Started on	Monday, 10 October 2022, 1:08 PM
State	Finished
Completed on	Monday, 10 October 2022, 1:53 PM
Time taken	45 mins 1 sec
Marks	9.00/30.00
Grade	**3.00** out of 10.00 (**30**%)

Question **1**

Correct

Mark 1.00 out of 1.00

If X is a continuous random variable with probability density function f(x) = x/4 , 1 < x <3 . Find the mean of X.

- a. 2
- b. 13/6 ✔
- c. 15/6
- d. None of the others choice are correct
- e. 14/6

Your answer is correct.

The correct answer is:
13/6

Question 2

Correct

Mark 1.00 out of 1.00

Let X be the continuous random variable with cumulative distribution function

$F(x) = 1 - e^{-0.5x}$, $x>0$; the probability density function of X is f(x) =

a. $1-0.5e^{-0,5x}$, $x>0$

b. $1-0.5e^{0.5x}$, $x>0$

c. $0.5e^{-0.5x}$, $x>0$ ✔

d. None of them

e. $0.5e^{0.5x}$, $x>0$

Your answer is correct.

The correct answer is:
$0.5e^{-0.5x}$, $x>0$

Question 3

Correct

Mark 1.00 out of 1.00

The thickness of a conductive coating in micrometers has a density function of $600x^{-2}$ for 100 μm < x < 120μm. Find the standard deviation of the coating thickness.

a. 109.39

b. 121

c. None of them

d. 112

e. 102

Your answer is correct.

The correct answer is:
None of them

Question **4**

Incorrect

Mark 0.00 out of 1.00

If X is a continuous random variable with probability density function **f(x)** = $1.5x^2$, for -1 < x<1.
Find the **a** such that **P(X>a)** =0.05.

- a. 0.4688
- b. 0.3215
- c. 0.9655
- d. 0.6455
- e. None of them ✖

Your answer is incorrect.

The correct answer is:
0.9655

Question 5

Correct

Mark 1.00 out of 1.00

If X is a continuous random variable with probability density function f(x) = x/3, $3^{1/2}$<x <3. Find the mean of X.

a. $3-3/3^{0.5}$

b. $3-3^{1/2}/3$

c. None of others

d. $1-1/3^{1/2}$

Your answer is correct.

The correct answer is:
$3-3^{1/2}/3$

Question **6**

Correct

Mark 1.00 out of 1.00

A probability density function is given by $f(x) = b/x^2$ when $1<x<5$. What is the value of b ?

- a. 4/5
- b. 5/4 ✔
- c. 5
- d. 4
- e. 1

Your answer is correct.

The correct answer is:
5/4

Question 7

Correct

Mark 1.00 out of 1.00

Let X be a continuous random with f(x) is probability density function. Which the following statement(s) is (are) TRUE?

(i) $f(x) = 0.25, 0 < x < 4 \Rightarrow E(X) = 2$

(ii) $f(x) = 0.125x , 3 < x < 5 \Rightarrow E(X) = 4.083$

(iii) $f(x) = 0.125x , 0 < x < 4 \Rightarrow E(X) = 2.6667$

a. (ii)

b. (i)

c. (iii)

d. All of them ✔

Your answer is correct.

The correct answer is: All of them

Question 8

Correct

Mark 1.00 out of 1.00

Let X be the continuous random variable with cumulative distribution function $F(x) = 1 - e^{-0.2x}$, $x>0$; find the probability density function of X.

a. $f(x) = 1-0.2e^{-0.2x}$, $x>0$

b. $f(x) = -0.2e^{-0.2x}$, $x>0$

c. $f(x) = 0.2e^{-0.2x}$, $x>0$

d. None of others

Your answer is correct.

The correct answer is:
$f(x) = 0.2e^{-0.2x}$, $x>0$

Question 9

Incorrect

Mark 0.00 out of 1.00

A supermarket manager has determined that the amount of time customers spend in the supermarket is approximately normally distributed with a mean of 45 minutes and a standard deviation of 6 minutes. Find the probability that a customer spends between 39 and 43 minutes in the supermarket. Let P(Z < -1) = 0.157, P(Z < -0.33) = 0.369, P(Z < 0.02) = 0.502 and P(Z < 0.85) = 0.803.

- a. None of them ✖
- b. 0.4177
- c. 0.213
- d. 0.823
- e. 0.212

Your answer is incorrect.

The correct answer is:
0.212

Question **10**

Incorrect

Mark 0.00 out of 1.00

Assume that the number of asbestos particles in a squared meter of dust on a surface follows a Poisson distribution with a mean of 10.000. If a squared meter of dust is analyzed, approximate the probability that less than 8050 particles are found. Let P(Z<-4) = 0; P(Z <5) = 1; P(Z<0) = 0.5 given that Z is a standard normal random variable.

a. 0

b. None ✖

c. 1.02

d. 0.5

e. 1

Your answer is incorrect.

The correct answer is:
0

Question 11

Not answered

Marked out of 1.00

Assume that Z scores are normally distributed with a mean of 0 and a standard deviation of 1. If P(-a < Z < a) = 0.4314, find a. Let P(Z < -0.18) = 0.4286, P(Z < 0.33) = 0.6293, P(Z < 0.57) = 0.7157 and P(Z < 1.49) = 0.9319.

a. None of them

b. 0.75

c. -0.18

d. 1.49

e. 0.57

Your answer is incorrect.

The correct answer is:
0.57

Question 12

Correct

Mark 1.00 out of 1.00

If we are using the normal approximation to determine the probability of at most 28 successes in a binomial distribution P(X≤28) the normal distribution probability that is used to make the estimate is
(i) P(X≤28.5)
(ii) P(X<28)
(iii) P(X≤27.5)
(iv) P(X≤28)

a. (iii)

b. (iv)

c. (i) ✔

d. None of the others choice

e. (ii)

Your answer is correct.

The correct answer is:
(i)

Question 13

Correct

Mark 1.00 out of 1.00

The speed of a file transfer from a server on campus to a personal computer at a student's home on a weekday evening is normally distributed with a mean of 60 kilobits per second and a standard deviation of 4 kilobits per second. What is the probability that the file will transfer at a speed of less than 58 kilobits per second?
P(Z<-0.5)=0.3085; P(Z<0.5)=0.6914; P(Z<(0.13)=0.4483; P(Z<0.13)=0.5517

- a. 0.3085 ✔
- b. 0.9544
- c. 0.0228
- d. None of them
- e. 0.6914

Your answer is correct.

The correct answer is:
0.3085

Question **14**

Not answered

Marked out of 1.00

Let the random variable X represent the profit made on a randomly selected day by a certain store. Assume that X is Normal with mean 360 $ and standard deviation 50$. What is P(X >400)? P(Z<0.7)=0.7580, P(Z<0.8)= 0.7881, P(Z<0.9)=0.8159

a. 0.3085

b. 0.2119

c. 0.1508

d. None

e. 0.2315

Your answer is incorrect.

The correct answer is:
0.2119

Question **15**

Not answered

Marked out of 1.00

Assume that X has a normal distribution with the mean is μ= 15.2 and the standard deviation is σ = 0.9. Find the probability that X is greater than 16.1.

Let P(Z < 0.1) = 0.8413, P(Z > 0) = 0.50, where Z is a standard normal distribution.

a. 0.0228
b. 0.8413
c. 0.1587
d. 0.3085

Your answer is incorrect.

The correct answer is:
0.1587

Question **16**

Not answered

Marked out of 1.00

If we are using the normal approximation to determine the probability of at most 28 successes in a binomial distribution P(X ≤28) the normal distribution probability that is used to make the estimate is:

(i) P(X ≤28.5)

(ii) P(X <28)

(iii) P(X ≤27.5)

(iv) P(X ≤28)

a. (i)

b. None of them

c. (iv)

d. (ii)

e. (iii)

Your answer is incorrect.

The correct answer is:
(i)

Question 17

Not answered

Marked out of 1.00

Assume X is normally distributed with a mean of 30 and a standard variation of 3. Determine the value for x that holds: P(X >x) = 0.5. Let P(Z<0)= 0 .5; Z is a standard normal random variable.

a. 20

b. 40

c. 30

d. None

e. 10

Your answer is incorrect.

The correct answer is:
30

Question **18**

Not answered

Marked out of 1.00

Assume X is normally distributed with a mean of 15 and a standard variation of 1.3. Determine the value for x that holds:.P(X >x) = 0.5. Let P(Z<0)= 0 .5; Z is a standard normal random variable.

a. None of them

b. 20

c. 25

d. 10

e. 15

Your answer is incorrect.

The correct answer is:
15

Question **19**

Not answered

Marked out of 1.00

Suppose that the log-ons to a computer network follow a Poisson process with an average of 5 counts per minute.
Find the mean time between counts and the standard deviation of the time between counts.
Hint: Exponential distribution

a. 0.25 and 0.25
b. 0.2 and 2.23
c. None of others.
d. 0.2 and 0.04
e. 0.2 and 0.2

Your answer is incorrect.

The correct answer is:
0.2 and 0.2

Question 20

Not answered

Marked out of 1.00

A catalog company that receives the majority of its orders by telephone conducted a study to determine how long customers were willing to wait on hold before ordering a product. The length of time was found to be a random variable best approximated by an exponential distribution with a mean equal to 2.8 minutes. What proportion of callers is put on hold longer than 2.8 minutes?

a. 0.50

b. None of the other choices is correct

c. 0.632121

d. 0.60810

e. 0.367879

Your answer is incorrect.

The correct answer is:
0.367879

Question 21

Not answered

Marked out of 1.00

The time between calls to a plumbing supply business is exponentially distributed with a mean time between calls of 15 minutes. What is the probability that there are no calls within a 60-minute interval?

a. e^{-2}

b. e^{4}

c. None

d. e^{2}

e. e^{-4}

Your answer is incorrect.

The correct answer is:
e^{-4}

Question 22

Not answered

Marked out of 1.00

Suppose that the log-ons to a computer network follow a Poisson process with an average of 5 counts per minute. Find the mean time between counts and the variation of the time between counts.

a. 1/5 and 1/25

b. None of them

c. 1/5 and 1/5

d. 5 and 1/5

e. 1/5 and 4/5

Your answer is incorrect.

The correct answer is:
1/5 and 1/25

Question 23

Not answered

Marked out of 1.00

The distance between major cracks in a highway follows an exponential distribution with a mean of 5 miles. What is the probability that there are no major cracks in a 10-mile stretch of the highway?

- a. 0.1353
- b. 0.2013
- c. 0.2727
- d. None of them
- e. 0.1546

Your answer is incorrect.

The correct answer is:
0.1353

Question 24

Not answered

Marked out of 1.00

The time between calls to a plumbing supply business is exponentially distributed with a mean time between calls of 15 minutes. What is the probability that there are no calls within a 45-minute interval?

a. e^{+3}

b. None of the others

c. e^{-3}

d. e^{-2}

e. e^{+3}

Your answer is incorrect.

The correct answer is:
e^{-3}

Question 25

Not answered

Marked out of 1.00

Suppose X has an exponential distribution with $\lambda = 0.1$. Determine $P(X<30)$

a. 0.8293

b. 0.9502

c. 0.8531

d. None of the other choices is corect

e. 0.8647

Your answer is incorrect.

The correct answer is:
0.9502

Question 26

Not answered

Marked out of 1.00

Suppose that the log-ons to a computer network follow a Poisson process with an average of 7 counts per minute. Find the mean time between counts and the standard deviation of the time between counts.

a. None of them
b. 7 and 1/7
c. 1/7 and 1/7
d. 1/7 and 1/49
e. 1/7 and 7

Your answer is incorrect.

The correct answer is:
1/7 and 1/7

Question 27

Not answered

Marked out of 1.00

The time (in years) until the first critical-part failure for a certain car is exponentially distributed with a mean of 3.4 years. Find the probability that the time until the first critical-part failure is less than 1 year.

a. 0.966627

b. None of the other choices is correct

c. 0.033373

d. 0.254811

e. 0.745189

Your answer is incorrect.

The correct answer is:
0.254811

Question 28

Not answered

Marked out of 1.00

Suppose X has a continuous uniform distribution over the interval [-3; 7]. Determine the mean, variance, and standard deviation of X.

a. 2; 4 and 2

b. 3; 4; 5

c. 2; 25/3 and 2.887

d. 4; 8 and 2.828

e. None of them

Your answer is incorrect.

The correct answer is:
2; 25/3 and 2.887

Question 29

Not answered

Marked out of 1.00

Suppose *X* has a continuous uniform distribution over the interval [-2,2]. Determine the mean, variance, and standard deviation of *X.*

a. 0; 4/3 and `1 - 2 sqrt(3)/3`

b. 0; 4/3 and `2 sqrt(3)/3`

c. 0; 4/3 and `2 sqrt(3)`

d. None of the others

Your answer is incorrect.

The correct answer is:
0; 4/3 and `2 sqrt(3)/3`

Question 30

Not answered

Marked out of 1.00

Suppose a uniform random variable can be used to describe the outcome of an experiment with outcomes ranging from 40 to 80. What is the probability that this experiment results in an outcome less than 50?

a. 0.08
b. 1/4
c. 0.31
d. None
e. 0.45

Your answer is incorrect.

The correct answer is: 1/4