**Problems in genetic engineering / DNA Cloning**

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**Question 1: Multiple choices:**

1-Plasmids are used for carrying out the cloning procedure. Which of the statement is true for plasmids?  
a) Bacterial plasmids are linear in nature  
b) They are single stranded  
c) Insertion of DNA into plasmid allows it to be propagated in host cells and they are known as vectors because of their this property  
d) They are not capable of replication in bacteria

2-Which of the following characteristic is not present in a plasmid on a general basis?  
a) Multiple cloning site (MCS)  
b) Origin of replication (ori)  
c) Antibiotic resistance gene  
d) Beta galactose genes

3-bla is a gene, which is incorrect for it?  
a) It is an antibiotic resistance genes  
b) Antibiotic acts by blocking the cross-linking of the bacterial cell wall and thus leading to lysing of cells  
c) It encodes beta lactamase enzyme  
d) The beta lactam ring is activated

4-Molecules having new combination of sequences that were not present before are called as:  
a) intermolecular ligants  
b) recombinants  
c) couple  
d) intramolecular ligants

5-Insertion of DNA into lacZ gene may lead to disruption of the gene function. This given statement is true or false?  
a) True  
b) False

6-Transformation efficiency is defined as:  
a) ratio of transformed colonies by microgram of sample DNA that is to be inserted  
b) ratio of transformed colonies by amount of sample DNA that is to be inserted  
c) ratio of transformed colonies by microgram of plasmid DNA  
d) ratio of transformed colonies by amount of plasmid DNA

7-After carrying out the cloning experiment, the cells are plated on agar. Along with agar, it also contains antibiotic resistant genes, X-gal and an inducer of lacZ gene. Which of the following would grow?  
a) Cells that have taken up plasmid DNA  
b) Cells that have taken up genomic DNA  
c) Cells having no insert  
d) Cells either having no insert or having genomic DNA

8-Which of the following is true regarding taking up of plasmid DNA in the bacterial cells?  
a) There are more chances of having two plasmids in a single cell  
b) There are more chances of having a single plasmid in one cell  
c) Uptake upto two plasmids is possible but not more than that  
d) Both are taken up with the same efficiency

9-If genomic DNA has been inserted instead of the plasmid, what will happen?  
a) It would lead to inactivation of lacZ gene  
b) The X-gal substrate would be broken down  
c) The colonies formed are blue in colour  
d) The lacZ gene would be intact

10-Generation of recombinants by randomly cloning fragments of total DNA from an organism is called as:  
a) genomic library  
b) screening  
c) recombination  
d) shotgun cloning

11-Why the whole lacZ gene can’t be present in the plasmid at one time?  
a) Because the whole lacZ gene can’t be present anywhere  
b) The whole lac Z gene is very large in size and the plasmid size is small  
c) The whole lacZ gene is never functional  
d) Because the plasmid takes is having a restriction site only for taking up a portion of lacZ gene