22ESP211N/ 22ESP211

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Second Semester)

Branch – **ENVIRONMENTAL SCIENCE**

ENVIRONMENTAL BIOTECHNOLOGY AND NANO TECHNOLOGY

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Question No.	Question	K Level	CO
1	Which among the following is not a greenhouse gas? a) Water vapour b) Ozone c) Nitrous oxide d) Hydrogen sulphide	K1	CO1
2	Algal blooms are caused by a) Macroalgae b) Phytoplanktons c) Aquatic plants d) Mangrooves	K2	CO1
3	Biopulping removes_____. a) Cellulose b) Lignins c) Chitin d) All of these	K1	CO2
4	Minamata is a disease caused by a) Hydrocarbons b) Pesticide c) Hg poisoning d) Cyanide poisoning	K2	CO2
5	*Bacillus thuringenesis* is associated with a) Biopesticides b) Biofiltration c) Biosurfactants d) Bioleaching	K1	CO3
6	Aerosols are _____ suspended in gas. a) Steam b) Vapour c) Liquid particles d) None of these	K2	CO3
7	Dimension of a nanoparticle is a) 10^{-3} b) 10^{-15} c) 10^{-9} d)10^{-10}	K1	CO4
8	Zeolites are a) Aluminosilicates b) Iron ores c) Synthetic polymers d) Carbon	K2	CO4
9	Inorganic pollutants includes a) Heavy metals b) Cyanides c) Both (a) and (b) d) None of these	K1	CO5
10	Green chemistry aims at a) Environmental protection b) Environmental sustainability c) Environmental conservation d) All of these	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	What are bioindicators? Elaborate on microbial bioindicators with suitable example.	K3	CO1
	(OR)		
11.b.	Mention the significance and applications of environmental biotechnology.		
12.a.	Explain in detail about cyanide eco-toxicity and cyanide removal.	K4	CO2
	(OR)		
12.b.	Elucidate the mercury accumulation in aquatic food chain and toxic effects.		
13.a.	Elaborate on microbial bio-pesticides with an example.	K4	CO3
	(OR)		
13.b.	Discuss the bio ethics of GM animals.		
14.a.	Demonstrate chemical and physical properties of nanaoparticles.	K5	CO4
	(OR)		
14.b.	Explain the role of hydrogels and its applications in nanotechnology.		
15.a.	Comment on the advantages of nanotechnology over conventional methods of wastewater treatment.	K5	CO5
	(OR)		
15.b.	What is green chemistry? How is green chemistry associated with energy sector?		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Explain about the role of biotechnology in reduction of CO_2 emission.	K4	CO2
17	What are xenobiotics and how do they interfere in the smooth functioning of the environment?	K3	CO2
18	Explain the role of microorganisms in phosphate solubilization and their benefits on sustainable agriculture.	K4	CO1
19	Explain in detail about various natural and synthetic nanomaterials and its usages.	K2	CO4
20	Discuss the various nano based technologies in pollution control.	K3	CO5

Z-Z-Z END