

Student Name:

ID Number:

Final Exam
General Microbiology (MSEH211)
Questions Paper: A

Monday

25-02-1434

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A) Select the ***BEST*** answer from the following multiple choice questions (0.5 mark each unless otherwise indicated):

- 1) Which of the following technique is considered as “environmental friendly” to clean up organic pollutants and toxic waste:
 - A) Gamma irradiation.
 - B) Chlorination.
 - C) Bioremediation.
 - D) Filtration.

- 2) One of the major role for normal flora is:
 - A) Production of therapeutic enzymes.
 - B) Synthesis of vitamins B and K.
 - C) Production of buttermilk, yogurt, bread and soya sauce.
 - D) Synthesis of acetone and organic acid.

- 3) Which of the following expression demonstrates the correct nomenclature of the microorganism:
 - A) *Escherichia coli*
 - B) *E.coli*
 - C) *Escherichia Coli*
 - D) Escherichia coli

- 4) Which of the following microorganism can be used to treat sewage via flocculation and grazing:
 - A) Viruses.
 - B) Protozoa.
 - C) Fungi.
 - D) Bacteria.

- 5) Which of the following parasites is a major concern with regards to safe drinking water:
 - A) *Entamoeba histolytica*
 - B) *Toxoplasma gondii*
 - C) *Naegleria fowleri*
 - D) *Giardia lamblia*

- 6) Which of the following parasitic oocyst survives chlorine disinfection:
 - A) *Cyclospora cayetanesis*
 - B) *Cryptosporidium parvum*
 - C) *Giardia lamblia*
 - D) *Toxoplasma gondii*

- 7) A patient was suffering from: diarrhoea, abdominal pain, nausea and intestinal blockage. He has eaten a sandwich of beef-burger from one of the poor hygiene restaurants. The patient is more likely infected with (1 Mark):
- A) *Trichuris trichiura*.
 - B) *Ancylostoma duodenale*.
 - C) *Taenia saginata*.
 - D) *Necator americanus*.
- 8) 12 years old child was diagnosed with amoebic dysentery after drinking contaminated water from one of the rural area of the Kingdom. The child was infected with (1 Mark):
- A) Hepatitis A virus.
 - B) Hepatitis E virus.
 - C) *Entamoeba histolytica*.
 - D) Astrovirus.
- 9) Tertiary treatment of wastewater is required to fully removed which of the following parasites:
- A) *Giardia lamblia*.
 - B) *Cryptosporidium parvum*.
 - C) *Entamoeba histolytica*.
 - D) *Naegleria fowleri*.
- 10) The primary cause of pneumonitis or Loeffler's syndrome is:
- A) Rhinoviruses.
 - B) *Ascaris lumbricoides*.
 - C) Respiratory Syncytial Viruse.
 - D) *Schistosoma mansoni*.
- 11) 8 years old child was diagnosed with iron deficiency anemia after he was playing in humid, muddy and warm soil. The child was infected with (1 Mark):
- A) *Ascaris lumbricoides*.
 - B) *Schistosoma mansoni*.
 - C) *Necator americanus*.
 - D) *Plasmodium*.
- 12) Which of the following diseases can be caused from the import of contaminated food such as raspberries, lettuce and basil:
- A) Cyclosporiasis.
 - B) Cryptosporidiosis.
 - C) Schistosomiasis.
 - D) Toxoplasmosis.

- 13) A patient was admitted to the hospital after he was diagnosed with the symptoms of Katayama fever, dermatitis, and skin rash. The skin rash appeared after he was swimming in a fresh water lake. He was likely to be infected with (1 Mark):
- A) *Naegleria fowleri*.
 - B) *Schistosoma mansoni*.
 - C) *Cyclospora cayetanesis*.
 - D) *Ancylostoma duodenale*.
- 14) Which of the following diseases present a major hazard to travellers to warm climate countries:
- A) Giardiasis.
 - B) Meningoencephalitis.
 - C) Malaria.
 - D) Cyclosporiasis.
- 15) The significant environmental source for the oocyst of *Toxoplasma gondii* is:
- A) Cattles.
 - B) Cats.
 - C) Dogs.
 - D) Monkeys.
- 16) Viruses attach to the target cells via receptors which found on:
- A) Viral nucleic acid.
 - B) Viral tail.
 - C) Viral capsid.
 - D) Viral cell wall.
- 17) You have been selected to work as an environmental scientist in food factory. You have used UV light as a disinfection technique to sterile some food products. Which of the following microorganism will be resistance to the UV light (1 Mark):
- A) *Giardia lamblia*.
 - B) *Pseudomonas aeruginosa*.
 - C) *Saccharomyces*.
 - D) *Adenoviruses type 40*.
- 18) The entire lytic cycle is completed in:
- A) > 20 minutes.
 - B) < 20 minutes.
 - C) ≤ 20 minutes.
 - D) ≥ 20 minutes.

- 19) A source of drinking water has been contaminated with sewage water.
What viruses do expect to be there (1 Mark):
- A) Enteroviruses.
 - B) Enteroviruses and Coxsackie viruses.
 - C) Enteroviruses and RSV.
 - D) Enteroviruses and HEV.
- 20) You have been appointed a role of environmental specialist at the infectious control unit in one of the Kingdom hospitals. Which of the following viruses are expected there (1 Mark):
- A) HAV and HEV.
 - B) HAV and HBV.
 - C) HBV and HCV.
 - D) HEV and HBV.
- 21) Contamination of objects in the environment play a crucial role in the transmission of:
- A) Rhinoviruses.
 - B) SARS.
 - C) RSV.
 - D) Influenza A virus.
- 22) Which of the following disinfection method is used to inactivate RSV:
- A) Filtration.
 - B) Sub-atmospheric steam at 80°C.
 - C) Organic solvent and detergents.
 - D) Gamma irradiation.
- 23) You been asked to write a report about outbreak in drinking water, which of the following microorganism can be the primary cause (1 Mark):
- A) *Naegleria fowleri* and Adenoviruses.
 - B) *Giardia lamblia* and Astroviruses.
 - C) *Cryptosporidium parvum* and Adenoviruses.
 - D) *Schistosoma mansoni* and enterovirus 72.
- 24) The following virus is the most important respiratory pathogen during infancy and early childhood:
- A) Influenza virus.
 - B) Parainfluenza virus.
 - C) SARS.
 - D) RSV.

- 25) Which of the following viruses are transmitted by percutaneous routes and exchange of blood or secretions:
- A) HAV, HBV and HEV.
 - B) HEV, HCV and HDV.
 - C) HCV, HDV and HBV.
 - D) HEV, HBV and HDV.
- 26) Influenza viruses are:
- A) ssRNA.
 - B) ssDNA.
 - C) dsDNA.
 - D) dsRNA.
- 27) Which of the following viruses are transmitted via fecal-oral route:
- A) HAV, HEV and Respiratory viruses.
 - B) HAV, HEV and Astroviruses.
 - C) HAV, HEV and Enteroviruses.
 - D) HAV, HEV and Delta agent virus.
- 28) Which of the following microorganisms lack peptidoglycan:
- A) *Methanobacterium*.
 - B) *Pseudomonas aeruginosa*.
 - C) *Staphylococcus aureus*.
 - D) *E. coli*.
- 29) The formation of oogonia and antheridia is one of the sexual reproduction in:
- A) Protozoa.
 - B) Algae.
 - C) Fungi.
 - D) Bacteria.
- 30) Which of the following structure helps bacterial attachment to various surfaces:
- A) Teichoic acid.
 - B) Fimbriae.
 - C) Flagella.
 - D) Glycocalyx.
- 31) Geosmin is produced by:
- A) *Gymnodinium*.
 - B) *Alexandrium*.
 - C) *Anabaena*.
 - D) *Nodularia*.

- 32) Prokaryotic ribosomes are called:
- A) 30S.
 - B) 70S.
 - C) 80S.
 - D) 50S.
- 33) Plate count method is used to enumerate:
- A) Bacteria and Algae.
 - B) Bacteria and viruses.
 - C) Bacteria and protozoa.
 - D) Bacteria.
- 34) Which of the following molecules serves as sites for storage and synthesis of starch:
- A) Pectin.
 - B) Pyrenoids.
 - C) Chitin.
 - D) N-acetylglucoseamine .
- 35) The optimal temperatures and pH for *Cyanobacterial* blooms are:
- A) 10-37°C and pH 4-10.
 - B) 15-30°C and pH 6-9.
 - C) 15-35°C and pH 6-7.
 - D) 10-40°C and pH 5-8.
- 36) The type of medium used to isolate microbes which metabolise phenol from soil sample is:
- A) Selective medium.
 - B) Enriched medium.
 - C) Enrichment medium.
 - D) Differential medium.
- 37) Blod's Basa medium is:
- A) Selective medium.
 - B) Enriched medium.
 - C) Enrichment medium.
 - D) Differential medium.
- 38) Ciguatera is a disease cause by toxin produced by:
- A) *Gymnodinium species*.
 - B) *Gambierdiscus toxicus*.
 - C) *Cylindrospermopsis*.
 - D) *Oscillatoria*.

- 39) You would like to use a bacterial culture as bio-degraders to perform a bioremediation process. To which of the following phases would you grow your culture to obtain active organisms (1 Mark):
- A) Exponential phase.
 - B) Stationary phase.
 - C) Lag phase.
 - D) Death phase.
- 40) The addition of penicillin and streptomycin to a culture medium will (1 Mark):
- A) Enhance the growth of bacteria and suppress the growth of fungi.
 - B) Enhance the growth of fungi and suppress the growth of bacteria.
 - C) Enhance the growth of both bacteria and fungi.
 - D) Suppress the growth of both bacteria and fungi.
- 41) Which of the following microorganisms can not be Gram-stained:
- A) *Schizosaccharomyces*.
 - B) *Sulfolobus*.
 - C) *Candida albicans*.
 - D) *Gambierdiscus toxicus*.
- 42) Mycorrhizae is:
- A) A commensalism relationship between fungi and plants.
 - B) A symbiotic relationship between fungi and plants.
 - C) A parasitic relationship between fungi and bacteria.
 - D) A commensalism relationship between fungi and bacteria.
- 43) An example of fission yeast is:
- A) *Schizosaccharomyces*.
 - B) *Sulfolobus*.
 - C) *Candida albicans*.
 - D) *Saccharomyces*.
- 44) Which of the following ribosomes are found in eukaryotic cells:
- A) 30S.
 - B) 40S.
 - C) 50S.
 - D) 70S.

- 45) Which of the following disinfections can be used to sterile environmental floors and walls:
- A) Hexachlorophene.
 - B) Providone and iodine.
 - C) Phenolics and hypochlorite.
 - D) Gluteraldehyde.
- 46) *Lactobacilli* are:
- A) Facultative anaerobes.
 - B) Microaerophilic.
 - C) Obligate aerobes.
 - D) Aerotolerant.
- 47) *Streptococcus pyogenes* grows better on:
- A) MacConkey agar.
 - B) Chocolate agar.
 - C) Blood agar.
 - D) Mannitol salt agar.
- 48) Most of common spoilage and medically important bacteria are:
- A) Mesophiles.
 - B) Psychrophiles.
 - C) Thermophiles.
 - D) Acidophiles.
- 49) Bacterial flora in the colon are:
- A) Obligate aerobes.
 - B) Obligate anaerobes.
 - C) Facultative anaerobes.
 - D) Microaerophilic.
- 50) *Staphylococcus aureus* grows better in:
- A) MacConkey agar
 - B) Chocolate agar.
 - C) Blood agar.
 - D) Mannitol salt agar.

B) Answer the following short assay questions:

1) Using a diagram briefly describe the lysogenic cycle? (4 Marks)

2) Mention the basic role of bacteriophage in the environment? (4 Marks)

1)

2)

3)

4)

3) List four major differences between fungi and bacteria in terms of nutritional adaptation? (4 Marks)

1)

2)

3)

4)

4) Define the following terminology? (3 Marks)

- **Symbiotic relationship:**

- **Commensalism relationship:**

- **Parasitic relationship:**