

**1/H-77 (i) (Syllabus-2015)**

**2 0 1 7**

**( October )**

**BIOTECHNOLOGY**

**( Honours )**

**( Cell Biology and Genetics )**

*Marks : 56*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

**Answer Question No. 1 which is compulsory and  
any **four** from the rest**

- 1. Describe the compositions and functions of  
any *two* of the following. Give diagrams :**

**6×2=12**

- (a) Cytoskeleton .**
- (b) Centrioles**
- (c) Nucleolus**

( 2 )

2. What is the 'cell theory'? Outline the development of the theory. Give the main features of the theory. 11
3. Explain how 'dosage compensation' determines sex in some organisms. 11
4. (a) What is test cross? Write about its application. 2+2=4
- (b) What are the roles of cyclin dependent kinases in cell cycle progression? 7
5. Describe the following gene interactions :
- (a) Complementary gene interaction 6
- (b) Inhibitory gene interaction 5
6. What is 'genetic crossing over'? When does it happen? Give a brief description of the process. What are the results of genetic crossing over? 2+2+5+2=11
7. "Shell coiling in *Lymnaea* is a maternal effect." Explain with well-labelled diagrams. 11

( 3 )

8. (a) Give some important features of the inheritance pattern of an autosomal recessive trait in man. 5
- (b) What is point mutation? What are the results of a point mutation? 1+5=6

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