Class : XII CCT Sub: Biology

A student of biotechnology had to prepare recombinant DNA as a part of his/her project thesis. The vector used by him/her is a versatile, easily manipulated vector pBR322. The foreign DNA was inserted into pBR322 using Bam H1. For transformation with recombinant DNA the bacterial cell must be made capable of taking up DNA as DNA do not pass through membrane. While doing so in the lab, the bacterial cells were not taking up foreign DNA even after treating with sodium ions. He/she asked his/her professor, the reason behind this.

1. What may be the reason that the rDNA was not accepted by the bacterial cell?
   a. The foreign DNA should be inserted into pBR322 using Sal I
   b. Valency and charge of the ion used was inappropriate.
   c. Instead of pBR322, YAC vector should be used.
   d. Microinjection is the better method to insert rDNA into bacterial cell.
2. After correcting the mistakes, the student inserted rDNA into the bacterial cell. Non-recombinants would survive on the medium containing-
   a. Ampicillin but not tetracycline
   b. Tetracycline but not ampicillin
   c. Both tetracycline and ampicillin
   d. Neither tetracycline nor ampicillin
3. A host cell does not take up foreign DNA until it has been made competent to do so. This is because:
   a. DNA is a hydrophilic molecule
   b. DNA is a very large molecule
   c. There are no receptors for DNA on the cell membrane
   d. DNA is an inert molecule
4. pBR322 does not contain
   a. An origin of replication site
   b. Sites for many restriction enzymes
   c. A gene that codes for restrictor of plasmid copy number
   d. Gene for ampicillin and tetracycline resistance
5. Which statement regarding restriction endonuclease is NOT correct?
   a. They recognize a specific base sequence in the DNA
   b. They are produced by bacterial cells as primitive immune system
   c. They digest DNA by removing nucleotides from a free 3’ end
   d. They often generate sticky ends

ANSWER KEY

1. B
2. C
3. A
4. B
5. C