Faculty of Science Botany& Microbiology Department		كلية العلوم قسم النبات والميكروبيولوجي
Food Microbiology (498 B) Time: Two hours Total degree: 50 marks	Summer semester exam - the academic year 2021/2022 Fourth Level Exam date: Saturday, 10/09/2022	

Answer all the following questions:

The first question: **put (T) or (F) sign in front of each following sentences: (35 marks)**

1. Nitrogen fixation is a process that occurs in all bacteria. ( )
2. The only effective way to store bacterial cultures for short periods of time is to arrest their metabolism by freezing. ( )
3. Most spoilage bacteria grow at acidic pH. ( )
4. Moisture is the intrinsic factors for the microbial growth. ( )
5. Some bacteriophages are used to identify some pathogens. ( )
6. Foods might not be contaminated with microbes from packaging and wrapping materials. ( )
7. Bacteria are important pathogens in food because they can grow in low pH, low water activity and high osmotic pressure. ( )
8. Water quality, feeding habits, and diseases can change the normal microbial types and levels of fish. ( )
9. Fecal coliforms like *E. coli* used as an index of sterilization. ( )
10. Fusarium associated with rot in citrus fruits, potatoes, grains and mycotoxins production. ( )
11. Candida can spoil food with low acid, salt and sugar and cause rancidity in butter and dairy products. ( )
12. Some bacteriophages can cause fermentation failure such as in case of lactic acid bacteria. ( )
13. Facultative Anaerobes are able to grow in both the presence and absence of oxygen such as *Lactobacillus*. ( )
14. Different types of parasites can get in food from soil. ( )
15. Conditions naturally present in food termed extrinsic factors. ( )
16. The effect of temperature on microbial growth depends upon other environmental conditions. ( )

17. Antimicrobial substances are like lactinin and anti-coliform factors in eggs and lysozyme in milk. ( )
18. Milk is not sterile in cow's udder. ( )
19. Enzyme rennin is added to fermenting milk to hasten protein coagulation. ( )
20. Pickling uses naturally occurring lactic acid bacteria residing on meat. ( )
21. Dextran is an EPS produced by *Enterococcus mesenteroides* while growing in sucrose and used as a stabilizer in ice cream. ( )
22. Bacteriocins can be used to control spoilage in foods. ( )
23. From Most common genera of Psychrophilic organisms is Alcaligenes. ( )
24. Molds are the major causes of spoilage of foods with increase water activity. ( )
25. Toxin of *Staphylococcus aureus* is heat stable and not inactivated by cooking. ( )
26. *Salmonella abortus* causing abortion in ewes, and *Salmonella gallinarum* cause of human typhoid. ( )
27. All strains of *shigella* possess potent indotoxins which are carbohydrate-lipid protein complexes. ( )
28. Iodophores are prepared by combining iodine with surface-active compounds, such as alkylphenoxypolyglycol. ( )
29. H_2O_2 is a very effective germicide and kills vegetative cells, spores, and viruses. ( )
30. The foam-drying method consists of whipping a product to produce a stable foam to reduce the surface area. ( )
31. Vacuum Packaging is a removal of air from the package and then sealing the package hermetically. ( )
32. Sulfur dioxide can destroy vitamin B12 in molds and yeasts than bacteria. ( )
33. Time are one of the aspects that can adjust the rate in which food spoils. ( )
34. *Salmonella* is diagnosed by identifying the bacteria in the urine of an infected person. ( )
35. *E. coli* can breakdown cellulose and assist in the absorption of vitamin K. ( )

Question 1: Choose the correct answer from the following:(25 marks)

1. **Does increasing the pH of food increase the chances of food spoiling?**
   a. No b. Yes c. Don't know

2. **There are three main causes of food spoilage.**
   a. True b. False c. Don't know

3. **What is the best way to thaw out frozen foods?**
   a. Warm Water b. Refrigerator c. On Counter

4. **A type of food preservation technique that involves sealing food in sterilized, airtight containers:**
   a. Drying b. Canning c. Irradiating

5. **Sugar and salt act as preservatives by:**
   a. increasing the water content of food
   b. increasing the acid content of the food
   c. binding water so it is not available for microorganisms

6. **Symptoms of *Staphylococcus* poisoning include respiratory failure.**
   a. True b. false c. Don't know

7. **In the fermentation process, microorganisms produce_____ which inhibit the growth of harmful microorganisms.**
   a. water and acid b. acid and alcohol c. alcohol and alkali

8. **Separate cooking boards should be used for cutting cooked meat, poultry, fish vs raw vegetables and fruits.**
   b. True b. false c. Don't know

9. **What is the most important way to prevent a foodborne illness from bacteria?**
   a. Control time and temperature.
   b. Practice good personal hygiene.
   c. Practice good cleaning and sanitizing.

10. **Beneficial microbes are used in foods in several ways e.g. ...**
   a. Growing microbial cells (yogurt)
   b. Metabolic by-products (lactic acid, acetic acid...)
   c. all choices are correct

11. **Increasing the acid content of a food is effective in preventing the growth of:**
   a. Clostridium botulinum b. Salmonella c. molds

12. **What should food handlers do to prevent food allergens from being transferred to food?**
   a. Clean and sanitize utensils after use.

b. Buy from approved, reputable suppliers.
c. Store cold food at 41°F (5°C) or lower.

13. What are the most common symptoms of food poisoning?

a. Nausea and vomiting b. Joint pain c. Headache

14. HACCP is designed to detect food hazards in a food industry facility.

a. True b. false c. Don't know

15. The two parts of HACCP include:

a. hazard analysis and critical control points
b. health analysis and critical control points
c. hazard analysis and critical conformation production

Good luck

Dr. Amal Danial

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Faculty of Science **Botany and Microbiology Dept.**		كلية العلوم قسم النبات والميكروبيولوجى
Biotechnical Analysis (B453) Course **Time: 2 hours** **Marks: 50 marks**		**Summer semester 2021/2022** **Level: Fourth**

The questions are on four pages

Answer the following questions

Frist Question: Put (√) or (×): **(30 marks)**

1. Solvents should be high viscosity & high volatility to increase CC efficiency. ( )
2. If the stationary phase is polar, chromatography is reversed phase. ( )
3. In flame photometer, filters select which colors the photometer detects and exclude the influence of other ions. ( )
4. Colorimeter can be used in UV and visible wavelengths. ( )
5. Cell forced through narrow gap leading to disruption of cell membrane by hand homogenizer. (√)
6. Good buffer is relatively free side effect buffer. ( )
7. Combined PH meter electrodes are better stored immersed in the bridge electrolyte (KCl 3 M). ( )
8. In column chromatography uniform & high flow rate of solvent gives better resolution. ( )
9. Tris buffer is suitable at pH 4. ( )
10. Preparative chromatography is used to separate the components of a mixture for more advanced use. ( )
11. Enzyme immunoassay (EIA) use an enzyme to label either the antibody or antigen. ( )
12. Excessive run times have no adverse effect in the isopycnic separation. ( )
13. Increase in column temperature results in speed of elution and improve separation. ( )
14. Centrifuges tubes are exclusively made of glass. ( )
15. Spectrophotometer is useful for determining the concentration of a known substance in solution. ( )
16. RCF=1.12 x105x (rpm). ( )
17. Buffer is a solution that does not resist PH change. ( )
18. If K_d (distribution coefficients) is large; solute is eluted more strongly by stationary phase. ( )

19 .The analyte is the substance to be separated during chromatography. ( )

20 . In sandwich ELISA a known Ag is fixed to a solid phase. ( )

21. Paper chromatography has the advantage that the corrosive reagents like sulphuric acid can used. ( )

22. An antibody is a protein produced in the body to a foreign substance. ( )

23. The HPLC is a form of liquid chromatography that utilizes small size columns and higher mobile phase pressures. ( )

24. Immunoassays measure the antigen only. ( )

25. The GC is a type of chromatography used for separating and analyzing compounds that can be vaporized and decomposed. ( )

26. Immunoassays depend on the use of an analytical reagent that is associated with a detectable label. ( )

27. The Ag (antigen) is incorporated in the agar before pouring it in the plates in double diffusion test. ( )

28. In immunofluorescence technique, we tag the fluorescein molecule to the antibody. ( )

29. In Single beam spectrophotometers both the blank and the sample cells are placed in the instrument at the same time. ( )

30. The separation of the particles is according to their size in differential and rate-zonal centrifugation. ( )

Second Question: Choose the correct answer: **(20 marks)**

1. **The ..... is a physical method of separation in which the components to be separated are distributed between two phases.**
   a) Chromatograph b) Centrifugation
   c) Chromatogram d) Chromatography

2. **The ..... is the solvent that will carry the analyte.**
   a) Eluent b) Eluate c) control d) none of the above

3. **Efficiency of column chromatography separation, ... with ratio length / width increases.**
   a) decreases b) increases c) not change d) all the above

4. **Preventing buffer contamination by mixed with.....sodium azide.**
   a) 0.6% b) 0. 2% c) 0.02% d) None of the above

5. **In ..... chromatography, stationary phase is thin film of liquid formed on the surface of a solid inert support.**
   a) Ion exchange b) Affinity c) Partition d) None of the above

6. **The ..... is also called electronic spectroscopy.**
   a) UV spectrometer b) Colorimetry c) Atomic spectrometry d) a &b

7. **Large cells are broken by chopping action through:**

a) French press b) Sonication
c) Hand homogenizer d) Blade homogenizer

8. **In column chromatography, the ..... of column temperature results in speed of elution but does not improve separation.**

a) decrease b) increase c) change d) all the above

9. **The..... buffer suitable for gel permeation and cation-exchange chromatography.**

a) Tris b) Phosphate c) Hepes d) Borate

10. **Swinging bucket rotors are most commonly used for:**

a) Pelleting applications b) Isopycnic separation
c) Density gradient d) All of the above

11. **For separation of subcellular organelles, and isolation of macromolecules we can use:**

a) Chromatography b) Colorimeter c) Spectrophotometer d) None of the above

12. **In ..... rotors, the tubes are held in vertical position during rotation.**

a) Vertical b) Fixed angle c) Swinging bucket d) a &c

13. **In ..... centrifugation, density of the sample solution must be less than that of the lowest density portion of the gradient.**

a) Differential b) Isopycnic Density-Gradient c) Rate-zonal d) a &c

14. **In spectrophotometer, the ultraviolet light source is .....-lamp.**

a) Deuterium b) Tungsten c) Fluorescent d) None of the above

15. **The ..... is used in inorganic chemical analysis to analyze the elemental composition of samples.**

a) Colorimeter b) Spectrophotometer
c) UV spectrometry d) Flame photometer

16. **Blood grouping test is an example to:**

a) Precipitation test b) Agglutination test
c) ELISA d) None of the above

17. **Microtiter plate is a plastic plate that contains..... wells.**

a) 96 b) 98 c) 94 d) 100

18. **The .....has been largely replaced in routine clinical laboratory practice by enzyme immunoassay.**

a) ELISA b) FIA c) RIA d) None of the above

19. **In the ..... chromatography, stationary phase is porous gel with no attractive action on solute molecules.**

a) Molecular Exclusion b) Affinity

c) Ion exchange d) partition

20. **..... solution is containing all the substances used in the immunoassay except the antigen to be tested.**

a) Standard b) Blank c) Control d) Diluent

The end of the questions,,,,,,,,,,,,,,,,,,,,,,,, Good luck

Dr/ Huwida Abdel-kader