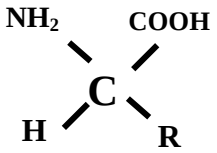
Answer the following:

Question one:

A. Choose the correct answer:

1. Replacing the alkyl (R) group in the following amino acid with H atom, the amino acid formed may be ……..
   (glycin – alanine – methionine – arginine)



2. If the adenine nucleotide in one turn of DNA is 10 so the number of guanine nucleotide is …….(0 – 5 -10 - 80)
3. All the following represent the character of DNA in prokaryotes except...
   (double helix- condensed chromatin – have the ability for replication – have the code for protein synthesis)
4. we can determine the evolutionary relationship using……
   (recombinant DNA – made tailor DNA – hybrid DNA – all the previous)
5. bacterial cells does not contain….
   (cytoplasm – plasma membrane – nuclear membrane – nucleic acid)

B. Give reasons for:

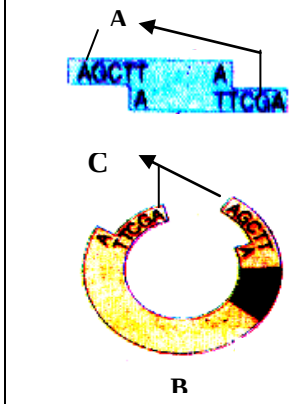
1. amount of protein in the cell prove that it is less likely to be the genetic material.
2. Polyploidy is more common in plants.
3. Treating the tip of the plants with colchicines.
4. Insulin extracted from bacteria are more similar to human insulin.
5. Although some parts of DNA is not coded for protein but they are present in the chromosome.

Question two:

A. What would happen in the following cases:

1. Absence of promoter from DNA.
2. 2 strands of DNA are not antiparallel.
3. The genetic cod is singlet or doublet.
4. Disappearance of start codon AUG from mRNA.
5. Treating the genetic material responsible for bacterial transformation by deoxyribonuclease enzyme.

B. The following diagram represent one of the method of cloning DNA sequences.



1. what is the part B represent and when is it found?
2. What is the name of the enzyme used to treat DNA piece and part B.
3. What is the name of the structure resulting from combination?
4. What are the single stranded A and C represented? What is the name of the enzyme used to join both of them?
5. Explain with drawing the rest of the steps.
6. Explain another method used for cloning DNA piece and the name of the enzyme used?

C. Explain with a labeled drawing only:
Linking of paired nitrogenous bases together to form DNA double helix.

Question three:

A. Protein synthesis include translation process"
   1) How this process started? And where?
   2) What is the name of the organelle that perform this process? And where is it form?
   3) What is the kind of RNA that enter in production of that organelle? and how many copies of genes required for its production?
   4) What is the difference between this process in prokaryotes and eukaryotes?

B. Write a brief account about:
   a. Polyribosome b. Repetitive DNA c. polyploidy d. anticodon

C. Compare between DNA in prokaryotes and eukaryotes.