

Exam Date & Time: 26-Sep-2020 (02:00 PM - 05:30 PM)



## PSG COLLEGE OF ARTS AND SCIENCE

Note: Writing 3hrs: Checking & Inserting Image : 30mins

MSc DEGREE EXAMINATION MAY 2020  
(FourthSemester)

Branch - ENVIRONMENTAL SCIENCE

INDUSTRIAL PROCESS AND WASTE MANAGEMENT [18ESP20]

Marks: 75

Duration: 210 mins.

### SECTION - A

Answer all the questions.

- 1) Which of industries generate waste water with high potassium and organic load  
(i) Textile  
(ii) Tannery  
(iii) Distillery  
(iv) Rubber (1)
- 2) Find out the raw material used in the Distillery industry.  
(i) Malted Barlet  
(ii) Grapes  
(iii) Molasses  
(iv) Green Malt (1)
- 3) At what temperature the cream is separated from milk in the creamy process?  
(i) 15°C  
(ii) 30°C  
(iii) 45°C  
(iv) 60°C (1)
- 4) What are the toxic material generated during the process of chemical recovery from black liquor?  
(i) Sodium Sulphide  
(ii) Dimethyl Sulphide  
(iii) Mercury Sulphide  
(iv) Calcium Sulphide (1)
- 5) Which one of the following is regarded as the most efficient and effective tanning agent?  
(i) Chromium (III) Sulfate  
(ii) Chromium Oxide (1)

- (iii) Copper Sulphate
- (iv) Chromium Hydroxide

- 6) What is the name of the tree that is considered as a major commercial source of natural rubber latex?
- (i) *Hopea parviflora*
  - (ii) *Hevea brasiliensis*
  - (iii) *Millingtonia hortensis*
  - (iv) *Ficus elastic*
- 7) Which one of the following treatment units is more suitable for ammonia bearing wastes?
- (i) Ion exchange
  - (ii) Electrodialysis
  - (iii) Steam stripping / Air stripping in towers
  - (iv) High rate biofilter
- 8) What is the process in which mercaptans are converted to less harmful disulphide, employing solutions like lead oxide, in caustic soda together with sulphur?
- (i) Topping
  - (ii) Hydrode sulphurization
  - (iii) Sweetening
  - (iv) Coking
- 9) In pyro-processing, the raw mix is heated to produce
- (i) Cement clinkers
  - (ii) Cement packaging
  - (iii) Cement Dispatch
  - (iv) Quarring
- 10) In a pharmaceutical industry \_\_\_\_\_ is a process of using a liquid binder to lightly agglomerate the powder mixture.
- (i) Dry granulation
  - (ii) Wet granulation
  - (iii) Both dry and wet granulation
  - (iv) All of the above

### SECTION - B

Answer all the questions.

- 11) Briefly explain the milk processing in a dairy unit.
- a)
- [OR]
- b) Narrate the Biomethanization process in distillery industry.
- 12) Briefly discuss the steps involved in the dyeing unit.

- a) [OR] Analyze treatment methods for wastewater generated by pulp and paper mill. (5)
- b) 13) Outline the processes adopted in a rubber industry. (5)
- a) [OR] Prepare a wastewater treatment plan for a detergent manufacturing unit with a flow chart. (5)
- b) 14) Interpret the characteristics of wastewater produced by fertilizer industry. (5)
- a) [OR] Explain the processing of crude oil in an oil refinery. (5)
- b) 15) What is electroplating? Summarize the characteristics of a electroplating effluent. (5)
- a) [OR] Briefly discuss the waste water characteristics food processing unit with few examples indicating its effects. (5)
- b)

### SECTION - C

Answer all the questions.

- 16) Construct a flowchart for alcohol production in distillery unit and evaluate the treatment options for solid and liquid waste. (8)
- a) [OR] Summarize the methods of sugar production and discuss its solid and liquid production by products. (8)
- b) 17) Elucidate the manufacturing processes of a synthetic fibre unit with a flow chart. (8)
- a) [OR] Highlight the effective utilization of bagasse in the production of newsprint paper with suitable flow diagram. (8)
- b) 18) Outline the status of plastic industry in India, characteristics and treatment of wastewater from plastic industry. (8)
- a) [OR] Distinguish the methods of processing of natural and synthetic rubber. (8)
- b) 19) Illustrate the manufacturing processes of mineral acids with suitable diagrams. (8)
- a)

[OR] Summarize the manufacturing processes of nitrogenous fertilizers with a neat flow (8)  
b) chart.

20) Elucidate the production of Cement and pollution control measures adopted in a cement (8)  
plant.

a)  
[OR] Critically analyze the effects of Pharmaceutical industry waste water and suggest (8)  
b) treatment methods.

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