Reg. No.															

Question Paper Code	13736

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

Civil Engineering

(Common to All Branches)

24BSCY201 - CHEMISTRY FOR ENVIRONMENT AND SUSTAINABILITY

Regulations - 2024

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	The interlocking pattern of various food chains in an ecosystem is called as _____. (a) Food chain (b) Food Pyramid (c) Food web (d) None of the above	1	K1	CO1
2.	_____ is the development of a bare area without any life form. (a) Invasion (b) Nudation (c) Migration (d) Stabilization	1	K1	CO1
3.	The Tajmahal is being affected by (a) Noise pollution (b) Air pollution (c) Water pollution (d) Soil pollution	1	K1	CO2
4.	Carbon dioxide is primarily called as greenhouse gas because (a) Traps heat (b) Traps light (c) Traps warm currents (d) none of the above	1	K1	CO2
5.	Colloidal conditioning of boiler is done by using (a) Calgon (b) EDTA (c) Ion exchange resins (d) gelatin	1	K1	CO3
6.	Hard water is water containing (a) $Ca^{2+,}$ Mg^{2+} (b) NO_3^{2-}, PO_4^{3-} (c) Na^+, K^+ (d) dissolved gases.	1	K1	CO3
7.	Which of the following statement is correct regarding leachate? (a) It can be discharged in water bodies without any treatment. (b) It can be used for the irrigation in parks. (c) It is used for the treatment of waste water. (d) It is generated in a landfill.	1	K1	CO4
8.	Organic agriculture insists avoiding the use of (a) Organic manure (b) Stored water (c) Modern technologies in harvesting (d) Chemical fertilizers	1	K1	CO4
9.	What is the minimum speed required for satisfactory working of wind generator? (a) 13Km/hr (b) 20Km/hr (c) 25Km/hr (d) 15Km/hr	1	K1	CO5
10.	Sustainable development can be thought in terms of three spheres (a) Environment, economy and society (b) Environment, economy and equity (c) Environment, ecology and society (d) Environment, economy and ecology	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	State biogeochemical cycle.	2	K1	CO1
12.	Mention any two hotspots in India.	2	K1	CO1
13.	List out few causes of climate change.	2	K1	CO2
14.	What is acid rain? Write their effects.	2	K1	CO2
15.	Differentiate between hard water and soft water.	2	K2	CO3
16.	Define break point chlorination.	2	K1	CO3
17.	Explain how soil acidity affects plant growth and soil chemistry.	2	K2	CO4
18.	What are the types of solid wastes?	2	K1	CO4
19.	Define biomass energy.	2	K1	CO5

20.		Differentiate nuclear fission and fusion.	*2*	*K2*	*CO5*
21.		What is sustainable development?	*2*	*K1*	*CO6*
22.		Explain how biodegradable polymers contribute to sustainability.	*2*	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Discuss in detail the Energy flow in an ecosystem.	*11*	*K2*	*CO1*
		OR			
	b)	Explain the values of biodiversity with suitable illustrations.	*11*	*K2*	*CO1*
24.	a)	What is global warming? Explain the effects and preventive measures of global warming.	*11*	*K2*	*CO2*
		OR			
	b)	Explain the causes, impacts and control measures of ozone layer depletion in the atmosphere.	*11*	*K2*	*CO2*
25.	a) (i)	Describe the Reverse osmosis method of desalination of brackish water.	*5*	*K2*	*CO3*
	(ii)	Discuss the Zeolite process of water treatment with neat diagram and suitable Reactions.	*6*	*K2*	*CO3*
		OR			
	b)	Explain the demineralization of water using the ion-exchange process. How are exhausted cation and anion exchange resins regenerated?	*11*	*K2*	*CO3*
26.	a)	Describe the effects of fertilizers and pesticide usage on soil chemistry and the environment.	*11*	*K2*	*CO4*
		OR			
	b)	With a help of a flow diagram explain the methods of separation of components of municipal solid waste and its processing.	*11*	*K2*	*CO4*
27.	a)	Explain the working principle of tidal energy and ocean thermal energy conversion (OTEC) with suitable diagrams.	*11*	*K2*	*CO5*
		OR			
	b)	Describe the main components of a nuclear reactor and explain its working principle.	*11*	*K2*	*CO5*
28.	a)	What is green chemistry? Write down the 12 principles of green chemistry in detail manner.	*11*	*K2*	*CO6*
		OR			
	b) (i)	Discuss the process and importance of Environmental Impact Assessment (EIA) in sustainable development.	*5*	*K2*	*CO6*
	(ii)	Discuss the concept of sustainable development.	*6*	*K2*	*CO6*