



Question No. 1:

A random sample of size 9 from a normal distribution with mean μ gave the following sample mean and sample standard deviation $\bar{X} = 12$, $S = 0.3$.

1. A point estimate of μ is

(A)	1.50
(B)	12.00
(C)	1.20
(D)	1.33

2. The estimated variance of \bar{X}

(A)	0.01
(B)	0.09
(C)	0.30
(D)	0.90

3. The lower bound of the 96% confidence for μ is

(A)	9.87
(B)	10.45
(C)	9.23
(D)	11.76

4. The upper bound of the 96% confidence for μ is

(A)	14.23
(B)	13.55
(C)	12.24
(D)	14.77

Question No. 2:

Suppose that a random sample of size $n_1 = 16$ is taken from a normal population with a mean $\mu_1 = 2.5$ and a standard deviation $\sigma_1 = 2.0$. A second independent random sample of size $n_2 = 25$ is taken from a normal population with a mean $\mu_2 = 3.6$ and a standard deviation $\sigma_2 = 2.5$. Let \bar{X}_1 and \bar{X}_2 be the means of the first and second samples, respectively. The observed values of \bar{X}_1 and \bar{X}_2 are 2.6 and 3.4 respectively.

5. The mean of $\bar{X}_1 - \bar{X}_2$

(A)	6.6
(B)	-0.8
(C)	6.1
(D)	-1.1

6. The variance of $\bar{X}_1 - \bar{X}_2$,

(A)	4.5
(B)	0.5
(C)	0.3
(D)	0.18

7. $P(\bar{X}_1 - \bar{X}_2 < 0)$

(A)	0.8406
(B)	0.9406
(C)	0.5406
(D)	0.2406

8. The lower bound of the 95% confidence interval for $\mu_1 - \mu_2$ is

(A)	-2.1859
(B)	-0.1459
(C)	-1.2059
(D)	-3.1259

9. The upper bound of the 95% confidence interval for $\mu_1 - \mu_2$ is

(A)	0.5859
(B)	2.1859
(C)	1.2259
(D)	0.3059



Question No. 3:

A random variable X has a normal distribution with mean $\mu = 40$ and standard deviation $\sigma = 4$.

10. $P(X > 42) =$

(A)	0.1269
(B)	0.3085
(C)	0.4257
(D)	0.2167

11. $P(42 < X < 44) =$

(A)	0.1498
(B)	0.2598
(C)	0.3598
(D)	0.4598

12. The value of c for which $P(X > c) = 0.9732$

(A)	31.63
(B)	32.83
(C)	31.28
(D)	32.28

Question No. 4:

The waiting time, in hours, between successive speeders spotted by a radar unit is a continuous random variable with cumulative distribution:

$$F(x) = 1 - e^{-10x}, x > 0.$$

13. This distribution is

(A)	uniform
(B)	Poisson
(C)	normal
(D)	exponential

14. Find the probability of waiting less than 12 minutes between successive speeders:

(A)	0.8647
(B)	0.7482
(C)	0.9423
(D)	0.6121

15. The mean waiting time between successive speeders spotted is

(A)	0.12
(B)	0.01
(C)	0.10
(D)	0.05

Question No. 5:

For the sample
1.6, 1.1, 1.2, 1.7 and 1.9,

16. the mean =

(A)	1.30
(B)	1.50
(C)	1.41
(D)	1.28

17. the variance =

(A)	0.415
(B)	0.315
(C)	0.115
(D)	0.215



Question No. 6:

A population has a mean μ and a variance σ^2 . Ahmed, Fahad, and Saleh have been asked to draw samples of sizes 60, 60 and 50 respectively. Denote by \bar{X}_A , \bar{X}_F and \bar{X}_S to their sample averages. Then

18.

(A)	$\bar{X}_A = \bar{X}_F$ always
(B)	$\bar{X}_A > \bar{X}_F$ always
(C)	$\bar{X}_A < \bar{X}_F$ always
(D)	None of the above

19.

(A)	$E(\bar{X}_F) = E(\bar{X}_S)$ always
(B)	$E(\bar{X}_F) > E(\bar{X}_S)$ always
(C)	$E(\bar{X}_F) < E(\bar{X}_S)$ always
(D)	None of the above

20.

(A)	$\text{Var}(\bar{X}_F) = \text{Var}(\bar{X}_S)$ always
(B)	$\text{Var}(\bar{X}_F) > \text{Var}(\bar{X}_S)$ always
(C)	$\text{Var}(\bar{X}_F) < \text{Var}(\bar{X}_S)$ always
(D)	None of the above

Question No. 7:

In order to estimate the proportion of homes with DSL connection in Riyadh, a survey of 500 homes found 350 with DSL connections. Let \hat{p} be the sample proportion for the homes with DSL connections. Then

21. $\hat{p} =$

(A)	.35
(B)	.45
(C)	.50
(D)	.70

22. The estimated standard deviation of $\hat{p} =$

(A)	0.0205
(B)	0.2050
(C)	0.0250
(D)	0.2105

23. The estimated standard error for $\hat{p} =$

(A)	0.0205
(B)	0.2050
(C)	0.0250
(D)	0.2105

24. The length of 95% confidence interval for p=

(A)	.4020
(B)	0.8030
(C)	0.0803
(D)	0.0402

25. For 95% confidence interval, the maximum error will not exceed

(A)	0.0803
(B)	0.0402
(C)	0.8030
(D)	0.4020