

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted during the academic year 2015– 16 & thereafter)

SUBJECT CODE: 15BY/PC/ST44

M. Sc. DEGREE EXAMINATION, APRIL 2018
BIOTECHNOLOGY
FOURTH SEMESTER

COURSE : CORE
PAPER : STEM CELL BIOLOGY AND TISSUE ENGINEERING
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL THE QUESTIONS

(20 x 1 = 20)

1. What are stem cells?
2. Define the term pluripotency.
3. Define signal transduction.
4. What is tissue engineering?
5. What are embryonic stem cells?
6. What is Clonality?
7. Define Heterogeneity.
8. What is Microencapsulation?
9. What are Xenografts?
10. What is meant by Remyelination?
11. What is VEGF?
12. What is Gliosis?
13. Give any two examples for the applications of tissue engineering.
14. Define Microgravity.
15. What is Gene Editing?
16. What are Adult Stem Cells?
17. What are Induced pluripotent stem cells?
18. What is Apligraf?
19. What is the stochastic model in relation to Cancer Stem Cells?
20. What are Synthetic Microchromosomes?

SECTION – B

ANSWER ANY 4 QUESTIONS IN ABOUT 600 WORDS

(4 x 10 = 40)

21. Write short note on the pluripotent stem cells from vertebrate embryos.
22. Briefly discuss the mechanism of stem cell renewal.
23. Write a short note on Insulin-producing cells derived from embryonic stem cells.
24. Discuss briefly about the Orthopedic applications of Stem Cells.
25. Write a short note on the *in vitro* control of tissue development.
26. Write a short note on the future perspective of tissue engineering.
27. Explain briefly the applications of stem cells in Gene therapy.

SECTION – C

ANSWER ANY TWO QUESTIONS IN ABOUT 1500 WORDS

(2 x 20 = 40)

28. Write a detailed essay on the Extrinsic and Intrinsic Determinants of Pluripotency.
29. Discuss in detail the applications of Stem cells for Burns and Skin Ulcers.
30. Write a detailed note on the Growth Factors and Biomaterials used in tissue engineering.
31. Explain in detail the applications of Tissue Engineering in Periodontal and Artificial Womb.
