

- 1) 2 2) 1 3) 4 4) 1 5) 2
 6) 3 7) 4 8) 4 9) 3 10) 2
 11) 4 12) 2 13) 3 14) 4 15) 3
 16) 1 17) 4 18) 2

19) SAMPLE ANSWER:

- (1) Amino acids are the building blocks required to synthesize proteins.;
- (2) Ribosomes are the site for protein assembly.;
- (3) DNA codes for the amino acid sequence. OR DNA provides instructions for making proteins.

- 20) 1 21) 2 22) 1 23) 1 24) 1
 25) 4 26) 3 27) 1 28) 4 29) 2

30) SAMPLE ANSWERS: (a) **AACCTGCTC** OR **CCTACGGCA**; (b) at least one change indicated

31) SAMPLE ANSWERS: a change in a gene OR a change in DNA code OR a change in a allele

32) 3

33) SAMPLE ANSWERS: The gene is beneficial to people who have only one copy. OR The allele makes people resistant to malaria. OR People with one gene survive malaria and pass the gene on to offspring.

34) SAMPLE ANSWERS: *E. coli* OR bacteria

35) SAMPLE ANSWERS: enzymes OR proteins

36) SAMPLE ANSWERS: Irradiation... kills the bacteria that cause the meat to spoil. OR ...disrupts the structure of bacteria that cause the meat to spoil. OR ...prevents reproduction of the bacteria that causes the meat to spoil.

37) SAMPLE ANSWERS: It causes mutations. OR Essential enzymes are destroyed. OR Irradiation disrupts the structure of bacterial DNA so that it cannot replicate properly.

- 38) 3 39) 1 40) 2 41) 3 42) 1
 43) 2 44) 4

45) SAMPLE ANSWERS: Different parts of genetic information are used in different cells. OR Different cells are influenced by their environments in the body.

- 46) 1 47) 3 48) 4 49) 3 50) 4
 51) 4 52) 2 53) 4 54) 1 55) 2
 56) 1