

Chapter Four: Microorganisms

Creative Essay Type

1. ► There is an organism which can fix free atmospheric nitrogen. Another type of organism that multiplies inside the first type of organism mentioned in the stem.

[RAJUK Uttara Model College, Dhaka]

- What is capsomere? 1
- What is meant by merozygote? 2
- "The two multiplication processes of the last type of organism mentioned in the stem are different."— Explain. 3
- The role of 1st type of organism mentioned in the stem is unique— give your opinion. 4

Ans: See HSC EV Biology 1st Paper 4th Chapter Note Ques. No. 14 of Answer Paper.

2. ► Tony is studying in an Agricultural University. During vacation went to his village. In a potato cultivating land he observed blackish water spot on leaf margin of potato. He gave some advice to farmer to control the disease of potato.

[The Millenium Stars School and College, Rangpur]

- What is called sporangium? 1
- Why bryophyte is known as amphibian plant? 2
- Explain the symptoms of the diseases of potato in the stem. 3
- What types of advice Tony gave to the farmer to control disease in the stem? Analyze. 4

Ans: See HSC EV Biology 1st Paper 4th Chapter Note Ques. No. 17 of Answer Paper.

3. ► Rashed has been suffering from fever with violent shivering for 10 days. After observation, doctor told him about the infection of specific parasite causing anemia and violent shivering with fever in his body. The doctor also said him that a man can get rid of the parasite of this disease in many ways excepting the advice of a doctor?

[Mirzapur Cadet College, Tangail]

- What is viroid? 1
- Explain the importance of palmella stage for regeneration of *Ulothrix*. 2
- Explain the causes of anemia in Rashed's body. 3
- With suitable logic analyze the doctor's statement that stated in the last line of the stem. 4

Ans: See HSC EV Biology 1st Paper 4th Chapter Note Ques. No. 18 of Answer Paper.

4. ►



Fig-A



Fig-B

[Pabna Cadet College, Pabna]

- What is nucleosome? 1
- What differences are present in semi conservative and dispersive replication? 2
- Why organism 'A' is called connecting link between non-living and living things? Explain. 3
- How organism 'A' helps in genetic recombination of

organism 'B'? Analyze.

4

Ans: See HSC EV Biology 1st Paper 4th Chapter Note Ques. No. 21 of Answer Paper.

5. ► Mr. Nasim cultivates paddy every year. This year he found some dark water soaked lesions on the leaf of some plants in his field. He meets with agriculture officer and came to know that his paddy field is attack by late blight disease.

[Sylhet Cadet College, Sylhet]

- What is Blight? 1
- What do you mean by STD? 2
- What would be your suggestion to control the disease? 3
- How the above causal agents attack a paddy plant & how it spread in the field? 4

Ans: See HSC EV Biology 1st Paper 4th Chapter Note Ques. No. 27 of Answer Paper.

► Question No. a (Knowledge based)

Ques-1. What is chiasma? [All. B.-18]

Ans: Chiasma is the point of contact, the physical link, between two (non-sister) chromatids belonging to homologous chromosomes.

Ques-2. What is mesosome?

Ans: Mesosome is an organelle of bacteria that appears as an invagination of the plasma membrane and functions either in DNA replication and cell division or excretion of exoenzymes.

Ques-3. What is ecological pyramid? [D. B.-17]

Ans: An ecological pyramid is a diagram that shows the relative amounts of energy or matter, or numbers of organisms within each trophic level in a food chain or food web.

Ques-4. What is capsomere?

Ans: The capsomere is a subunit of the capsid, an outer covering of protein that protects the genetic material of a virus. Capsomeres self-assemble to form the capsid.

► Question No. b (Comprehension based)

Ques-1. What do you mean by parthenogenesis? [All. B.-18]

Ans: Parthenogenesis is a form of asexual reproduction wherein the offspring develops from the egg or female gamete without the prior fertilization from the male gamete. It occurs commonly among lower plants and invertebrate animals (particularly rotifers, aphids, ants, wasps, and bees) and rarely among higher vertebrates.

Ques-2. Why the alternation of generation is important in the life cycle of Plasmodium?

Ans: Alternation of generation is a type of life cycle found in terrestrial plants and some algae in which subsequent generations of individuals alternate between haploid and diploid organisms. Plasmodium is survived through alternation of generation. Alternation of generation completes the life cycle of Plasmodium. When the alternation of generation is hampered, it affects the offspring of Plasmodium. Alternation of generation keeps the type of species intact. That is why alternation of generation is important for Plasmodium.

Ques-3. What do you mean by palmella stage?

Ans: The palmella stage is formed under unfavorable conditions as shortage of water, excess of salts etc. The protoplast of parent cell divides to make many daughter protoplasts but they do not form zoospores. The parent cell wall gelatinizes to make mucilaginous sheath around daughter protoplasts. The daughter protoplasts also develop gelatinous wall around themselves but do not develop flagella. These protoplast segments are called palmellospores. The division and red visions of these protoplast ultimately forms amorphous colony with indefinite number of spores and it is called palmella stage.

Ques-4. What do you mean hemorrhagic dengue? [C. B.-17]

Ans: Dengue fever is a mosquito-borne tropical disease caused by the dengue virus. Symptoms typically begin three to fourteen days after infection. This may include a high fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash. Recovery generally takes two to seven days. In a small proportion of cases, the disease develops into the life-threatening dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs.

Creative Multiple Choice

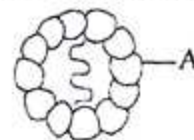
- What is the name of the 1st stage of malarial parasite infecting human body? [D. B.-17]
 - Merozoite
 - Trophozoite
 - Cryptozoite
 - Sporozoite
- Which are in the comma shaped bacteria? [R. B.-17]
 - Vibrio
 - Pseudomonas
 - Spirillum
 - Sarcina
- In which year the chemical nature of virus was first described?
 - 1935
 - 1937
 - 1946
 - 1984
- 'Viral body consists only of nucleic acid and protein'— who made this comment?
 - F.C. Bawden & N.W. Pirie
 - W.M. Stanleg & F.C. Bawden
 - F.C. Bawden & A. Mager
 - Dmitri Ivanovsky & Gallow
- Who discovered that the pathogen of AIDs is a virus?
 - Gallow
 - Stamley
 - Mager
 - Bawden
- Of which the virus body is made?
 - Nucleic acid
 - Protein
 - Nucleic acid and protein
 - Chitin
- Which virus is bread shaped?
 - T₂-phage
 - Polio
 - Vaccinia
 - Rhabdo virus
- Which organism of the following can be crystalized?
 - Virus
 - Bacteria

- Cyanobacteria
 - Algae
- Which one is a viral disease? [R. B.-16]
 - Malaria
 - Blight of Rice
 - Cholera
 - Ring spot of Papaya
 - Which one of the following is a plant virus? [Dj. B.-16]
 - TMV
 - T₂-phage
 - HIV
 - Flavi virus
 - Which one is the characteristic of virus? [C. B.-16]
 - Prokaryotic
 - Metabolism occurs
 - Obligate parasite
 - DNA & RNA present
 - Which one is the viral disease of man? [Ctg. B.-16]
 - Cholera
 - Dysentery
 - Hepatitis
 - Tuberculosis
 - Which one is the carrier of ring spot virus of Papaya? [S.B.-16]
 - Air
 - Water
 - Aphid
 - Soil
 - Which one is a virus without the outer covering?
 - Influenza virus
 - Harpis virus
 - HIV
 - TMV
 - What is the shape of Tobacco mosaic virus? [J. B.-16]
 - Rod shaped
 - Round
 - Cuboid
 - Tad pole shaped
 - In which one of the following single stranded DNA is present? [C. B.-15]
 - Vaccinia
 - Coliphage
 - Variola
 - TIV
 - What is name of the structure in the diagram? [Ctg. B.-15]
 - T₂-phage
 - Vaccinia
 - TMV
 - Polio



- T₂-phage
 - Vaccinia
 - TMV
 - Polio
- Prions are — [S. B.-15]
 - Infectious protein fibrils
 - Infectious small RNA
 - Vacant protein of virus
 - Fagmented small RNA of virus
 - How many serotypes of Dengue virus are there?
 - Two
 - Three
 - Four
 - Five
 - Which one of the following is present in bacterial cell?
 - Mitochondria
 - Plastid
 - Ribosome
 - Lysosome
 - Who is considered as the father of Bacteriology?
 - Erenberg
 - Robert Hooke
 - Luis Pasteur
 - Leeuwenhoek
 - Which one is the main component of bacterial cell wall? [C. B.-16]
 - Glyco lipid
 - Chitin
 - Peptidoglycan
 - Lipoprotein

23. Which one of the following is the motile organ of bacteria?
 (a) Flagella (b) Pili
 (c) Rhizoid (d) Fiber **a**
24. Which one is prokaryotic? [D.B.-15]
 (a) Riccia (b) Wlothrix
 (c) Mucor (d) E. coli **d**
25. In which one plasmid is found? [R.B.-15]
 (a) Pnevnococcus (b) TMV
 (c) E. coli (d) Vibrio cholerae **c**
26. Which bacteria help in retting jute? [Ctq.B.-15]
 (a) Lactobacillus (b) Clostridium
 (c) Nitrosomonas (d) Azotobacter **b**
27. Which one is a bacterial disease? [S.B.-15]
 (a) Cholera (b) Dengue
 (c) Ring worm disease (d) Coccidionmycosis **a**
28. E.coli produces which one in the intestine?
 (a) Vitamin B-complex (b) Vitamin B-10
 (c) Vitamin-K (d) Vitamin C **c**
29. Which microorganism can produce vinegar from alcohol?
 (a) Bacillus (b) Azotobacter
 (c) Nitrosomonas (d) Pseudomonas **b**
30. Which one is responsible for Typhoid fever?
 (a) Vibrio cholerae (b) Salmonella typhosa
 (c) Escherichia coli (d) Treponema pallidum **b**
31. Which is the causal organism of tuberculosis?
 (a) Vibriocholerae
 (b) Treponema pallidum
 (c) Shigella dysenterae
 (d) Mycobacterium tuberculosis **d**
32. What is the other name of bacterial capsule?
 (a) Slime layer (b) Cell wall
 (c) Cell membrane (d) Envelope **a**
33. What is the shape of the sporozoite of Plasmodium?
 (a) Barrel shaped (b) Spindle shaped
 (c) Spherical (d) Star shaped **b**
34. In which stage of the following the malarial parasites reinvade the liver cells?
 (a) Merozoite (b) Macro-metacryptozoite
 (c) Cryptozoite (d) Micrometacryptozoite **b**
35. What type of microorganism malarial parasite is?
 (a) Protozoa (b) Bacteria
 (c) Fungi (d) Varied **a**
36. Where gametogony of Plasmodium is completed? [D.B.-16]
 (a) In human liver
 (b) Red blood cells of man
 (c) In crop of mosquito
 (d) In salivary gland of mosquito. **c**
37. Which one of the following is the diploid stage of malarial parasite? [Dj.B.-16]
 (a) Sporozoite (b) Ookinete
 (c) Trophozoite (d) Cryptozoite **b**
38. In which stage Plasmodium infects human body?
 (a) Trophozoite (b) Ookinete
 (c) Zygote (d) Sporozoite **d**
39. In which stage of life cycle of malarial parasite first haemozoin toxin is deposited? [J.B.-16]
 (a) Trophozoite stage (b) Signet ring stage
 (c) Schizont stage (d) Rosette stage **c**
40. Meiosis in malarial parasite takes place in which of the following? [S.B.-15]
 (a) Oocyst (b) Schizont
 (c) Merozoice (d) Trophozoite **a**
41. Which stage is observed during fever arises? [B.B.-15]
 (a) Merozoite (b) Sporozoite
 (c) Cryptomerozoite (d) Cryptozoite **a**
42. How many days is the incubation period of plasmodium vivax?
 (a) 8-25 (b) 12-25
 (c) 15-20 (d) 11-16 **b**
43. How many days the gametocytes remain active in human blood?
 (a) 7 (b) 8
 (c) 9 (d) 10 **a**
- Multiple Completion Based Questions
44. The treatment and prevention measures of both PRS and Flavi virus infected diseases are same, because — [C.B.-17]
 i. Both are RNA viruses
 ii. Both have similar shape
 iii. Both are carried by insects
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii **b**
45. The viral body consists of protein coat and nucleic acid core and in its body —
 i. Other cellular organelles are absent
 ii. Metabolic enzymes are absent
 iii. Antibiotic shows activity
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii **a**
46. Reo virus is a RNA virus and in its body is absent —
 i. Single stranded DNA
 ii. Double stranded DNA and
 iii. Single stranded RNA
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii **b**
47. Applicable in case of virus — [S.B.-15]
 i. All are acellular
 ii. Metaboli enzymes absent
 iii. Genetic recombination occurs
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii **d**
48. The 'A' marked part in the figure — [S.B.-15]



- i. Bears the characteristics of antigen
 ii. Made up of protein
 iii. Units of the cover are called capsomeres

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

49. In hepatitis disease —

- i. Liver grow larger
ii. Amount of billurubin decreases in blood
iii. Stool becomes whitish.

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

50. DNA present in the head of *E. coli* infecting virus is —

- i. Double stranded
ii. 60 m long
iii. Remain coiled

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

51. Information about reproduction of bacteria are — [Ctg.B.-16]

- i. Endospore of Bacteria is known as resting spore
ii. Motile conidia produced by filamentous bacteria are called gonidia.
iii. Zygote of bacteria known as merozygote

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii



Fig: A

52. The erythrocytic cycle of malarial parasite contain the phases —

- i. Trophozoite ii. Signet ring
iii. Schizont

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

53. In the erythrocytic cycle, the *Plasmodium*—

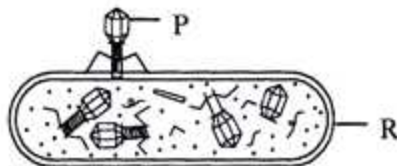
- i. Infects red blood cells
ii. Reproduces in white blood cells
iii. Its merozoite engulf hemoglobin as the food.

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

► Situation Set Based Questions

Observe the following diagram and answer questions 54 & 55.



54. How many viruses can be produced in the R? [S.B.-17]

- (a) 100-300 (b) 100-400
(c) 100-500 (d) 100-600

55. In the figure in the stem — [S.B.-17]

- i. P coat is made up of protein
ii. In R part viral DNA multiplies
iii. In the last stage the R cell dissolves

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii



Answer the questions 56 and 57 in light of the following diagram:

56. The above diagram represents which of the following diagram?

- (a) HIV (b) H₁N₁
(c) TMV (d) T₂ Phage

57. The micro-organism in the figure —

- i. Made up of lipid and protein
ii. Tead pole shaped
iii. Destroy *E. Coli* cells

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Read the following stem and answer the questions 58 & 59.

Rafique is suffering from high fever. He has pains in muscle, back west and bone joints. Rashes have also arisen on skin of the body. [Dj.B.-16]

58. Cause of Rafique's fever is a —

- (a) Bacteria (b) Fungus
(c) Virus (d) Plasmodium

59. For the prevention of the disease in the stem it needs to take —

- i. Medicine like paracetamol
ii. To sleep within mosquito net day time
iii. Measures not to deposit water around dwelling house

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Read the following stem and answer to the questions number 60 and 61:

Shaon visited Rangamati with his uncle in the winter vacation. After coming back, he was attacked with fever. The fever is felt with shivering after certain successive time. [All Board-18]

60. In which language is the disease, mentioned in the stem, named?

- (a) Italian (b) Greek
(c) Spanish (d) Latin

61. The microbe which attacked Shaon —

- i. at first attacks liver
ii. always remains diploid stage
iii. destroys red blood corpuscle

Which one of the following is correct?

- (a) i and ii (b) i and iii
(c) ii and iii (d) i, ii and iii

Read the following stem and answer the questions 62 and 63.

Sumy is suffering from fever for few days. He has severe headache, lose of appetite, vomiting tendency and bone pain. The doctor said after examining him that it was a mosquito borne fever.

62. What type of fever Sumy is suffering from?

- (a) Malasia (b) Dengue
(c) Typhord (d) Rheumatic fever.

63. Measures to prevent the disease in the stem are —

- i. Destroy Aedes mosquito
ii. Keep the surroundings of house clean
iii. Take preventives

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

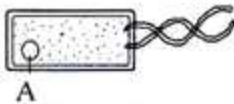
Observe the diagram in the stem and answer question 64.



64. The process in the stem is — [B.B.-16]

- (a) Conjugation (b) Transduction
(c) Transformation (d) Binary fission

Observe the diagram and answer questions 65 – 67:



65. Which of the following diseases is caused by organisms shown in the stem? [J. B.-15]

- (a) Pneumonia (b) Influenza
(c) Pox (d) Meseals

66. The 'a' marked part in the figure is used in —

- i. Genetic engineering
ii. Tissue culture technology
iii. Producing insulin

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

67. In what characteristic the organism in the stem shows difference from the acellular organisms?

- (a) Infecting capacity
(b) Producing preventers
(c) Controlling insects & pests
(d) Increasing soil fertility

Read the following stem and answer questions 68 and 69:

Huge number of people die of Hepatitis infection every year all over the world. For this disease liver cancer may occur. Use of pure water and hygienic clean environment may play role in prevention of this disease.

68. Which one is the most dangerous among the following diseases?

- (a) Hepatitis-A (b) Hepatitis-B
(c) Hepatitis-C (d) Hepatitis-D

69. The disease can be detected by —

- i. ALT text
ii. By detecting amount of billurubin in blood
iii. By detecting the amount of glucose in blood

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Read the following paragraph and answer the questions

70 and 71:

Nusaiba came to know about one type of organism from her biology text which is included in the protozoa. It is carried by a specific female mosquito. It creates a serious disease of man. The disease is endemic in temperate and semitemperate zone.

70. Nusaiba acquired knowledge about which organism?

- (a) Plasmodium (b) Clostridium
(c) Xanthomonas (d) Lactobacillus

71. Due to infection by this disease, the patient —

- i. suffers from anemia
ii. spleen enlarges
iii. breathing trouble accurse

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Read the following passage and answer questions 72 and 73:

Arian is suffering from chills and fever for few days and the fever gradually goes down after a specific time.

72. What type of disease Arian is suffering?

- (a) Dengue (b) Malaria
(c) Phylaria (d) Diphtheries

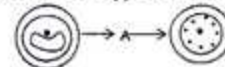
73. In Arian's body parasite has infected —

- i. Liver
ii. Lung
iii. Redblood cells

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Answer the question 74 in light of the following stem:



74. Which one is the 'A'-marked diagram in the stem? [Ctg.B.-16]

- (a) Amoeboid trophozoite
(b) Trophozoite
(c) Merozoite
(d) Rosette

Read the following stem and answer question 75:

One type of parasite infects human body and destroys red blood cells. It also causes severe temor during appearing fever.

75. The organism in the stem completes which stage in human Body? [Dj.B.-15]

- (a) Sporogony (b) Schizogony
(c) Plasmogony (d) Gametogony

Read the following stem and answer questions 76 and 77:

Sumon was affected with fever after returning from Chittagong. His fever relapses after definite period and appears with temor.

76. What is the name of the parasite of fever Sumon was attacked with? [C.B.-15]

- (a) Bordetella Pertusis (b) Salmonella typosa
(c) Plasmodium Vivax (d) Microsporium canis

77. The parasite of Sumon's fever attack what part of human body?

- i. Liver
ii. Red blood cells
iii. Kidney

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii