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## GIET UNIVERSITY, GUNUPUR – 765022

B. Tech ( Third Semester – Regular) Examinations, December – 2020

**BBSBS 3040 – ENVIRONMENTAL SCIENCE & ENGINEERING**

(Civil Engineering)

Time: 2 hrs

Maximum: 50 Marks

**The figures in the right hand margin indicate marks.**

**PART – A: (Multiple Choice Questions)**

**(1 x 10 =10 Marks)**

**Q.1. Answer ALL questions**

	[CO#]	[PO#]
a. Organic contaminants are removed from the wastewater by _____	1	1
(i) Water softening		
(ii) Demineralization		
(iii) Adsorption		
(iv) Absorption		
b. How many types of aerators are commonly used in the treatment of wastewater?	1	1
(i) 2		
(ii) 3		
(iii) 4		
(iv) 5		
c. Alum is effective when pH of water is between _____	2	1
(i) 8		
(ii) 10		
(iii) 6.5-8.5		
(iv) 9		
d. Which gas is released when alum is added to water?	2	1
(i) Al (OH) <sub>3</sub>		
(ii) CaSO <sub>4</sub>		
(iii) CO <sub>2</sub>		
(iv) Ca(OH) <sub>3</sub>		
e. What do we call the accumulation of heavy metals and pesticides in the food chain	3	1
(i) biomagnification		
(ii) predation		
(iii) biogenesis		
(iv) necrosis		
f. In which form is water the purest?	3	1
(i) solid ice		
(ii) clear liquid c		
(iii) steam vapour		
(iv) combination of ice and water		
g. Which of the following gas is more in percentage in the air?	3	1
(i) Oxygen gas		
(ii) Nitrogen gas		
(iii) Water vapour		
(iv) Carbon dioxide gas		
h. DDT and Aluminium cans are examples of _____	4	1
(i) Primary Pollutants		
(ii) Secondary pollutants		
(iii) Biodegradable Pollutants		
(iv) Non-Biodegradable Pollutants		
i. Which of the following particles is called the particulate pollutants?	4	1
(i) Ozone		
(ii) Radon		
(iii) Fly Ash		
(iv) Ethylene		
j. Which of the following is called the secondary air pollutant?	4	1
(i) PANs		
(ii) Ozone		
(iii) Carbon monoxide		
(iv) Nitrogen Dioxide		

**PART – B: (Short Answer Questions)****(2 x 5 = 10 Marks)**Q.2. Answer ALL questions

	[CO#]	[PO#]
a. What are the different types of water intake?	1	1
b. Name any two disinfectant and its uses.	2	2
c. Write any two difference between primary treatment and secondary treatment.	3	2
d. Define Hindered Settling and Free settling	3	2
e. Define sedimentation.	4	2

**PART – C: (Long Answer Questions)****(6 x 5 = 30 Marks)**Answer ANY FIVE questions

	Marks	[CO#]	[PO#]
3. Discuss briefly about the physical, chemical and Biological characteristics of water.	(6)	1	2
4. Define the following i) Sources of water ii) Per capita demand iii) design period iv) population forecast	(6)	1	2
5. Explain the basic unit operations and unit processes for surface water treatment and its significance.	(6)	2	2
6. Define the Following (i). Screening, (ii). Plain Sedimentation, (iii). Sedimentation aided with Coagulation, Filtration	(6)	2	2
7. Enumerate the quantity and characteristics of wastewater and its effluent discharge standards.	(6)	3	2
8. Discuss about the Primary treatment like Screening, Grit removal, Sedimentation, Sedimentation aided with coagulation.	(6)	3	2
9. Discuss briefly about the Air pollution and its influence of meteorological phenomena on air quality?	(6)	4	2
10. Discuss the following Lapse rate and dispersion, Engineered systems for air pollution control.	(6)	4	2

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