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Quiz 8
May 12008.

VII. (12 points total)

The stability of a DNA double helix can be measured by its melting temperature, T_m , defined as the temperature at which the helix is 50% dissociated into individual chains. Explain why the double helix formed between polydeoxyadenylic acid (polyA) and polydeoxythymidylic acid (polyT) has a considerably lower T_m (68°C) than that of the double helix formed between polydeoxyguanydic acid (polyG) and polydeoxycytidylic acid (polyC) (91°C).

A DNA double helix formed between polyG and polyC has higher T_m (91°C) because C/G base pair has three H-bonds, so it would need more heat to separate the two strands. Whereas an A/T pair has only two H-bonds.

VIII. (14 points)

The restriction endonuclease *XhoI* cleaves DNA at the recognition site shown below. Describe with appropriate diagrams a strategy for using *XhoI* to transfer a gene from human DNA to a bacterial plasmid for production of the corresponding protein.

