STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2011 – 12 & thereafter)

SUBJECT CODE: 11BY/PC/MI14

M. Sc. DEGREE EXAMINATION, NOVEMBER 2014
BIOTECHNOLOGY
FIRST SEMESTER

COURSE : CORE
PAPER : MICROBIOLOGY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL QUESTIONS: **20 x 1 = 20**
DEFINE / EXPLAIN THE FOLLOWING.

1. The oldest eukaryotic organisms are considered to be
   A. diplomonads like Giardia B. archaea C. fungi D animals
2. The unifying feature of the archaea that distinguishes them from the bacteria is
   A. habitats which are extreme environments with regard to acidity
   B absence of a nuclear membrane temperature
   C. presence of a cell wall containing a characteristic outer membrane
   D. cytoplasmic ribosomes that are 70S
3. Catalase production is negative in which of the following?
   A. *Streptococcus* B. *Salmonella* C. *Proteus* D. *Staphylococcus*
4. The production of sufficient acid by fermentation of glucose leads to decrease in pH such that pH of the medium falls below 4.5. Which of the following test can detect it?
   A. Indole test B. Methyl red test C. Citrate utilization test
   D. Voges-Proskauer test
5. Single or clusters of flagella at both poles is known as
   A. monotrichous B. petritrichous C. amphitrichous D. none of these
6. Which of the following is an abiotic elicitors?
   A. UV irradiation B. Osmotic shock C. Heavy metal ions
   D. All of these
7. Balanced growth is defined as
   A. cultures undergoing balanced growth while maintaining a constant chemical composition
   B. balancing the growth while controlling the pH
   C. balancing the growth while controlling the temperature
   D. balancing the growth while changing the nutrient composition
8. Nutrient content and biological structures are considered as
   A. implicit factor for microbial growth B. intrinsic factor for microbial growth
   C. processing factor D. none of the above
9. The organism which grows best above 45°C are called
   A. psychrophilic B. mesosphilic C. thermophilic D. any of these

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10. Which of the following groups contain(s) many unique coenzymes, such as coenzyme M and coenzyme F_{420}?
    A. Sulfate-reducing bacteria B. Methanotrophs (methane-oxidizing microbes)
    C. Methanogens (methane-producing microbes)
    D. Acetogens (acetigens; acetate-producing microbes)

11. Plate count of bacteria in foods generally use the plating medium consisting of
    A. peptone, yeast extract, glucose, sodium chloride, agar and distilled water
    B. yeast extract, glucose, sodium chloride, agar and distilled water
    C. peptone, glucose, sodium chloride, agar and distilled water
    D. peptone, yeast extract, glucose, sodium chloride and distilled water

12. Site in the ribosome from which the tRNA donates amino acids to the growing polypeptide chain is
    A P site B. O site C. T site D. A site

13. What is the action of tetracycline in prokaryotes?
    A. It blocks translocation reaction on ribosomes
    B. It blocks peptidyl transferase reaction on ribosomes
    C. It blocks the binding of amino-acyl tRNA to the A site of ribosomes
    D. Not known with certainity

14. Swelling of the can is caused primarily by
    A. gas forming, anaerobic spore formers
    B. gas forming, aerobic spore formers
    C. both (a) and (b)
    D. none of these

15. Esters like flavors in butter are resulted from the action of
    A. *P. mephitica* B. *Aeromonas hydrophila* C. *P. fragi*
    D. *Pseudomonas synxantha*

16. In viruses with envelopes
    A. the envelope and the embedded proteins are encoded by the viral nucleic acid
    B. the envelope is derived from the host but it contains embedded proteins coded by the viral nucleic acid
    C. the envelope is coded by the viral nucleic acids, but the proteins come from the host's membrane proteins
    D. the envelope and its imbedded proteins are derived from the host's membranes

17. A bacterial defense mechanism against bacteriophage is called
    A. Concatamerization B. polymerization
    C. restriction D. lysogeny

18. Which of the following characteristic of the Rotavirus was important for the construction of the Rotashield vaccine?
    A. The possession of a segmented RNA genome
    B. A limited number of capsule types
    C. The ability of monkey Rotavirus strains to cause serious illness (diarrhea) in human beings
    D. The ability of the Rotavirus to be transmitted faster

19. Which of the following statements is not true regarding Mycobacterium tuberculosisand/or the disease it causes?
    A. The pathogen contains mycolic acid in its cell wall
    B. The pathogen can live inside macrophages
    C. Antibodies to the pathogen are protective
    D. None of these
20. The influenza vaccine is administered each year because
    A. mutations in the viral hemagglutinin may allow the virus to evade the immune response elicited by previous vaccines
    B. it is a polysaccharide vaccine that does not confer long-term protection
    C. the vaccine is sufficiently toxic to make it necessary to administer only a small amount at any one time
    D. none of the above

SECTION – B

ANSWER ANY FOUR QUESTIONS EACH ANSWER NOT EXCEEDING 800 WORDS :

4 x 10 = 40

21. Discuss the staining protocols of bacterial cells.
22. What are the modern developments in Microbiology?
23. Explain the use of ribosomal RNA analysis in bacterial taxonomy.
24. Write a short note on control of food spoilage from microbes.
25. Explain about plant and animal viruses.
26. Write about syphilis.

SECTION – C

ANSWER ANY TWO QUESTIONS EACH ANSWER NOT EXCEEDING 1500 WORDS :

2 x 20 = 40

27. Explain the Ultra structure of the Bacterial cell.
28. Write an essay of microbial diversity and taxonomy.
29. Explain the microbial enzymes and their application in Industries.
30. Write an essay on Sexually transmitted diseases.

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