**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

**B.Sc. BIOTECHNOLOGY– II SEMESTER**

**SEMESTER EXAMINATION, MARCH 2019**

**BT218: Cell Biology and Genetics**

**Time- 21/2 hrs Max Marks-70**

**This paper contains two printed pages and three parts**

1. **Answer any TEN of the following 10 X 2 = 20 marks**
2. How are CDKs regulated?
3. What is Dynamic Instability?
4. Write a note RuBisCO.
5. Write a brief note on the structure and function of the Golgi complex.
6. What are the roles of peroxisomes in plants?
7. What are NORs?
8. State the Law of Segregation. Give the monohybrid phenotypic and genotypic ratio.
9. What are the various dominance relationships?
10. What is Penetrance?
11. What is the Hardy Weinberg Equilibrium?
12. What is recombination frequency?
13. State any two uses of Aneuploids.
14. **Answer any FIVE of the following 5 X 6 = 30 marks**
15. Write a note on the eukaryotic cell cycle check points and how specific proteins assist in the progression of the cell cycle through these check points.
16. Write a note on GPCRs and their role in signal transduction.
17. Describe the CAM pathway. What is the significance of the pathway?
18. State the characteristics of Multiple Alleles. Add a note on *Erythroblastosis foetalis*.
19. Explain the genic balance theory.
20. Outline the origin of various species of *Brassica*.
21. With an example, outline the cytological basis of crossing over.
22. **Answer the following 2 X 10 = 20 marks**
23. Explain how cells synthesise ATP by oxidative phosphorylation. Use diagrams where necessary.

**OR**

Explain how microtubules and motor proteins facilitate the movement of cilia and flagella.

1. The black Langshan breed of chicken has feathered shanks. When Langshans are crossed to the Buff Rock breed with non-feathered shanks, all the F1 have feathered shanks. Out of the 360F2 progeny, 24 were found to have non-feathered shanks and 336 had feathered shanks.
2. What is the mode of interaction for this trait?
3. What proportion of the feathered F2 would be expected to be heterozygous at one locus and homozygous at the other?

**OR**

In F2 generation, Mendel obtained 621 tall plants and 187 dwarf plants out of the total of 808. Test whether these two types of plants are in accordance with the Mendelian segregation ratio of 3:1. (*Χ2*tab =3.84)