

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2008 – 09 & thereafter)

SUBJECT CODE: BI/PE/CG15

M. Sc. DEGREE EXAMINATION, NOVEMBER 2008
BIOINFORMATICS
FIRST SEMESTER

COURSE : ELECTIVE

PAPER : CELL BIOLOGY & GENETICS

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS. (20X1=20)

I. ANSWER ALL QUESTIONS (3x2=6)

1. What characteristics distinguish Eukaryotes from Prokaryotes.
2. Differentiate virions from prions.
3. What is unique about the bacterial cell wall?

II. FILL IN THE BLANKS (1x5=5)

4. The DNA is wound with histone proteins to form_____.
5. Microtubules are made up of the protein_____.
6. The functional interaction of different non-allelic genes is called_____.
7. When both alleles of a pair are fully expressed in a heterozygote they are called _____.
8. Stacks of thylakoids are known as _____.

III. STATE TRUE OR FALSE. (1x4=4)

9. Color blindness is due to sex linkage.
10. Turner's syndrome is characterized by monosomy of x chromosome.
11. Cytoplasmic connections between adjacent plant cells are known as microfilaments.
12. The loss of both chromosomes of a pair is termed aneuploidy.

IV. CHOOSE THE CORRECT ANSWER (1x5=5)

13. Materials can be brought into the cell by
a) Diffusion b) Osmosis c) Active transport d) All of the above.
14. Identify the stopcodon.
a) UAU b) GAU c) UAG d) UUU
15. The internal membranes of the Mitochondrion are called
a) thylakoids b) ETP c) stroma d) cristac
16. The cross of F₁ with either of the parent is called.
a) Back cross b) Dihybrid cross c) Monohybrid cross
d) Multiple cross
17. In Meiosis reduction division takes place producing
a) 4 cells b) 2 cells c) 8 cells d) 16 cells

SECTION – B

ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500 WORDS.

4 X 10 = 40

18. Write briefly on chromosomal aberrations.
19. Discuss the phenomenon ‘Linkage & Crossing over’ using suitable egs.
20. Associate the structure of Golgi body with its function.
21. Elaborate on a three-point test cross.
22. Explain the structure of ribosomes and its relation to protein synthesis.
23. In pigeons the checkered pattern is dependent on a dominant gene C and a plain exterior on the recessive allele c. Red colour is controlled by a dominant gene B and brown by the recessive allele b. Diagram completely a cross between homozygous checkered red birds and plain birds. Summarise the expected F₂ results.
24. Describes the phases of the cell cycle and comment on the control systems.

SECTION – C

ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1200 WORDS.

2 X 20 = 40

25. Describe the structure and composition of the plasma membrane and throw light on the fluid mosaic model.
26. Explain multiple alleles with reference to Blood groups.
27. Elaborate on the chromosome mechanism of sex determination.
28. Write notes on the structure of DNA.
