

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2004 – 05)

SUBJECT CODE: BT/MO/SB64

B. Sc. DEGREE EXAMINATION, APRIL 2007

BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE : MAJOR – OPTIONAL

PAPER : SOIL BIOLOGY AND BIOTECHNOLOGY

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS

I Choose the correct answer :

(6 Marks)

1. Which type of earthworms are used in vermiculture
a) Epigeics b) Endogeics c) Aneciecs d) all the above
2. The bacteria which convert the nitrite to nitrate is
a) Nitrosomonas b) Nitrobacter c) Rhizobium d) all the above
3. The pH of fresh water is
a) acidic only b) alkaline only c) neutral d) acidic to alkaline
4. Which horizon in the soil contains parent weathered rock material without any biological activity
a) Horizon D b) Horizon A c) Horizon B d) Horizon C
5. Water logged soil are deficient in
a) nitrogen b) oxygen c) carbon dioxide d) all the above
6. It is estimated that biological nitrogen fixation in soil amounts to about
a) 700 mg N/m²/year b) 800 mg N/m²/year
c) 600 mg N/m²/year d) 500 mg N/m²/year

II. Fill in the blanks:

(6 marks)

7. The asymbiotic, nitrogen fixers can be classified into aerobic bacteria, anaerobic bacteria and
8. Vermicompost is a method of making compost with the use of
9. Most of the biologically incorporated sulphhydryl sulphur is mineralized by fungi.
10. Fungi penetrating the deeper tissues of the roots and rhizomes are called
11. Symbiotic N₂ fixing microorganisms that infect higher plants usually live in small knob like protuberance known as
12. Phosphatic rocks contain phosphorus which reaches the soil by a process.

III. State true or false:

(6 marks)

13. The microorganisms responsible for ammonification are bacteria of the genus Rhizobium and clostridium.

14. Humus is the main source of nutrients for soil micro-organisms and green plants.
15. Vermicompost is a stable fine granular organic matter when added to clay soil loosens and provides the passage for the entry of air.
16. Mycorrhizae play very important role in the stem tissues.
17. Earthworms can generally be called as biological indicators of soil fertility.
18. *Bacillus thuringiensis* is used as biofungicide.

IV. Answer any six questions in 50 words each: (6x3=18)

19. Denitrification.
20. Soil pH
21. Nematophagus fungi
22. VAM
23. Rhizoplane
24. Vermicomposting
25. Viral insecticides
26. Soil Genesis
27. Vermiwash

SECTION - B

Answer any four questions in 200 words each. Draw diagrams wherever necessary.
(4x6=24)

28. Explain the biogeo-chemical cycle of Carbon.
29. Give an account of polysaccharide decomposition.
30. Write briefly about the role of earthworm in organic farming.
31. Briefly explain mycorrhizal association.
32. Describe briefly the soil profile showing the different horizons.
33. Give an account of microbial herbicides.

SECTION - C

Answer any two questions in 1000 words each. Draw diagrams wherever necessary.
(2x20=40)

34. Write a detailed account on Vermiculture.
35. Give an account of symbiotic and non-symbiotic nitrogen fixation.
36. Explain in detail the microbial transformation of phosphorus and sulphur taking place in soil.
37. Write an essay on soil biota.
