JC2 H1 MATHEMATICS (8865)

Term 3 Weekend Assignment 1

Topic: Binomial Distribution

Name: _____   Marks:_____/**11**

C.G.:   _____

1. TJC Promo 8865/2021/Q9

CheapnGood is an online shop that sells solar powered lights. CheapnGood is not very reliable and it is known that p% of their solar powered lights **do not work**. A shopper bought 12 solar powered lights for his garden from CheapnGood. The 12 lights were randomly chosen by CheapnGood and delivered to the shopper.

For **part (i) to part (iv)**, take $p = 15$.

(i) Find the probability that exactly 7 lights bought by the shopper work. [1]

(ii) Find the probability that at least 3 lights bought by the shopper do not work. [2]

(iii) Find the probability that exactly 7 lights work given that at least 3 lights bought by the shopper do not work. [3]

(iv) Find the least value of r such that the probability that less than r lights bought by the shopper do not work is greater than 0.9. [3]

In a random sample of size 12, find in terms of p, the mean and variance of the number of lights that do not work. [2]