LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **FOOD CHEMISTRY AND FOOD PROCESSING**

THIRD SEMESTER – **NOVEMBER 2018**

FP 3808 – INORGANIC, PHYSICAL & CHEM. COMPONENTS OF FOOD

Date: 30-10-2018 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

Part A

Answer all the questions. 10 x 2 =20 marks

1. Define DLVO (Derjaguin,Landau,Vervey and Overbeek) theory.
2. Define contact angle.
3. Express the temperature dependence of equilibrium constant.
4. Give the relationship of equilibrium relative humidity (ERH) and fugacity.
5. Write the significance of standard reduction potential (SRP).
6. Mention the importance of moisture assay and moisture analysis.
7. What are caseinate gels?
8. What is low temperature plasma ashing method?
9. Define Hysteresis.Mention its significance.
10. Mention the role of E° (SRP) with an example of coupled reactions in living systems. Relate this with free energy change (ΔG).

Part B

Answer any eight questions. 8 x 5= 40 marks

11. Discuss surface phenomenon with respect to adsorption and interfacial tension.
12. Write a note on Electric double layer.
13. Describe the general aspects of quality loss in frozen pizza.
14. What are food gels? Explain the role of milk proteins in attributing to the formation of such gels
15. How can the molecular entanglement network, would greatly affect the properties of food?
16. Write a note on the following technological aspects of dehydration.
    i) Air drying
    ii) Vacuum freeze drying(lyophilisation)
17. Define the following
    i) Ostwald ripening
    ii) Interfacial rheology.
18. Explain the relationship of the equation $\boldsymbol{D = kT/\pi\beta\eta rs}$. How can it be applied to study molecular mobility in food stability?
19. Write a note on karl Fischer titrations.
20. Write a note on glass transition temperature (Tg) with a state diagram.

21. What are food gels? Explain the role of milk proteins in attributing to the formation of such gels
22. Explain the graphical representation of electric double layers. How can it be applied for studying ionic equilibrium.

PARTC

Answer any four questions. 4 x 10 =40 marks

23. How can the molecular entanglement network, would greatly affect the properties of food?
24. Explain the graphical representation of William Lander Ferry (WLF) kinetics and its influence on food stability**.**
25. Explain the possible ways of determining ash content in food.
26. Explain the factors affecting mineral composition of foods.
27. Discuss the following
    i) Solute type greatly affects Tg
    ii) Water is a plasticizer of great effectiveness and it greatly affects Tg,

    Where Tg is nothing but glass transition temperature.
28. Explain the Arrhenius theory to study the reaction kinetics with a simple shelf life plot approach.

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