

Exam (1)

Q1) The grades of general exam are normally distributed with mean 70.8 and variance 25, the minimum grade for the top 20% of the grades is :

- a) 70 b) 90 **c) 75** d) 0.75 e) 0.8

Q2) the weights of tomato pasta can is normally distributed with mean 240 grams and standard deviation 8 grams based on this information the 70th percentile of can's weight is:

- a) 235.84 b) between 235.84 and 244.16 c) larger than 244.16 **d) 244.16**
e) less than 235.84

Q3) suppose that 20% of the student in university of Jordan own cars in a random sample of 30 students, let x be the number of students who own cars then the distribution of x is :

- a) N(0.2 , 0.003) b) poisson (30) **c) B(30,0.2)** d) N(30,0.8) e) N(6,4.8)

Q4) The distribution that can be used to approximate the binomial distribution B(50,0.3) is

- a) N(15,10.5)** b) N(0.3 , 3.24) c) N(15,35) d) Poi (10.5) e) Poi (0.3)

Q5) the weights of potato chips (x) in packaged bags are normally distribution with mean 15 and variance 4 the distribution of the average weight of a random sample of 18 such bags is:

- a) N(15, 1/3) b) N(15, 1/5) **c) N(15,2/9)** d) N(15,1/6) e) t(17)

Q6) let $z \sim n(0,1)$ with $P(-C < Z < C) = 0.6970$ then the value of c is equals :

- a) 0.64 b) 0.52 c) 1.28 **d) 1.03** e) 0.84

Q7) Suppose you want to play a game that costs 5\$ each time you play . If you win , you get 100\$ If the probability of winning is 0.03 , then the expected value of the amount that the player stands to gain is :

- a) -3 b) 7 c) 0 **d) -2** e) 10

Q8) let x be a random variable such that $E(x) = \text{var}(X) = 5$ Then $E(x^2) =$

- a) 25 b) 16 c) 20 **d) 30** e) 12

Q9) a student answers 10 true or false questions by random guessing the probability that this student will answer at least 5 questions correctly is :

- a) 0.828 b) 0.377 c) 0.172 d) 0.717 **e) 0.623**

Q10) suppose that $x \sim \text{Bin}(n, p)$ and $E(x) = 6$ and $\text{Var}(x) = 2.4$ then (n) is equal:

- a) 6 **b) 10** c) 4 d) 2.4 e) 2.5

Q11) let x be a binomial with $n = 100$ and $p = 0.7$ then $P(X > 75)$ is = **0.1151**

Exam (2)

Q1) In a game of tossing 1 fair coin , you win if you get two heads; the probability that you win 1 times out of 6 game is :

- a) 0.3559 b) 0.4448 c) 0.5130 d) 0.1318

$$P_{HH} = \frac{1}{4} \quad n=6 \quad X \sim Bi(6, 0.25)$$

$$P(X=1) = \binom{6}{1} (0.25)^1 (0.75)^5$$

Q2) In a certain population the grades of students have mean 75 and variance 49 it a random sample of 64 student is chosen. then the probability that the sample mean is greater than 74 will be :

- a) 0.1271 b) 0.3091 c) 0.6392 d) 0.9890 e) 0.8729

Q3) let x be a discrete random variable with the following probability density Then $E(x^2)$ is :

P	-2	0	5
F(x)	a	0.2	0.3

- a) 9.5 b) 6.8 c) 4.7 d) 5.2 e) 7.1

Q4) let $x \sim \text{binomial}(10, 0.2)$, then $E(x^2 + 1) =$

- a) 4.6 b) 5.6 c) 6.6 d) 7.6 e) 8.6

Q5) let x be a discrete random variable with $E(x) = 4$ and $E(2x^2 - x - 5) = 35$ then $\text{Var}(x) =$

- a) 5 b) 6 c) 7 e) 4

Q6) Let $x \sim N(M, \sigma^2)$ then $P(M < x < M + \sigma) =$

- a) 0.3413 b) 0.4772 c) 0.5605 d) 0.2010 e) 0.4987

Q7) the weights of people in a certain population are normally distributed with mean 70 kg and standard deviation 8 kg . The weight above which 10 % of the observations is =

- a) 76.24 b) 78.24 **c) 80.24** d) 82.24 e) 84.24

Q8) Let $Z \sim N(0,1)$ and $P(-C < Z < C) = 0.6$ find $c =$

- a) 0.76 **b) 0.84** c) 1.28 d) 0.52 e) 0.64

Q9) rolling two dice once, let x be the sum of number if spots appear on both dice, then $P(x > 10) =$

- a) 18/60 b) 6/36 c) 10/36 **d) 3/36** e) 8/36

Q11) let x binomial (50, 0.3) using the normal Approximation $P(x > 17) :$

- a) 0.1401 **b) 0.2206** c) 0.3003 d) 0.1032 e) 0.0823

Questions

1. a class consists of 8 males and 12 females where 5 males and 8 females passed the exam . If a students is selected randomly from the class , find the probability that this student passed the exam :

- a) 0.6 b) 0.55 c) 0.75 d) 0.7 **e) 0.65**

2. The distribution at which the mean , mode and median equal to Zero is :

- a) Binomial ~~b) standardized normal distribution~~ d) F-dis

3. For the normal distribution, one of the following is true:

- a) $\mu = \text{mode} = Q_2$** b) $\mu > \text{mode} > Q_2$ c) $\mu < \text{mode} < Q_2$

4. the distribution at which the mean , mode and median are equal is :

- a) Binomial ~~b) Normal~~ c) Chi-square d) F-dis e) None

5. three children wearing T-shirts numbered 1,2,3 are asked to set on three chairs numbered 1,2,3 at random, the probability that each T-shirt number matches the chair number is :

- a) ~~$\frac{1}{6!}$~~ ~~b) $\frac{2}{3!}$~~ c) $\frac{2}{3!}$ **d) $\frac{1}{3!}$** e) $\frac{2}{6!}$

6. method of counting outcomes in which number of outcomes determined without taking care of arrangement order is :

- a) Permutation b) Factorial c) Multiplication rule **d) Combination** e) None

7. a box contains 4 balls numbered from (1-4) if three balls are chosen with replacement , then the probability that three are different numbered is :

- a) 0.375** b) 0.325 c) 0.425 d) 0.48 e) 0.556

8. The temperatures of summer weather this year are normally distributed with mean 38 and standard deviation 4 degrees, the smallest temperature for hottest 10% of the temperatures is :

- a) 10% b) 90% c) 43.12 d) 32.88 e) 38.22

9. If a group of students have test scores that are normally distributed with mean 82 and standard deviation 4 , then half of the student made a grade below :

- a) 82 b) 86 c) 0.1355 d) 64 e) 1

10. a class consists of 12 math students and 8 physics students if a random sample of 5 students is chosen from this class then the probability of getting exactly 3 math students is :

- a) $\frac{12^3 8^2}{20^5}$ b) $\frac{(12)(11)(10)(8)(7)}{(20)(19)(18)(17)(16)}$ c) $\frac{\binom{12}{3} \binom{8}{2}}{\binom{20}{5}}$ d) $\frac{\binom{12}{3} \binom{8}{2}}{\binom{20}{5}}$

11. the number of ways for arranging 5 books (3 math and 2 physics) on a shelf such that all math books are beside each other :

- a) 36 b) 144 c) 48 d) 12 e) 72

12. If a box contains five balls three of them white and two are black , what's the probability of drawing three white balls without replacement :

- a) 0.5 b) 0.2 c) 0.1 d) 0.4 e) 1

13. The number of ways 2 boys and 3 girls can stand. On a line such that all boys are next each other :

- a) 48 b) 18 c) 36 d) 12 e) 24

14. a class contains 8 students , 6 are math and two are physics . If we choose two students from this class , then the probability that the 2nd is physics given that 1st is physics :

- a) 2/7 b) 1/6 c) 1/7 d) 2/8 e) 1/8

15. a box contains 10 balls , 8 are white and two are black . If we draw 4 balls together , the probability of getting 3 white is :

- a) $\frac{\binom{4}{1}}{\binom{8}{3}}$ b) $\frac{\binom{8}{3}\binom{2}{1}}{\binom{10}{4}}$ c) $\frac{\binom{4}{3}}{\binom{10}{4}}$ d) $\frac{\binom{8}{3}}{\binom{10}{4}}$ e) 1

16. a group of four friends with different ages , what is the probability that they will have different birthdays (If the year is 365 days) :

- a) 0.5 b) 0.358 c) 0.983 d) 0.99 e) 0.111

17. The number of ways we can perform 3-digit even number using { 1,2,3,4,5,6 } is(no restriction) :

- a) 60 b) 125 c) 50 d) 40 e) 45

18. the number of ways of selecting 3 red and 2 white balls out of box contains 5 red and 4 white ball is :

- a) 12 b) 60 c) 30 d) 40 e) 20

19. A multiple-choice test has 30 question there are 4 – choices for each question , a students is answering the test by guessing , then the distribution is :

- a) $x \sim \text{Bin}(30,0.5)$ b) $x \sim \text{Bin}(30,4)$ c) $x \sim \text{Bin}(30)$ d) $x \sim \text{Bin}(30,0.25)$

20. Suppose a game is played with one six-sided die . If the die is rolled and landed on 1,2,3 the player wins nothing if the die lands on 4 or 5 the player wins 3\$ if the die lands on 6 , the player wins 12\$. the expected value =

- a) 2 b) 3 c) 4

→ 21. Let $x \sim N (M, \sigma^2)$, then $P (M + \sigma < x < M + 2 \sigma) =$

- a) None b) 0.1300 **c) 0.1359** d) 0.8413 e) 0.9772

22. A class contains 10 students , the probability that they will have different birthdays is :

- a) 0.911 b) 0.791 c) 0.934 **d) 0.883** e) None

23. Let x be a random variable with mean 100 and variance 25 , then $E (-2x + x^2) =$

- a) 10,000 **b) 9825** c) 500 d) 0 e) 125

24. suppose you rank in the top 10 % of your class If the mean GPA is 2.7 and the standard deviation is 0.59 , then your GPA:

- a) is more than 3.4552** b) is less than 3.4552 c) is more than 1.88 d) is less than 1.88

25. A family has 5 children (3 girls and 2 boys) Two of the girls and one boy wear glasses . the probability that two of them wearing glasses if two of them are selected is :

- a) 1 b) 3/5 c) 6/5 **d) 0.30** e) 0

→ 26. A random variable takes the values 1,2,3 where $P(x=2) = 0.5$ and $E (x) = 1.8$ then

$P (x > 2 \mid x > 1)$ is

- a) 1.8 b) 0.5 **d) 2/3** e) 0

27. The systolic blood pressure x for a healthy person is normally distribution with mean 120 and standard deviation 10 . For a sample of 25 persons probability that the average will be between 120 and 123 is :

- a) 0.5 **b) 0.4332** c) 0.9332 d) e) None

28. Let $X \sim N (5, \sigma^2)$ and $P(5 < x < 8) = 0.3413$ Then $\sigma =$

- a) 5 b) 4 **c) 3** d) 1 e) 2

29. The distribution that can be used to Approximate the binomial distribution Bin

(50, 0.3):

- a) $N(15,10.5)$ b) $N(0.3,3.24)$ c) $N(15,35)$ d) $N(15,35)$ e) $T(0.3)$

30. The weights of potato chips (x) in packaged bags are normally distributed with mean 15 grams and variance 4 grams. The distribution of the average weights of a random sample of 18 such bags is:

- a) $N(15,1/3)$ b) $N(15,1/5)$ c) $N(15,1/6)$ d) $N(15,2/9)$ e) $T(17)$.

31. Suppose that 20% of students in the University Of Jordan own cars. In a random sample of 30 student, let x be the number of students who own cars, then the distribution of x is :

- a) $N(0.2,0.003)$ b) $B(30,0.2)$ c) $N(6,4.8)$ d) $N(30,0.8)$ e) $T(30)$

32. Let $x \sim \text{Bin} (20,0.3)$ then $P (x < 5 \cup x > 1)$ is:

- a) 0.146 b) 0.13 c) 0.76 d) 0.25 e) 0.16

33. Let $Z \sim N (0,1)$ with $P (-c < Z < c) = 0.697$ then the value of c =

- a) 0.64 b) 1.28 c) 0.52 d) 1.03 e) 0.84

34. An exam consists of (3) true or false question followed by (6) multiple choice questions each with 4 answers So, the number of ways the exam can be answered assuming that questions may be left blank :

$$3^3 * 4^6$$

35. From a group of 6 men and 4 women . A team of 2 is randomly chosen . The probability that this team consists of 1 man and 1 women is :-

- a) $3/5$ b) $8/15$ c) $5/9$ d) $4/15$ e) 1

36. A class consists of 40 % of males and 60 % of females . 15 % of males and 25% of females are physics students and the remain are math students if a student is chosen randomly from this class then the probability that this student is a physics student is :

$$0.21$$

35. Consider the following probability distribution

X	0	1	2	3
P(x)	a	b	0.3	0.2

If $E(x) = 1.5$ then (a) equals =

$$b = 0.3$$

$$a = 0.2$$

- a) 0.2 b) 0.4 c) 0.1 d) 0.3 e) 0.5

37. Suppose that 20 % of the students in certain college are smokers. Let x be the number of smokers in a random sample 10 students then $E(x) =$

- a) 7 b) 5.6 c) 1.6 d) 2 e) 3.6

38. If x is a discrete random variable such that $P(x \leq 7) = 0.9$ and $P(x < 3) = 0.3$ and $P(x=3) = 0.1$ then $P(3 < x \leq 7) =$

- a) 0.8 b) 0.5 c) 0.9 d) 0.6 e) 0.7

39. If x is a continuous random variable then $P(x=0.5)$ is :

- a) 0 b) Positive and smaller than 0.5 c) 1 d) Greater than 0.5 and less than 1 e) 0.5

40. Let $Z \sim N(0,1)$, if $P(0 < Z < a) = 0.3212$ then $a =$

- a) 0.82 b) 0.78 c) -0.82 d) -0.92 e) 0.92

41. The weights of children of a certain age have the normal distribution with mean = 10 kg and $\sigma = 1$. The weights of children of this age with weight more than 10.84 kg is :

- a) 0.2005 b) -0.84 c) 0.84 d) 10/21 e) None

42. Let $x \sim \text{Bin}(100, 0.1)$ Then $P(x < 13) =$

- a) 0.6103 b) 0.5731 c) 0.8413 d) 0.7967 e) 0.2033

43. Let \bar{x} be the mean of a sample of size $n = 64$ randomly selected from a population that has mean $M = 30$ and variance $\sigma^2 = 100$. Then $P(\bar{x} < 28) =$

- a) 0.3129 b) 0.1120 c) 0.1329 d) 2210 e) 0.0548

44. let $x \sim N(160, 25)$, the 40th percentile of $x =$

- a) 162.75 b) 158.75 c) 154.75 d) 153.75 e) 156.75

45. If $x=0,2$ is a discrete random variable with $E(x) = 0.4$, then $P(x=0) =$

- a) 0.6 b) 0.7 c) 0.4 d) 0.5 e) 0.8

46. Let $x \sim \text{Bin}(100, 0,3)$ then the normal distribution approximation is

- a) $N(100, 0.3)$ b) $N(30, 3)$ c) $N(30, 21)$ d) $N(0.3, 100)$ e) $N(21, 30)$

47. If $x \sim N(M, \sigma^2)$, then $P(M < X < M + 3\sigma) =$

- a) 0.401 b) 0.4987 c) 0.273 d) 0.224 e) 0.316

48. If the grades of students in a certain population are normally distributed with standard deviation 4 and 10% of the student are above the grade 70, then the mean is =

- a) 65.79 b) 62.16 c) 63.45 d) 64.88 e) 66.8

49. The weights of students in a certain population have mean 50 kg and standard deviation 5 kg. If a random sample of size 36 is chosen the probability that the sum of their weight is less than 1836 kg is =

- a) 0.5793 b) 0.6677 c) 0.9590 d) 0.4033 e) 0.8849

50. Let $x \sim \text{Bin}(25, 0.2)$ then $P(M - \sigma < x < M + \sigma) =$

- a) 0.546 b) 0.780 c) 0.891 d) 0.793 e) None of these

51. Let $x \sim \text{Bin}(25, 0.1)$ then $E(x(x+1)) =$

- a) 25 b) 2.5 c) 5 d) 11 e) 12