Probability theory and ans

STA 2023 Test on sections 6. 1, 6. 2, 7. 1-7. 3, and 7. 5 STA 2023 Test on sections 6. 1, , and 6. 2. Classify the following random variable as to whether it is discrete or continuous. 1) The number of runs scored in a baseball game. A) continuous B) discrete Ans = B 2) The cost of a road map. A) continuous B) discrete Ans = B Provide an appropriate response. 3) A random variable is A) generated by a random number table. B) the variable for which an algebraic equation is solved. C) a numerical measure of a probability experiment.. Ans = C D) a qualitative attribute of a population. 4) Given the table of probabilities for the random variable x, does this form a probability distribution? Answer yes or no. x 5 10 15 25 P(x) 0. 1 —0. 1 0. 3 0. 8 Ans = No 5) True or False: The expected value of a discrete random variable may be negative Ans = True 6) The table of probabilities of the random variable x is given as: x 0 1 2 5 P(x) 0. 5 0. 2 0. 2 0. 1 Find the mean, μ and standard deviation, Ïƒ of x. Round answers to one decimal place. Ans = μ = 1. 1, Ïƒ = 1. 5 7) If p is the probability of success of a binomial experiment then the probability of failure is A) 1 B) —p C) 1—p D) p + 0. 5 Ans = C 8) A binomial experiment has 6 trials with the probability of success on any trial = p = 0. 5. Find the probability of exactly 2 successes in the 6 trials. (Use the binomial probability distribution function.) Ans = 0. 2344 9) Assume that male and female births are equally likely and the birth of any child does not affect the probability of the gender of any other children. Find the probability of at most three girls in nine births. Ans = 0. 1714 exact Ans = 0. 1719 normal approx 10) A test consists of 16 True False questions. If a student guesses on each question what is the mean number of correct answers? Ans = 8 STA 2023 Test on Ch 7 11) Use the standard normal distribution to find P(—1. 24 < Z < 1. 32). Ans = 0. 7991 12) Use the standard normal

distribution to find P(Z > 1. 05). Ans = 0. 1469 13) If P(0 < Z < a) = 0. 4452 find a Ans a = 1. 6 14) Assume credit ratings are normally distributed with a mean of 200 and a standard deviation of 50. If a person is randomly selected find the probability that his credit rating is between 200 and 270. Ans = 0. 4192 15) Use the continuity correction and describe the region of the normal curve that corresponds to the indicated binomial probability. The probability that the number of correct answers is between 15 and 27 inclusive is A) The area between 14. 5 and 26. 5 B) The area between 14. 5 and 27. 5 C) The area between 15. 5 and 26. 5 D) The area between 15. 5 and 27. 5 Ans = B 16) Suppose you buy 1 ticket for $1 out of a lottery of 1, 000 tickets where the prize for the one winning ticket is to be $600. What is your expected value? Ans = —40 cents 17) A baseball player has a batting average of . 300. This player has 200 official plate appearances. Using the normal approximation (to the binomial distribution) find the probability that he gets from 55 to 65 (inclusive) base hits in his 200 plate appearances. Ans = 0. 6039 18) Assume that in a certain year SAT scores are normally distributed with a mean μ of 1020 and a standard deviation Ïƒ of 150. Approximately what is the actual score of a person who scores in the 98th percentile on the SAT? . Ans = 1328