

4. A company produces blue beads and green beads.

The proportion of green beads produced is 0.38

Beads are selected at random and put into mixed packs of 10

(a) Find the probability of a pack containing more than 6 green beads.

(2)

(b) Find the most likely number of green beads in a pack.

Show your working clearly.

(2)

The company also produces bowls.

Initial tests suggest that 20% of these bowls are faulty.

The manager of the company believes that the proportion of faulty bowls is greater than 20%

He takes a random sample of 40 bowls.

(c) Using a 5% level of significance, find the critical region for a one-tailed test to check the manager's belief.

State your hypotheses clearly.

(3)

(d) Find the actual level of significance for this test.

(1)

The manager finds that 17 of the 40 bowls sampled are faulty.

(e) With reference to this information and part (c), comment on the manager's belief.

(1)

(f) Comment on the validity of the statistical model used in part (c), giving a reason for your answer.

(1)