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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021.

First Degree Programme under CBCSS

Botany

Core Course

BO 1543 – CELL BIOLOGY, GENETICS AND EVOLUTIONARY BIOLOGY

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

I. Answer **all** the questions. Write short notes on the following.

1. Which cell organelle contains the enzymes of Calvin Cycle?

2. An important ratio in Mendalian genetics is 1:2:1. What the ratio means?

3. Define back cross

4. Write down any two functions of endoplasmic reticulum

5. What is the major difference between a metacentric chromosome and telocentric chromosome?

6. What is a linkage group?

7. Mention the significance of the ‘S phase’ of the cell cycle

8. Define three point cross.

9. Define genetic drift

10. What are alleles?

(10 × 1 = 10 Marks)

II. Answer **any eight** of the following

11. With the help of a simple diagram explain ‘duplication’.

12. Differentiate between monohybrid and dihybrid crosses.

13. List out the functions of vaculoe.

14. Enumerate the salient features of quantitative traits.

15. With the help of an example explain incomplete dominance.

16. List out the major differences between the ribosomes of bacteria and that of eukaryotic cells.

17. Define coefficient of coincidence in the backdrop of crossing over.

18. What is the genetic cause of Turner’s syndrome.

19. Citing an example explain parallel evolution.

20. Name one chemical used to induce polyploidy. Add a note on its mode of action

21. Why mitochondria is called as the power house of the cell?

22. Why the allele causing hemophilia is inherited from father to daughter and not from father to son?

(8 × 2 = 16 Marks)

III. Answer **any six** of the following

23. With the help of a labeled diagram describe the structure of chloroplast.

24. Citing suitable example differentiate between aneuploidy and euploidy.

25. Using a suitable cross as example explain law of segregation.

26. Explain the genetics behind the inheritance of ABO blood group in man.

27. Summarize the major steps in the construction of a linkage map.

28. Write an account on nucleosome model of DNA organisation.

29. 'Inheritance of flower colour in *Lathyrus* gives a modified Mendalian ratio' justify the statement

30. What is macro evolution? How it differs from macro evolution?

31. With the help of an example describe cytoplasmic inheritance

(6 × 4 = 24 Marks)

IV. Write essay on **any two** *of the following*

32. Write an account on the various sex determination mechanisms.

33. Write an essay on 'special types of chromosomes'.

34. What is epistasis? With the help of a suitable example explain recessive epistasis.

35. Write a critical account on the various theories of evolution.

(2 × 15 = 30 Marks)

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