BIRZEIT UNIVERSITY
MATHEMATICS DEPARTMENT

STAT 2311

Instructor: Mohammad Mdiah
FINAL EXAM_SAMPLE
Time: 120 minutes

Circle the correct answer

1. Consider a data which is normally distributed with mean of 64.9 and a standard deviation of 1.6. Find the third quartile for this distribution
   - **a.** 63.8
   - **b.** 66
   - **c.** 66.9
   - **d.** 66.7
   - **e.** None
2. A random sample of 40 students has a mean annual expenditure of $3120. A previous study had a population standard deviation of $677. Construct a 95% confidence interval for the population mean.
   - **a.** $2910 to $3330
   - **b.** $1987 to $2364
   - **c.** $110 to $210
   - **d.** $4812 to $5342
3. A sample of 200 students showed 88 of them have a part time job. Find the point estimate for p, the population proportion of students who have a part time job.
   - **a.** 0.786
   - **b.** 0.44
   - **c.** 0.306
   - **d.** 0.56

(4 – 7) *Consider the following data sample* ***3.4, 4.7, 1.9, 7.6, and 6.5***

4. The point estimate of the population mean of the data is
   a. 4.05.
   b. 1.9
   c. 4.82
   d. 4.7
5. The median of the data is
   a. 4.05.
   b. 1.9
   c. 4.82
   d. 4.7
6. The estimate of the population variance of the data is
   a. 2.3
   b. 4.22
   c. 2.05
   d. 5.28
7. The coefficient of variation of the data is
   a. 0.42.
   b. 2.1
   c. 1.1
   d. 0.48
   e. 5.6

8. A survey of 280 students at BZU showed that 63 owned a car. Construct a 90% for the proportion of students owned a car
   a. 0.176 to 0.247
   b. 0.176 to 0.283
   c. 0.184 to 0.266
   d. 0.161 to 0.289

A random sample of 100 people was taken. Eighty-five of the people in the sample favored Product A. We are interested in determining whether or not the proportion of the population in favor of product A is significantly more than 80%.

9. State the null and the alternative hypothesis

10. The *p*-value is

- **a.** 0.2112
- **b.** 0.05
- **c.** 0.025
- **d.** 0.1056

11. Using$\propto =$ 5%, what is your conclusion?

12. Of five letters (A, B, C, D, and E), two letters are to be selected at random. How many possible selections are there?
    a. 20
    b. 7
    c. 5!
    d. 10
13. An experiment consists of tossing 6 coins successively. The number of sample points in this experiment is
    a. 32
    b. 8
    c. 64
    d. 2
14. A random sample of 64 students at a university showed an average age of 25 years . assume that the population standard deviation is 2 years. The 98% confidence interval for the true average age of all students in the university is
    a. 20.5 to 26.5
    b. 24.4 to 25.6
    c. 23.0 to 27.0
    d. 20.0 to 30.0

15. The student body of BZU consists of 60% female students. A random sample of 8 students is selected. What is the probability that among the students in the sample at least 7 are female?
    a. 0.0896
    b. 0.0168
    c. 0.8936
    d. 0.1064
16. If A and B are independent events with P(A) = 0.4 and P(B) = 0.25, then $P(A \cup B) =$
    a. 0.65
    b. 0.55
    c. 0.10
    d. 0.75
17. Twenty percent of the students in a class of 100 are planning to go to graduate school. The standard deviation of this binomial distribution is
    a. 20
    b. 16
    c. 4
    d. 2

A random sample of 16 students selected from BZU had an average age of 25 years and a standard deviation of 2 years. We want to determine if the average age of all the students at the university is significantly more than 24.

18. State the null and the alternative hypothesis

19. The test statistic is

a. 1.96
b. 2.00
c. 1.645
d. 0.05

20. The *p*-value is between

a. 0.005 to 0 .01
b. 0.01 to 0.025
c. 0.025 to 0.05
d. 0.05 to 0.10

21. Using 1% significance level, what is your conclusion?

A random sample of 100 people was taken. Eighty-five of the people in the sample favored Product A. We are interested in determining whether or not the proportion of the population in favor of product A is significantly more than 80%.

22. State the null and the alternative hypothesis

23. Compute the test statistic

- **a.** 0.80
- **b.** 0.05
- **c.** 1.25
- **d.** 2.00

24. The *p*-value is

- **a.** 0.2112
- **b.** 0.05
- **c.** 0.025
- **d.** 0.1056

25. Using 5% significance level, what is your conclusion?

The following table shows the number of books borrowed from BZU main library by students in the last year

Number of books	Frequency
15	2
20	3
25	5
30	4
35	7
40	3

26. Find $P(X > 30)$?

a. 0.4
b. 0.42
c. 0.58

27. Find $P(20 \le X \le 30)$?

a. 0.5
b. 0.29
c. 0.21
d. 0.42

28. Find $E(X)$

a. 6.88
b. 29.17
c. 27.5
d. 4

29. Two hundred students are enrolled in a Statistics class. After the first examination, a random sample of 6 papers was selected. The grades were 61, 75, 94, 76, 70 and 80. Provide a 99% confidence interval for the mean grade of all the students in the class.

30. A researcher is interested in determining the average number of years employees of a company stay with the company. If past information shows a standard deviation of 7 months, what size sample should be taken so that at 95% confidence the margin of error will be 2 months or less?

31. Compute the weighted mean for the following distribution n

x_i	16	14	11	10	15
Weight (w_i)	14	17	19	9	5

32: Consider the following hypothesis

$$H_0: \mu = 150$$
$$H_a: \mu \neq 150$$

A sample of size 44 is used. The sample mean was 147 and the sample standard deviation was 17. At a 0.10 level of significance, what is your conclusion?

33. In the past, the average age of employees of a large corporation has been 40 years. Recently, the company has been hiring older individuals. In order to determine whether there has been an **increase** in the average age of all the employees, a sample of 100 employees was selected. The average age in the sample was 42 years. Assume that the population standard deviation is 12 years. Let $\alpha = .05$.

a) State the null and the alternative hypotheses.

b) Compute the test statistic.

c) Find the critical value(s).

d) Using the *p*-value approach, test to determine whether or not the mean age of all employees is significantly more than 40 years