

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2015– 2016)

SUBJECT CODE: 15BY/PE/HG34

M. Sc. DEGREE EXAMINATION - NOVEMBER 2016
BIOTECHNOLOGY
THIRD SEMESTER

COURSE : ELECTIVE
PAPER : HUMAN GENETICS
TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS.

(20 x 1 = 20)

CHOOSE THE CORRECT ANSWER

1. During cell division there are three types of check points one of them (M checkpoint) to ensure
a) Chromosomes are attached to the spindle b) Complete DNA replication
c) DNA not damage or broken d) All of the above
2. Which one is a hereditary disease?
a) Cataract b) leprosy c) blindness d) phenylketonuria.
3. In human beings, multiple genes are involved in the inheritance of
a) sickle-cell anaemia b) skin colour
c) colour blindness d) Down's syndrome
4. Cancer cells are
a) Unlimited number of cell divisions b) Growth without external signals
c) Avoidance of cell death d) All of the above
5. Assume that a population is in Hardy–Weinberg equilibrium for a trait controlled by one locus and two alleles. If the frequency of the dominant allele is 0.90, what is the frequency of the recessive allele?
a) 0.10 b) 0.19 c) 0.81 d) None of the above

FILL IN THE BLANKS

6. DNA replication occurs in _____ phase of the cell cycle.
7. Give one example for sex linked inheritance _____
8. An endoscopic procedure during pregnancy to allow access to the fetus is _____
9. The genetic disorders in which the body cannot properly turn food into energy is called _____
10. The pairing of homologous chromosomes is called _____

ANSWER IN ONE OR TWO SENTENCES

11. Oncogenes
12. Inbreeding
13. Dominance
14. Phenylketonuria
15. Pedigree analysis
16. Amniocentesis
17. Mitotic index
18. Chromosomal aberrations
19. Types of cancer treatment
20. Karyotyping

SECTION – B**ANSWER ANY FOUR QUESTIONS:****(4 x 10 = 40)**

21. Write in detail about Human Blood grouping. Mention a note on Rh typing.
22. Explain the inborn errors of metabolism with examples.
23. Describe the various stages of cell cycle.
24. Explain the Hardy-Weinberg Equilibrium in population genetics.
25. What are the various banding patterns of human karyotyping?
26. Discuss the autosomal recessive inheritance with examples.
27. Why is fetoscopy performed and what are the risks and considerations.

SECTION – C**ANSWER ANY TWO QUESTIONS:****(2 x 20 = 40)**

28. Write in detail on the Human Genome Project and its applications. What were some of the ethical, legal, and social implications addressed by the Human Genome Project?
29. Give a detailed account on the molecular basis of cancer and explain the role of gene therapy in treating cancer.
30. Write a detailed account on postnatal diagnosis in humans.
31. With neat labeled diagram explain the various stages of meiotic cell division.
