Dr Sudha

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- February -2018

B. Tech (2nd Semester) Biotechnology

COURSE CODE: 10B11BT411 **MAX. MARKS: 15**

COURSE NAME: GENETICS

COURSE CREDITS: 04 **MAX. TIME: 1 HR**

Note: All questions are compulsory. Carrying mobile phones will be treated as a case of unfair means. Calculator is allowed.

Q1 a) If both husband and wife are known to be carrier of the allele for albinism, what is the chance of the following combinations in a family of 04 children:- i) three unaffected and one affected.
b) If blue eye colour in human beings is recessive to other colour. Could blue eyed parents have a brown eyed child? Justify.
c) What are conditional mutations? Give an example. [1+1+1]

Q2: a) Mendel crossed peas having round green seeds with peas having wrinkled yellow seeds. All F1 plants had seeds that were round and yellow. Predict the results of testcrossing these F1 plants (show your work).
b) Gene interaction yields novel phenotypes. Justify the statement giving an example. [1.5+1.5]

Q3: a) Explain the phenomenon of Bombay Phenotype and elaborate the case study associated with this.
b) With regard to the ABO blood types in humans, determine the genotype of the male parent and female parent shown here:- i) Male Parent: Blood type B; his mother was type O
ii) Female Parent: Blood type A; her father was type B
Predict the blood types of the offspring that this couple may have and the expected proportion of each. [1.5+1.5]

Q4: a) In Drosophila an X- linked recessive mutation – scalloped (sd) causes irregular margins. What is the result if (a) a scalloped female is crossed with a normal male; (b) a scalloped male is crossed with normal female. Compare these results with those that would be obtained if the scalloped gene were autosomal.
b) Which of Mendel's postulates can only be demonstrated in crosses involving at least two pairs of traits? State the postulate. [2+1]

Q5: a) Contrast incomplete dominance and codominance.
b) Explain the inheritance and expression of Pattern Baldness in humans.
c) What are the advantages of Drosophila as model organism for study in Genetics? [1+1+1]