Department of Statistics & Operations Research
College of Science
King Saud University
STAT – 106: Biostatistics
Second Mid-Term Exam
Second Semester 1435 – 1436

Student's Name (In Arabic):

Student's Number: Attendance number:

Section's Number:

Instructions:

There are 30 multiple choice questions.

Time allowed is 90 minutes (1.5 Hour).

For each question, put the code of the correct answer in the following table beneath the question number. Please, use capital letters: A, B, C, and D.

Do not copy answers from your neighbors; they have different question forms.

Mobile Telephones are not allowed in the classroom.

1	2	3	4	5	6	7	8	9	10
B	**C**	**A**	**D**	**A**	**C**	**A**	**B**	**B**	**D**

11	12	13	14	15	16	17	18	19	20
C	**A**	**A**	**B**	**C**	**D**	**C**	**D**	**A**	**C**

21	22	23	24	25	26	27	28	29	30
B	**C**	**D**	**D**	**A**	**D**	**A**	**B**	**A**	**D**

Question (1-7): In some population it was found that the percentage of adults who have hypertension is 24 percent. Suppose we select a simple random sample of five adults from this population. Then the probability that the number of people who have hypertension in this sample, will be:

1. Zero

(A) 0.3670	(B) 0.2536	(C) 0.5681	(D) 0.1231

2. More than one

(A) 0.1452	(B) 0.2232	(C) 0.3461	(D) 0.4126

3. Between one and three, inclusive

(A) 0.7330	(B) 0.3641	(C) 0.4169	(D) 0.6324

4. Two or fewer (at most two):

(A) 0.2525	(B) 0.4625	(C) 0.3742	(D) 0.9067

5. Five:

(A) 0.0008	(B) 0.3654	(C) 0.1212	(D) 0.4541

6. The mean of the number of people who have hypertension in the sample is equal to:

(A) 0.12	(B) 2.7	(C) 1.2	(D) 3.6

7. The variance of the number of people who have hypertension in the sample is equal to:

(A) 0.912	(B) 4.231	(C) 1.329	(D) 3.658

Question (8-12): Given the mean number of serious accidents per year in a large factory is five. If the number of accidents follows a Poisson distribution, then the probability that in the next year there will be:

8. Exactly seven accidents:

(A) 0.3650	(B) 0.1044	(C) 0.514 2	(D) 0.6161

9. No accidents

(A) 0.0462	(B) 0.0067	(C) 0.4143	(D) 0.1960

10. one or more accidents

(A) 0.0072	(B)0.1671	(C) 0.6592	(D) 0.9933

11. The expected number (mean) of serious accidents in the next two years is equal to

(A) 2	(B) 5	(C) 10	(D) 0.5

12. The probability that in the next two years there will be three accidents

(A) 0.0076	(B) 0.1404	(C) 0.2376	(D) 0.3804

Question (13-18): Given the standard normal distribution, Z~N(0,1), find:

13. The area under the curve between and z=0 and z=1.43

(A) 0.4236	(B) 0.2330	(C) 0.5396	(D) 0.7864

14. $P(Z \geq 0.55)=$

(A) 0.7088	(B) 0.2912	(C) 0.3645	(D) 0.1875

15. $P(-1.96 < Z < 1.96) =$

(A) 0.0746	(B) 0.9950	(C) 0.9500	(D) 0.9750

16. If $P(Z < a) = 0.0055$, then the value of a =

(A) 2.54	(B) 0	(C) 1.64	(D) -2.54

17. If $P(-k < Z < k) = 0.8132$, then the value of k =

(A) 2.54	(B) 2.31	(C) 1.32	(D) 0.5

18. P(Z=1.33)=

(A) 0.1220	(B) 0.1660	(C) 0.1550	(D) 0.0

Question (19-22): Given the following discrete distribution:

x	-1	0	1	2	3	4
P(X=x)	0.15	0.30	0.20	*M*	0.10	0.10

19. The value of *M* is equal to

(A) 0.15	(B) 0.0	(C) 0.10	(D) 0.25

20. $P(X \leq 1.5)$ =

(A) 0.0	(B) 0.50	(C) 0.65	(D) 1.0

21. P(X=0) =

(A) 0	(B) 0.30	(C) 0.80	(D) 1.0

22. The expected (mean) value E[X] is equal to

(A) 0.0	(B) 1.35	(C) 1.05	(D) 1.20

Question (23-26): If the total cholesterol values for a certain population are approximately normally distributed with a mean of 200 mg/100 ml and a standard deviation of 20 mg/100 ml, find the probability that an individual picked at random from this population will have a cholesterol value:

23. Less than 210 mg/100 ml:

(A) 0.3878	(B) 0.1788	(C) 0.0062	(D) 0.6915

24. Greater than 190 mg/100 ml:

(A) 0.3085	(B) 0.1788	(C) 0. 0.0062	(D) 0.6915

25. Between 190 and 210 mg/100 ml

(A) 0.3830	(B) 0.7135	(C) 0.7153	(D) 0.3157

26. In a population of 10,000 people how many would you expect to have a cholesterol value between 190 and 210 mg/100 ml?

(A) 9043	(B) 2153	(C) 5120	(D) 3830

Question (27-28): Given the normally distributed random variable X with mean 100 and standard deviation 15,

27. If $P(X < k) = 0.0094$, the value of k is equal to

(A) 64.75	(B) 90.58	(C) 28.90	(D) 32.65

28. If $P(100 < X < M) = 0.4778$, the value of M is equal to

(A) 66.89	(B) 130.15	(C) 108.90	(D) 36.98

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29. Which of the following measurements is a result of a Bernoulli trial:

(A) The gender of a new born child
(B) The classification of a hospital patient's condition as stable, critical, fair or good
(C) The weight in grams of a newborn child
(D) The number of surgical procedures performed in a hospital in a week

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30. Given the normally distributed random variable X with $\sigma = 15$ and $P(X \leq 50) = 0.9904$, then the mean value is:

(A) 43.95	(B) 25.30	(C) 32.20	(D) 14.90

Good Luck …