

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, FEBRUARY 2022

THIRD YEAR [BATCH 2019-22]

MICROBIOLOGY (HONOURS)

PAPER : XI [CC11]

Date : 26/02/2022

Time : 11 am – 1 pm

Full Marks : 50

Answer **any five** questions of the following:

[5×10]

1. a) How does hydrogen ion concentration affect survival of microbes in food?
b) What is water activity? How does water activity affect microbe survival?
c) Give examples of antimicrobial substances in food that affect microbe growth. [3+(3+2)+2]
2. a) What are psychrophilic microbes? How do psychrophilic microbes affect food spoilage?
b) What type of microbes does vacuum sealed food support?
c) How does relative humidity affect microbial survival in food? [(2+3)+2+3]
3. What is the natural microbial flora of :
i) fruits and vegetables
ii) animals, birds, fish and shell fish (4+6)
4. Write short notes on the following : (2×5)
i) flat sour spoilage
ii) TA spoilage
iii) sulphide stinker spoilage
iv) spoilage due to insufficient heating
v) spoilage due to container leakage
5. a) How does fermented milk differ from cheese?
b) What may happen if milk is not heated before adding starter culture?
c) Graphically represent growth pattern of fermenting flora during yoghurt production with explanation. (2+3+5)
6. a) Name the starter culture of kefir.
b) What is the starter culture of kefir made up of?
c) Propose three possible mechanisms for hypocholesterolemic effect of Lactic acid bacteria.
d) Name the traditional raw material for kumis? How is it fermented? [1+3+3+(1+2)]
7. a) Name one endospore-forming food pathogen causing vomiting but no muscle weakness. Name the responsible toxin and its mode of action?
b) Do you know any other toxin produced by the same bacteria? How does this toxin work?
c) Propose some preventive measures against the disease. [(1+3)+(1+3)+2]

8. a) Write the cardinal temperature for *Campylobacter jejuni*.
b) Why does the pathogen show such optimum temperature?
c) Write down three important virulence factors of the pathogen.
d) List some foods that are associated with the disease? (2+3+3+2)
9. a) What do you mean by HACCP?
b) What should a good HACCP team be consisting of?
c) What is hazard?
d) Why is hazard analysis important?
e) Discuss potential chemical hazard in apple juice. (2+2+2+2+2)
10. a) What is the difference between control point and critical control point?
b) Why is agar-agar stable to microbial hydrolysis?
c) How does Latex Agglutination Assays differ from Reverse Passive Latex Agglutination Assays?
d) Write down the principle and advantages of immune-magnetic separation. [2+2+2+(2+2)]

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