FACULTY OF SCIENCE

B.Sc. I Year (Practical) Examination

Subject : MICROBIOLOGY

Paper – I

QUESTION BANK

W.E.F. Annual 2009

Time : 3 Hours} **{Max. Marks: 50**

Note : Each candidate has to perform one major experiment, one minor experiment and five spotters.

I. Major Experiment Questions : **(20 marks each)**

1. A light compound microscope, stage micrometer and ocular micrometer are provided to you. Calibrate the microscope for its measurements in 10 x (low power) and 45 x (high power). Repeat the calibrated values in each magnification.

2. A calibrated microscope fitted with ocular micrometer is provided to you. Prepare a slide of microscopic object (fungal spore or pollen grain) and measure the size of the microscopic object with the help of calibrated ocular micrometer in low power and high power. Report the result. Demonstrate at least one observation to the examiner.

   (Note : Internal examiner concerned is required to pre-calibrate the microscope and give the calibrated values in consultation with the co-examiner).

3. A Bacterial pure culture is provided to you. Prepare smear of the same and stain by differential (Grams) staining method. Observe the microscopic characteristics of stained culture and report the microscopic morphology, arrangement and staining nature. Demonstrate your observation.

4. Stain the given bacterial culture by Endospore staining and report your observation by demonstrating your observed field.

5. An actively growing Bacterial culture is provided to you. Prepare a smear for capsular staining, perform the staining and report the presence or absence of capsule. Demonstrate your observations.

6. Test the sugars present in the given sample and identify at least two sugars and report (The examiner to provide the known and unknown sugar samples to each student along with, necessary reagents for testing).

7. Test and identify at least two amino acids in the given sample by qualitative analysis (The examiner should provide known and unknown amino acid samples and reagents for testing to each student).

8. Plot a standard graph of glucose by calorimetry and report the quantity of glucose present in the given sample. (The examiner to provide sample and reagents to each student).

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II. Minor Experiment Questions : (10 marks each)

9. Demonstrate the spread plate technique for isolation of bacterial culture.

10. Demonstrate the streak plate technique for isolation of bacterial culture.

11. Demonstrate 10 fold serial dilution to obtain a dilution of 10^{-3} of the given sample.

12. A microscopic object is focused under a precalibrated microscope fitted with ocular micrometer. Find out the sizes of the object and report. (Note : Internal examiner is required to calibrate and focus the specimen and give the calibrated value of the given microscopic).

13. A bacterial culture is provided to you. Prepare a smear of the same, perform the simple staining and observe the microscopic characters. Report your observations by demonstrating to the examiner.

14. A bacterial culture is provided to you, perform the negative staining as per the standard protocol practiced by you. Report your microscopic observation by demonstrating to the Examiner.

15. Find out the presence or absence of glucose in the given sample by qualitative testing.

16. Find out the presence or absence of amino acid in the given sample by Ninhydrin test.

III. Specimen for Spotting : (5 spotters 3x5=15)

17. Microscope

18. Nutrient agar slants

19. Nutrient agar plates with streaking for colony isolation

20. Nutrient agar plate with isolated colnies obtained by dilution plating (pour plate or spread plate)

21. Potato dextrose agar with labeling (plate or slant)

22. Auto clave (Specimen)

23. Hot air oven (Specimen)

24. Incubator (Specimen)

25. Colorimeter (Specimen)

26. Inoculating loop / needle (Specimen)

27. Gram positive Bacilli (Slide Microscopic focusing)

28. Gram positive Cocci (Slide Microscopic focusing)

29. Gram negative Bacilli (Slide Microscopic focusing)

30. Nostoc (Slide Microscopic focusing)

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31. Spirulina (Slide focused)
32. Scenedesmus (Slide focused)
33. Diatoms (Slide focused)
34. Saccharomyces or yeast (Slide focused)
35. Rhizopus (Slide focused)
36. Aspergillus (Slide focused)
37. Penicillium (Slide focused)
38. Fusarium (Slide focused)
39. TMV (photo / sketch without labeling)
40. HIV (photo / sketch without labeling)
41. T_4 phage (photo / sketch without labeling)
42. Adenovirus (photo / sketch without labeling)

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