c) 295 (d) 2.2501 (e) none of them

f) Standard deviation=

- (a) 1.50003 (b) 30 (c) 2.2501 (d) 2.767 (e) none of them

j) Coefficient of variation=

- (a) 54.551% (b) 54.211% (c) 54.311% (d) 54.911% (e) none of them

h) To graph table above we use

- (a) histogram (b) polygon (c) bar chart (d) ogives (e) none of them

i) In cumulative frequency $F(4)$ =

- (a) 23 (b) 26 (c) 28 (d) 29 (e) none of them

Q4) (1) Suppose that it's known that a kidney transplant is successful 0.40 of time, if a random sample of 15 patients is chosen find?

a) The probability that the transplant will be successful in 10 of patients:

b) The expected number of successful:

c) The variance:

(2) Consider the discrete random variable X with the following probability distribution

X	2	3	4	5	6	Total
$P(x)$	0.334	0.256	0.140	0.096	0.174	1

Find the following

a) $P(x \leq 4)$

b) $P(2 \leq x < 6)$

c) $P(x \geq 8)$

(3) Suppose that the birth weight of Saudi babies of gestational age 41-42 weeks are approximately normally distribution with mean 3.4 kg and standard deviation 0.35 kg .

Find the probability that random chosen Saudi baby between 3.0 and 4.0 kg?

Q5) (1) Use the normal distribution table to find :

$$P(z \geq 1.53) =$$

(2) If X is continuous random variable for which $P(X < 1.75) = 0.08$

and $P(X \leq 3.65) = 0.73$, find

$$P(1.75 < x < 3.65) =$$

(3) Diabetic ketoacidosis is a potentially fatal complication of diabetes mellitus throughout the world and is characterized by very high blood glucose levels, in a study of 256 patients lining in Saudi Arabia of age 15 or more who were admitted for diabetic ketoacidosis, the mean blood glucose level was 29.6 a standard deviation 8 mmol/l

Find 95% confidence interval for the mean blood glucose level of such diabetic ketoacidosis patients.

Good luck...

Table of the standard normal distribution values ($z \geq 0$)

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.50000	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.52790	0.53188	0.53586
0.1	0.53983	0.54380	0.54776	0.55172	0.55567	0.55962	0.56356	0.56749	0.57142	0.57535
0.2	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409
0.3	0.61791	0.62172	0.62552	0.62930	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173
0.4	0.65542	0.65910	0.66276	0.66640	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793
0.5	0.69146	0.69497	0.69847	0.70194	0.70540	0.70884	0.71226	0.71566	0.71904	0.72240
0.6	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.75490
0.7	0.75804	0.76115	0.76424	0.76730	0.77035	0.77337	0.77637	0.77935	0.78230	0.78524
0.8	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327
0.9	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891
1.0	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214
1.1	0.86433	0.86650	0.86864	0.87076	0.87286	0.87493	0.87698	0.87900	0.88100	0.88298
1.2	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	0.89617	0.89796	0.89973	0.90147
1.3	0.90320	0.90490	0.90658	0.90824	0.90988	0.91149	0.91308	0.91466	0.91621	0.91774
1.4	0.91924	0.92073	0.92220	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189
1.5	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408
1.6	0.94520	0.94630	0.94738	0.94845	0.94950	0.95053	0.95154	0.95254	0.95352	0.95449
1.7	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.96080	0.96164	0.96246	0.96327
1.8	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062
1.9	0.97128	0.97193	0.97257	0.97320	0.97381	0.97441	0.97500	0.97558	0.97615	0.97670
2.0	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.98030	0.98077	0.98124	0.98169
2.1	0.98214	0.98257	0.98300	0.98341	0.98382	0.98422	0.98461	0.98500	0.98537	0.98574
2.2	0.98610	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.98840	0.98870	0.98899
2.3	0.98928	0.98956	0.98983	0.99010	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158
2.4	0.99180	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361
2.5	0.99379	0.99396	0.99413	0.99430	0.99446	0.99461	0.99477	0.99492	0.99506	0.99520
2.6	0.99534	0.99547	0.99560	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643
2.7	0.99653	0.99664	0.99674	0.99683	0.99693	0.99702	0.99711	0.99720	0.99728	0.99736
2.8	0.99744	0.99752	0.99760	0.99767	0.99774	0.99781	0.99788	0.99795	0.99801	0.99807
2.9	0.99813	0.99819	0.99825	0.99831	0.99836	0.99841	0.99846	0.99851	0.99856	0.99861
3.0	0.99865	0.99869	0.99874	0.99878	0.99882	0.99886	0.99889	0.99893	0.99896	0.99900
3.1	0.99903	0.99906	0.99910	0.99913	0.99916	0.99918	0.99921	0.99924	0.99926	0.99929
3.2	0.99931	0.99934	0.99936	0.99938	0.99940	0.99942	0.99944	0.99946	0.99948	0.99950
3.3	0.99952	0.99953	0.99955	0.99957	0.99958	0.99960	0.99961	0.99962	0.99964	0.99965
3.4	0.99966	0.99968	0.99969	0.99970	0.99971	0.99972	0.99973	0.99974	0.99975	0.99976
3.5	0.99977	0.99978	0.99978	0.99979	0.99980	0.99981	0.99981	0.99982	0.99983	0.99983