ASSIGNMENT BOOKLET

Bachelor's Degree Programme

(BSCM)

(GENETICS AND EVOLUTIONARY BIOLOGY)

Valid from 1ˢᵗ January, 2026 to 31ˢᵗ December, 2026

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THE PEOPLE'S
UNIVERSITY

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068

(2026)

Dear Student,

Please read the section on assignments in the Programme Guide for Core Courses that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet, and it consists of three parts, Part A, B and C. The total marks of all the parts are 100, of which 35% are needed to pass it.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO.: …………………………………………

NAME: …………………………………………

ADDRESS: …………………………………………

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COURSE CODE: …………………………….

COURSE TITLE: …………………………….

ASSIGNMENT NO.: …………………………….

STUDY CENTRE: …………………………….. **DATE:** …………………………………

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) Complete each of Part A, Part B and Part C of this assignment separately, and **submit them together.**

6) The assignment answer sheets are to be submitted to your Study Centre as per the schedule made by the study centre. **Answer sheets received after the due date shall not be accepted.**

   We strongly suggest that you retain a copy of your answer sheets.

7) This assignment is **valid from 1st January, 2026 to 31st December, 2026**. If you have failed in this assignment or fail to submit it by 31st December, 2026, then you need to get the assignment for the year 2027, and submit it as per the instructions given in the Programme Guide.

8) **You cannot fill the exam form for this course** till you have submitted this assignment.

We wish you good luck.

ASSIGNMENT
(Tutor Marked Assignment)

Note: Attempt all questions. The marks for each question are indicated against it.

1. Explain Trisomy 21 (Down's Syndrome) and Trisomy 18 (Edward's Syndrome) in detail. (5+5=10)

2. Write short notes on the following: (2×5=10)

    a). Dosage Compensation in Humans

    b). Double Helical Structure of DNA

3. What is mutation? Explain mutagenesis and significance of mutation in detail. (10)

4. a). Explain briefly the impacts of Miller's experiments on the theory of origin of life. (5)

    b). Discuss "struggle for existence" with reference to evolution. (5)

5. "Industrial melanism is an excellent example to demonstrate the natural selection". Justify the statement. (10)

6. Write the differences between the following pairs: $(4 \times 2\frac{1}{2} = 10)$

    a). Allopatric and Sympatric speciation

    b). Pre-mating and Post-mating isolation

    c). Extinction and Pseudoextinction

    d). Homologous and Analogous organs

7. a). Define the following terms: (1×5=5)

    i). Gene

    ii). Homozygous

    iii). Position effect

    iv). Vestigial organs

    v). Wallace effect

    b). Match the following: (1×5=5)

	Column A		Column B
i).	Meselson and Stahl	a)	Pre-zygotic and post-zygotic
ii).	Codominance	b)	Centromere is in middle
iii).	Metacentric	c)	DNA replication is semi-conservative

	iv).	Watson	d)	Both the alleles are equally expressed
	v).	Reproductive isolating barriers	e)	Established the existence of catalytic RNAs

8. Explain the clinical significance of Rh antigens in human blood. (10)

9. a). Explain why did Mendel select pea plants for his experiments. (5)

   b). What is crossing over? Give any *four* features of crossing over. (5)

10. a). "In small populations, the gene frequencies often tend to drift." Justify the statement giving suitable example. (5)

    b). Enlist the various changes that took place in the evolution of horse (any *five*). (5)