



Indian Institute of Technology Guwahati
BT 207 Genetic Engineering
End-Semester Examination

Total Marks: 40

Time: 3 hours

Instructions: Questions (Q) 1 to 7 are compulsory for all. Question 8 (Q8) is only for those who did not submit the assignment (will not be evaluated for others).

Q1. Fill-in the blanks (i to iv) or write true/false (v) 1 X 5 = 5 Marks

- (i) CODIS is a database for storing and comparingprofiles (RNA/DNA/protein/transcript).
- (ii) Big data analytics uses efficient analytic techniques to discover hidden.....(structures/patterns/elements).
- (iii) Transgenic organism contains.....DNA (self/foreign/endogenous).
- (iv) The emission maximum for GFP is(509/488/280/380 nm).
- (v) VNTR is used for DNA forensics (true/false).

Q2. Draw labelled diagram of a typical expression vector. Write the functions of any four characteristic elements that are present in an expression vector. 5 Marks

Q3. Describe characteristics of a Ti plasmid vector. 5 Marks

Q4. How will you develop a transgenic plant (describe using a labelled figure) 5 Marks

Q5. Write short notes on: 5 + 5 = 10 Marks

- (i) gene expression analysis using real time PCR (also draw the graph)
- (ii) primary and secondary biological databases (give examples).

Q6. What is basis of identification of individuals by DNA forensics? What is foldscope and how is it useful in DNA forensics? 5 Marks

Q7. Describe briefly about TALENs. 5 Marks

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Q8. Draw a graphical representation for gene therapy. Discuss about major advantages and disadvantages of the adenoviral and lentiviral vectors (alternative for the assignment). 10 Marks

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