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**53 (FPT 501) FIWM**

**2018**

**FOOD INDUSTRY WASTE MANAGEMENT**

Paper : FPT 501 (Back)

Full Marks : 100

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

***Answer any five questions out of seven.***

1. (a) Write about the primary treatment of wastewater in detail. 10
- (b) What is Grit ? Why is it necessary to remove the grit ? What are the different types of grit removal chambers ? 1+3+3
- (c) What is Flow equalization ? Explain. 3

*Contd.*

2. (a) Write True **or** False. 1×5

(i) Sedimentation process involves settling of suspended solids based on differences in specific gravity between solid particles.

(ii) Coagulation is a process of destabilization of a given colloidal suspension.

(iii) Alum is the most common aluminium salt used as coagulant in wastewater treatment process.

(iv) Bar screens are used to remove very large solids in preliminary treatment.

(v) pH adjustment is carried out after preliminary treatment.

(b) Describe the working process of activated sludge process (ASP). What are the advantages and disadvantages of ASP ? What is an active sludge ?

5+8+2

3. (a) What are Primary, Secondary and Tertiary sludge ? 3

- (b) What is Sludge Thickening ? Explain different methods of sludge thickening. 1+6
- (c) Write about the aerobic and anaerobic sludge digestions. 10
4. Write short notes on : 5×4
- (a) By-product utilization of grain processing industry.
- (b) By-product utilization of sugarcane processing industry.
- (c) Trickling filters.
- (d) Up-flow anaerobic sludge blanket process.
5. (a) Discuss with principle the landfill bioreactor. What do you understand by landfill gas ? 7+3
- (b) Discuss briefly about aerobic composting and anaerobic composting. 10

6. (a) Discuss in details about vermicomposting process. What are the advantages of vermicomposting ?

7+3

(b) Describe the UASB reactor. What are the design criteria of UASB ?

7+3

7. Write notes on :

5×4

(a) Pyrolysis

(b) Incineration

(c) Windrow composting

(d) Characteristics of Dairy Industry Waste.