THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA
Ph. D. ENTRANCE TEST (PET) 2023

Signature of Invigilator

Paper - II

Environmental Sciences

Roll. No.

_____

| **Maximum Marks: 50** | **No. Of Printed Pages: 8** |

Instruction for the Candidate:

1. This paper consists of **FIFTY (50)** multiple choice type questions. Each Question carries **ONE (1)** mark.
2. There is no Negative Marking for Wrong Answer.
3. A separate OMR Answer Sheet has been provided to answer questions. Your answers will be evaluated based on your response in the OMR Sheet only. No credit will be given for any answering made in question booklet.
4. Defective question booklet or OMR if noticed may immediately replace by the concerned invigilator.
5. Write roll number, subject code, booklet type, category and other information correctly in the OMR Sheet else your OMR Sheet will not be evaluated by machine.
6. Select most appropriate answer to the question and darken appropriate oval on the OMR answer sheet, with black / blue ball pen only. DO NOT USE PENCIL for darkening. In case of over writing on any answer, the same will be treated as invalid. Each question has exactly one correct answer and has four alternative responses (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
   Example: (A) ● (C) (D) where (B) is correct response.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. Calculators, Log tables any other calculating devices, mobiles, slide rule, text manuals etc are NOT allowed in the examination hall. If any of above is seized from the candidates during examination time; he/she will be immediately debarred from the examination and corresponding disciplinary action will be initiated by the Center Supervisor as deemed fit.
10. DO NOT FOLD or TEAR OMR Answer sheet as machine will not be able to recognize torn or folded OMR Answer sheet.
11. **You have to return the OMR Answer Sheet to the invigilator at the end of the examination compulsorily** and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet on conclusion of examination.

[P.T.O]

Paper - II
Environmental Sciences

Note: This paper contains **FIFTY (50)** multiple-choice questions. Each Question carries **ONE (1)** mark.

1. What is Ground Truthing?

A	A method for collecting data remotely	B	The process of comparing remotely sensed data to actual data collected on ground
C	The process of calibrating a remote sensing instrument	D	The process of transmitting remotely sensed data to a ground station

2. Wind rose represents graphical charts that characterize-------

A	wind humidity	B	the speed and direction of winds in an area
C	wind pressure	D	wind temperature at a location

3. A map contour line connecting areas of equal amounts of rainfall :

A	Isohyet	B	Isobar
C	Isoppt	D	Isohels

4. The ratio of mass of water vapour to mass of air indicates

A	Absolute humidity	B	relative humidity
C	specific humidity	D	humidity ratio

5. Which of the following statements is true?

A	Troposphere is thicker at the equator than at the poles	B	Troposphere is thicker at the poles than at the equator
C	Troposphere has equal thickness across the globe	D	Troposphere has the highest concentration of radicals

6. Photochemical smog usually does not comprise:

A	PAN	B	Ozone
C	CFCs	D	oxides of nitrogen

7. Ozone is present in

A	Stratosphere	B	Troposphere
C	Stratosphere and troposphere	D	Ionosphere

8. Which technique separates charged particles under the influence of an electric field

A	ICP-MS	B	electrophoresis
C	HPLC	D	FT-IR

9. Instrument used to measure the heat released from combusting a specific amount of biomass sample

A	Bomb calorimeter	B	auxanometer
C	mass spectrometer	D	Incinerator

10. Which of the following statements is correct

A	ICP-AES can be used to determine isotopes of elements	B	ICP- AES can be used to distinguish oxidation states of elements
C	ICP- MS uses hollow cathode lamp as source	D	ICP- MS can be used to determine isotopes of elements

11. Biosphere reserve region which is legally protected and where no human activity is allowed is known as

A	Core zone	B	green zone
C	buffer zone	D	restoration zone

12. The junction between biomes is known as

A	Edge	B	ecotone
C	biopause	D	Niche

13. Which of the following factors do not influence the decomposition of xenobiotic compounds?

A	pH	B	temperature
C	biota	D	redox potential

14. Hot spot areas have:

A	Low density of biodiversity	B	High density of endemism
C	Low density of biodiversity and endemism	D	High density of biodiversity and endemism

15. Identify the pollutant(s) for which oxidation-reduction-based reactions, catalysed by microorganisms are most relevant for controlling their environmental fate and toxicity ?

A	Chromium and lead	B	Arsenic and mercury
C	mercury and calcium	D	mercury and lead

16. NDMA, an apex body of Government of India that lay down the policies for disaster management comes under the Ministry of ---------:

A	Environment	B	Home affairs
C	Earth Science	D	Urban affairs

17. Which of the following statements is true about Geostrophic flow?

A	occurs when the pressure gradient force equals the Coriolis force.	B	occurs in atmospheric levels with substantial friction
C	Can occur in all levels of atmosphere	D	undergoes a near constant, acceleration

18. . Ghyben-Herzberg relation is---------

A	the relation between fresh water and salt water in a coastal aquifer	B	the relation between ground water and salt water in a aquifer
C	The relation between ground water and sodium absorption ratio	D	The relation between precipitation and evaporation in a watershed

19. Ground water tracers are

A	Chemical substances that contaminate ground water resources	B	Radioactive substances present in ground water
C	Substances that help identify hydrogeological characteristics of an aquifer	D	Dyes that contaminate groundwater aquifers

20. The downward movement of wet soil along the slopes under the influence of gravity is called

A	Creep	B	Lahars
C	Debris flow	D	mass wasting

21. Oil derived from coal, oil shales or tar sands is called _____

A	fossil oil	B	syncrude
C	fossil fuel	D	synfuel

22. In an oil trap formed by an anticline, _____ accumulates on top, _____in the middle, and _____ at the bottom.

A	oil, natural gas, groundwater	B	groundwater, oil, natural gas
C	natural gas, oil, groundwater	D	ground water, natural gas, oil

23. Instrument used to determine total air volume

A	anemometer	B	high volume air sampler
C	cyclone	D	spirometer

24. According to Noise Pollution Rules 2000, the permissible noise limit in silence zone is

A	75 dB day time 70 dB night time	B	55 dB day time 45 dB night time
C	65 dB day time 55 dB night time	D	50 dB day time 40 dB night time

25. Sullage water is -----

A	Waste water released from kitchen	B	black water
C	Waste water released from factories	D	Waste water released from hospitals

26. Bioremediation of soil is not achieved readily if :

A	Contaminant is a lighter molecule	B	Contaminant has high aromaticity
C	Contaminant is a polar molecule.	D	Contaminant is non-halogenated.

27 Which of the following documents rare and endangered species of animals and plants?

A	Green data book	B	Yellow data book
C	Blue data book	D	Red data book

28. A GM detector is used to detect:

A	Alpha particles	B	beta particles
C	gamma particles	D	alpha, beta and gamma particles

29. The radiation effects experienced by the exposed person are called:

A	Future effects.	B	Genetic effects.
C	Somatic effects.	D	Radiosensitive effects.

30. The materials that can be used as seals in landfills for the control of gas and leachate :

A	Sand	B	flyash
C	Marble	D	bentonite

31. Which of the following is not a criteria air pollutant?

A	Lead	B	Cadmium
C	Sulfur Dioxide	D	Oxides of Nitrogen

32.	Phosphorus uptake in alkali soil in the form of:			
A	$H_2PO_4^-$	B	HPO_4^{2-}
C	PO_4^{3-}	D	H_3PO_4
33.	Lichens indicate pollution by		
A	O_3	B	SO_2
C	NO_2	D	CO
34.	Which of the following solar cell materials has maximum efficiency ?		
A	Cd,Te thin film	B	Si, polycrystalline
C	Amorphous Si : Ge : H film	D	Ga As, single crystal
35.	What will be your result interpretation, if MPN results shows 0,1,3 after presumptive test?		
A	Water is potable	B	there was error in collecting water sample
C	dilution of media was not proper	D	Water is not polluted with E. coli
36.	Under the Environment Impact Assessment notification 14th September, 2006, preparation of Environment Impact Assessment Report is not required forthe projects falling in the :		
A	Category A Projects	B	Category B1 Projects
C	Category B2 Projects	D	Category B1 and B2 Projects
37.	Which of the following statements are true with respect to e-waste management rules 2016		
A	They are notified by Ministry of Environment Forest and Climate Change	B	They are notified by Ministry of Electronics and Information Technology
C	State Pollution Control board issues Extended Producer Responsibility	D	Ministry has notified 210 types of electrical and electronic equipment as E-waste
38.	Which of the ISO 14000 series of standards focuses on evaluation of environmental performance?		
A	14010	B	14020
C	14030	D	14025
39.	Which of the following measures the amount of organic compounds in water:		
A	Biological oxygen demand	B	chemical oxygen demand
C	Electrical conductivity and Biological oxygen demand	D	Biological oxygen demand and Chemical oxygen demand
40.	A linear correlation coefficient that falls in the range of -1 to +1 is known as:		
A	Karl Pearson's coefficient	B	t test value
C	Standard deviation	D	chi-square value
41.	_____ does not have additive or product property		
A	Poisson distribution	B	Binomial distribution
C	Binomial variate	D	Poisson variate
42.	The kurtosis defines the peak of the curve in the region which is-----		
A	Around the mode	B	Around the mean
C	Around the median	D	Around the variance
43.	If the correlation coefficient is zero, the slope of a linear regression line will be		
A	Positive	B	Negative
C	Zero	D	Positive or Negative

44. ……… defines how much a given value may differ from standard deviation

A	z score	B	t score
C	x score	D	r score

45. Mr. Sundarlal Bahuguna coined the Chipko slogan i.e.:

A	Trees: Property of Nature	B	Embrace the Trees for Environment
C	Ecology is Permanent Economy	D	Save the Trees

46. Government of India made mandatory GRIHA rating for government buildings. GRIHA stands for

A	Green Rating for Integrated Habitat Assessment	B	Green Rating for Integrated Habitat Abode
C	Grading for Integrated House Assessment	D	Grading of Integral Habitat Assessment

47. What is carbon trading?

A	Trading of coal and diamonds	B	Trading of graphene
C	Trading of less carbon emitting technologies	D	Trading of carbon emissions

48. What is the supreme decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC)?

A	Conference of the Parties (COP)	B	Ministry of Climate change
C	United Nations Environment Programme	D	Intergovernmental Panel on Climate Change (IPCC)

49. _____ is an environmental court for conservation of forests, environmental protection and other natural resources.

A	National Forest Tribunal	B	National Green Tribunal
C	National Environment Court	D	Nation Environment impact court

50. The idea of LIFE was introduced by the Prime Minister during:

A	UN Climate Change Conference 26, Glasgow	B	UN Climate Change Conference 27, Sharm El Sheikh
C	Bonn Convention	D	G7 forum

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Rough Work: