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RAN-2103001103030004

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S. Y. B. Sc. (Sem. - III) Examination

March - 2023

Microbiology (A.T.K.T.)

MB - 301 : Principles of Bacterial Systematics

Time: 1 Hours] **[Total Marks: 50**

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **S. Y. B. Sc. (Sem. - III)**

Name of the Subject :

☛ **Microbiology (A.T.K.T.) MB - 301 : Principles of Bacterial Systematics**

Subject Code No.: **2103001103030004**

Seat No.:

Student's Signature

(2) This exam contains 50 multiple choice questions, each worth 1 mark.

(3) All questions are compulsory.

***O.M.R. Sheet* ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ**
***O.M.R. Sheet*ની પાછળ છાપેલ છે.**
Important instructions to fillup O.M.R. Sheet
are given on back side of the provided O.M.R. Sheet.

Q. 1. Among which is the branch specifically deals with assigning names to microorganisms.

A. Taxonomy
B. Systematics
C. Nomenclature
D. Classification

Q. 2. The determination of the genus and species of a newly isolated microorganisms is based on _____.

A. Polyphasic taxonomy
B. Natural Classification
C. Phylogenetic
D. All of these

Q. 3. The classification of organisms according to their biological features and morphological structures are also known as _____.

A. Genotypic classification
B. Natural classification
C. Phenetic classification
D. Phylogenetic classification

Q. 4. The evolutionary development of a species is known as _____.

A. Phenotype
B. Phylogeny
C. Genotype
D. None of these

Q. 5. In recent time, the microorganisms of several phyla that share a distinctive features and unique morphology or metabolic features are classified as in _____.

A. Phylum
B. Proteobacteria
C. Bacteria
D. Superphlum

Q. 6. A single, pure microbial culture designate as _____.

A. Strain
B. Species
C. Biovars
D. Morphovars

Q. 7. A _____ is a collection of individuals that share many stable properties and differ significantly from other groups of individuals.

A. Strain
B. Biovars
C. Serovars
D. Species

Q. 8. Among which is a correct hierarchical arrangement in taxonomy?

A. Domain> Phylum> Class> Order> Family> Species> Genus
B. Domain> Phylum> Order>Class>Family> Genus> Species
C. Domain> Phylum> Class> Order> Family> Genus> Species
D. Domain> Class> Phylum> Order> Family> Genus> Species

Q. 9. Classical characteristics in taxonomic classification includes:

A. Morphological traits

B. Physiological traits

C. Biochemical and ecological traits

D. All of these

Q. 10. By which analysis bacterial fatty acid profile are scrutinize and effectively used in biochemical characterization?

A. FAME analysis

B. MS

C. DNA-DNA hybridization

D. %G+C content

Q. 11. Among which is not an example of ecological characteristics?

A. Temperature and pH

B. Oxygen and osmotic pressure

C. %G+C content

D. Habitat preference

Q. 12. Among which is a suitable temperature to promote DNA-DNA hybridization between almost identical strands?

A. 30 to 50 °C below the T_m

B. 30 to 50 °C above the T_m

C. 10 to 15 °C below the T_m

D. 10 to 15 °C above the T_m

Q. 13. In which volume of Bergey's manual of systematic bacteriology detailed classification of "The proteobacteria" is covered.

A. Volume 1

B. Volume 2

C. Volume 3

D. Volume 4

Q. 14. Archaea occupying a wide variety of ecological niches are placed in the phylum _____.

A. *Euryarchaeota*

B. *Crenarchaeota*

C. *Korarchaeota*

D. *Lokiarchaeota*

Q. 15. Strict anaerobic Archea, whose major metabolic end product is CH_4 is grouped as _____.

A. Sulfate reducers archaeal

B. Cell wall less archaea

C. Methanogenic archaea

D. Extremely thermophilic archaea

Q. 16. Archaeal Glyoxylate and Methylaspartate pathways driven for which purpose?

A. To assimilate Acetyle-CoA

B. To dissimilate Acetyle-CoA

C. To dissimilate Malate

D. To dissimilate pyruvate

Q. 17. Extreme halophiles catabolize glucose by which pathway?

A. Methylaspartate pathway
B. Glyoxylate pathway
C. Glyoxylate pathway
D. Entner-Doudoroff pathway

Q. 18. Sulfur dependent crenarchaeotes mostly found from _____.

A. Hot water
B. Agricultural soil
C. Solfatara
D. Cold water

Q. 19. Which Hyperthermophiles is dubbed as "strain 121"?

A. *Pyrolobusfumarii*
B. *Nanoarchaeumequitans*
C. *Bacillus megaterium*
D. *E. coli*

Q. 20. *Sulfolobus* spp. Utilize _____for nutrient uptake from surrounding environment.

A. ABC transporters
B. TatAC
C. Potassium transporter
D. Ca+ transporter

Q. 21. The major cell wall component of *Thermoproteus* spp. is _____.

A. Lipoprotein
B. Carbohydrate
C. Glycolipid
D. Glycoprotein

Q. 22. Methanotrophic archaea grow in association of _____.

A. Sulfate- reducing bacteria
B. Aerobic ammonia oxidation bacteria
C. Hyperthermophile bacteria
D. Halophilic bacteria

Q. 23. The ability of oxidizing methane by anaerobic archaeal linage is commonly known as _____.

A. Methanogen
B. ANME
C. Methanobactor
D. Sulfate reducers

Q. 24. The ANME are mostly found in which habitat?

A. Sea floor
B. Hydrothermal vents
C. Anoxic seawater column
D. All of these

Q. 25. The halophilic archaeal cell wall dependent on which chemical constituent?

A. HCl
B. NaCl
C. $MgSO_4$
D. $CuSO_4$

Q. 26. Which threewell explored genera are included in order *Rhizobiales*?

A. *Rhizobium, Agrobacterium and Brucellaceae*

B. *Rhizobium, Rhodospirillum and Brucellaceae*

C. *Agrobacterium, Brucellaceae and Rickettsia*

D *Agrobacterium, Brucellaceae and Magnetococcus*

Q. 27. Among which is the responsible for success of leguminous plants on planet Earth?

A. *Agrobacterium* B. *Brucella*

C. *Rhizobium* D. *Methylosinus*

Q. 28. Among which microorganism is responsible for Crown gall tumor in plants?

A. *Rhizobium oryzae* B. *Rhizobium pisi*

C. *Brucella abortus* D. *Agrobacterium tumefaciens*

Q. 29. The member of genus *Brucella* is responsible for _____.

A. Photosynthesis B. Nitrogen fixation

C. Methanogenesis D. Causing zoonotic disease

Q. 30. Which genus is a best studied colorless sulfur bacteria?

A. Thiobacillus B. Nitrosospira

C. Rhizobium D. Methylosinus

Q. 31. Thiobacillus can sequentially reduce nitrate to nitrogen. This process is known as _____.

A. Nitrogen fixation B. Nitrogen assimilation

C. Denitrification D. None of these

Q. 32. Most Members of which order degrade sugars by Embden-Meyerhof pathway?

A. *Bdellovibrionales* B. *Enterobacteriales*

C. *Rhizobiales* D. *Hydrogenophiales*

Q. 33. Which *Enterobacterial* prominently gives positive results upon Urease test?

A. *Escherichia* B. *Serratia*

C. *Enterobacter* D. *Proteus*

Q. 34. The _____ prey on other Gram-negative bacteria.

A. *Bdellovibrionales* B. *Enterobacteriales*

C. *Rhizobiales* D. *Hydrogenophiales*

Q. 35. The growing _____ utilize the host amino acids as its carbon, nitrogen and energy reserve.

A. *Enterobacteriales* B. *Rhizobiales*

C. *Bdellovibrionales* D. *Hydrogenophiales*

Q. 36. Which class is considered as smallest among Proteobacteria?

A. Alpha-Proteobacteria B. Beta-Proteobacteria

C. Gamma-Proteobacteria D. Epsilon-Proteobacteria

Q. 37. Which is known for their aerobic endospore forming ability?

A. *Clostridia* B. *Bacilli*

C. Both D. None of these

Q. 38. Which bacteria produces lethal toxins which kills moths?

A. *E. coli* B. *B. subtilis*

C. *P. aeruginosa* D. *B. thuringiensis*

Q. 39. Anthrax is caused by which bacteria?

A. *B. anthracis* B. *B. thuringiensis*

C. *B. subtilis* D. *B. megaterium*

Q. 40. Which organism produce lactic acid as their major fermentative product?

A. *E. coli* B. *B. subtilis*

C. *L. lactis* D. *B. thuringiensis*

Q. 41. Which bacteria gives hemolysis around its colony?

A. *Escherichia coli* B. *Bacillus subtilis*

C. *Lactobacillus lactis* D. *Streptococcus pyogenes*

Q. 42. _____ is associated with the formation of dental caries.

A. *S. pneumonia* B. *S. mutans*

C. *L. lactis* D. None of these

Q. 43. _____ is associated with lobar pneumonia and otitis media.

A. *S. pneumonia* B. *S. mutans*

C. *L. lactis* D. All of these

Q. 44. Which class of organisms commonly known as cell wall less organisms?

A. *Mollicutes* B. *Bacilli*

C. *Alpha-Proteobacteria* D. None of these

Q. 45. Due to the _____, mycoplasma has made it the model organism for development of a synthetic organism.

A. Small size of genome B. Big size of genome

C. Presence of Plasmid D. Presence of Mega-plasmid

Q. 46. Which is the light harvesting pigment present in Cyanobacteria?

A. Phycocyanin B. Chlorophyll

C. Carotenoids D. All of these

Q. 47. Periplasmic flagellum is unique feature of the _____ phylum?

A. Spirochaetes B. Cyanobacteria

C. Bacteroidetes D. Chlamydiae

Q. 48. The Lyme disease is caused by _____.

A. *Borrelia burgdorferi* B. *Bacillus subtilis*

C. *Treponema pallidum* D. *Streptococcus pyogenes*

Q. 49. Among which is a benefit of gliding motility in phylum *Bacteroidetes*?

A. Move away rapidly from prey

B. To survive in extreme environments

C. Digest insoluble macromolecular substrates

D. All of these

Q. 50. Glide (Gld) proteins commonly found in _____.

A. *Mollicutes* B. *Bacilli*

C. *Cyanobacteria* D. *Bacteroides*

_____

SPACE FOR ROUGH WORK