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PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch - **ENVIRONMENTAL SCIENCE**

ECOLOGY AND SUSTAINABLE DEVELOPMENT

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	The term "ecology" was first coined by: a) Charles Darwin b) Ernst Haeckel c) E.P. Odum d) Linnaeus	K1	CO1
2	The 10% law of energy transfer was proposed by: a) Raymond Lindeman b) Charles Elton c) A.G. Tansley d) G. Evelyn Hutchinson	K2	CO1
3	The logistic growth curve of a population is represented by: a) J-shaped curve b) S-shaped curve c) Exponential curve d) Straight line	K1	CO2
4	Which biome is characterized by permafrost? a) Tundra b) Desert c) Tropical rainforest d) Grassland	K2	CO2
5	Which of the following is a diversity index? a) Simpson's Index b) Richter scale c) Moh's scale d) Decibel scale	K1	CO3
6	Quadrat method is used for: a) Estimating soil pH b) Measuring population density of plants c) Measuring atmospheric temperature d) Estimating biomass of forests	K2	CO3
7	The Red Data Book is published by: a) WWF b) IUCN c) UNEP d) FAO	K1	CO4
8	The "Biosphere Reserve" program was launched by: a) UNESCO b) IUCN c) CBD d) ICAR	K2	CO4
9	The Brundtland Report is titled: a) Silent Spring b) Limits to Growth c) Our Common Future d) The Population Bomb	K1	CO5
10	Which of the following is a social indicator of sustainable development? a) Infant mortality rate b) GDP c) CO_2 emissions d) Energy consumption	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.	Explain the structure and functions of an ecosystem.	K5	CO1
	(OR)		
11.b.	Justify the role of microbes in biogeochemical cycle with reference to carbon cycle.		
12.a.	Discuss the types of species interactions in a community with examples.	K3	CO2
	(OR)		
12.b.	Explain the process of ecological succession with suitable examples.		
13.a.	Illustrate the methods of sampling populations in ecological studies.	K3	CO3
	(OR)		
13.b.	Explain the concept of ecosystem services with examples.		
14.a.	Analyse the strategies for biodiversity conservation in India.	K4	CO4
	(OR)		
14.b.	Evaluate the role of protected areas in biodiversity conservation.		
15.a.	Analyse the role of SDGs in promoting global sustainability.	K4	CO5
	(OR)		
15.b.	Examine the challenges in implementing sustainable development in developing countries.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

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

Question No.	Question	K Level	CO
16	Analyse how the laws of thermodynamics regulate energy transfer and productivity in ecosystems.	K4	CO1
17	Evaluate different models of population growth and discuss their ecological significance with examples from natural populations.	K5	CO2
18	Critically assess biodiversity assessment methods and argue which is most suitable for large-scale ecosystem monitoring in India.	K5	CO3
19	Compare and contrast various in-situ, ex-situ and community – based biodiversity conservation approaches.	K4	CO4
20	Analyse how sustainable development strategy balances industrial growth, power by eradication and climate to change adaptation.	K4	CO5

Z-Z-Z END