Total No. of Printed Pages: **07** No. of Questions : **50**

Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar
PET 2024 (9037) Doctor of Philosophy(Water and Land Management)

(To be filled by the Candidate)

Candidate Seat Number (As per Admit card)

OMR Sheet Number

Invigilator's signature with Date

Candidate's Seat No. in Words :_____

Name of the Center :_____

Paper Code & Name of Examination : **9037- Doctor of Philosophy(Water and Land Management)**

Date: **03/10/2024** **PET 2024 - EXAMINATION**

Time: **One Hours** Total Marks: **100**

Important Instructions for the candidate

1. Write your seat number and OMR Sheet number on the question paper in the earmarked space
2. This question paper carries Fifty (50) Multiple-choice type questions and each question carries 2 Marks
3. At the commencement of examination, the question paper will be given to the student.
4. Each question has four alternative responses marked (A) (B) (C) and (D). You have to darken the circle as indicated below on the correct response against each question
   Example: where (C) is correct answer

5. Your responses to the answer are to be indicated in the OMR Sheet. If you mark at any place other than in the circle in the OMR Sheet it will not be evaluated.
6. Rough work is to be done at the end of this question paper.
7. You have to return OMR answer sheet and question paper to the invigilator at the end of examination compulsorily and must not carry with you outside the examination hall.
8. Use only Black / Blue ball point pen
9. Use of any type of calculator or log table etc. is prohibited.
10. There is no negative marking for incorrect answers

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात तसेच आपणास दिलेल्या उत्तर पत्रिकेचा क्रमांक त्याखाली लिहावा.
2. या प्रश्नपत्रिकेतील सर्व प्रश्न सोडवणे अनिवार्य आहे.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल.
4. प्रत्येक प्रश्नासाठी (A) (B) (C) (D) अशी चार विकल्प उत्तरे दिली आहेत, त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा निळा करावा.
   उदा: जर (C) हे उत्तर योग्य असेल तर

5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओएमआर उत्तर पत्रिकेतच दर्शवावीत इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
6. प्रश्नपत्रिकाच्या शेवटी कोऱ्या जागेवरच कच्चे काम करावे
7. परीक्षा संपल्यानंतर विद्यार्थ्यांनी मूळ ओ. एम. आर उत्तरपत्रिका पर्यवेक्षकाकडे परत करणे आवश्यक आहे तथापि प्रश्नपत्रिका व ओ. एम. आर. उत्तरपत्रिका आपल्याबरोबर नेण्यास विद्यार्थ्याला परवानगी नाही.
8. फक्त काळ्या किंवा निळ्या बॉलपेनचाच वापर करावा
9. कॅल्क्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही
10. चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही

Q. No. **Question**

1. The soil water in between filed capacity and wilting point is-----
(A) Available water **(B)** Unavailable water
(C) Difficultly available water **(D)** Gravitational water

2. Soil Water at Field Capacity is with -------soil moisture tension
(A) 1/3 atmosphere **(B)** 15 atmosphere
(C) 30 atmosphere **(D)** 60 atmosphere

3. Reduced redox potential, denitrification, accumulation of ammonia is observed in…..
(A) Organic soils **(B)** Calcareous soils
(C) Acid soils **(D)** Submerged soils

4. In Pf scale, a tension head of 1000 cm is equal to a pF of--------
(A) -1 **(B)** 1
(C) 10 **(D)** 100

5. A part of rainfall available for the consumptive use of the crop is called as--------
(A) Water requirement **(B)** Effective rainfall
(C) Useful rainfall **(D)** Peak Requirement

6. Infrared thermometer is used to measure Stress degree days= summation of (_____-_____).
(A) Canopy temp- air temp **(B)** Air temp- canopy temp
(C) Soil temp-air temp **(D)** Canopy temp-soil temp

7. Border-strip irrigation method has limitations in-------soils.
(A) Sandy **(B)** Clayey
(C) Silty **(D)** Loamy

8. Drip requires ----pressure at emitter.
(A) 1 kg/cm^2 **(B)** 1.5 kg/cm^2
(C) 2.0 kg/cm^2 **(D)** 2.5 kg/cm^2

9. For controlling algae-----is used and to remove clogging of drippers------is used
(A) Chlorine, Sodium hypochlorite **(B)** HCl, H_2SO_4
(C) HCL, Sodium hypochlorite **(D)** HCl, NaOH

10. ------suggested the use of pF, which is defined as the logarithm of the negative pressure head in cm of water.
(A) Schofield (1935) **(B)** Arnon (1956)
(C) Schofield (1985) **(D)** Arnon (1936)

11. 90^0 V notch is suitable for-------water flows.
(A) Small **(B)** Large
(C) Fast **(D)** Slow

12. Intermittent application of water under surface gravity flow is called-----
(A) Corrugation **(B)** Surge irrigation
(C) Subsurface irrigation **(D)** Cablegation

13. Irrigation commission of India placed total surface flow as……
(A) 180 mh **(B)** 115 mh
(C) 150 mh **(D)** 145 mh

14. Dispersion of organic matter is observed in……..due to absorption of organic matter by…….
(A) Saline soils, Ca CO_3 **(B)** Non saline alkali soils, Ca CO_3
(C) Saline soils, Na CO_3 **(D)** Non saline alkali, Na CO_3

15. -------indicates the relative ease with which air and water penetrate or pass through the soil pores.
(A) Seepage **(B)** Permeability
(C) Infiltration **(D)** Deep Percolation

16. Pan evaporation method includes the effect of----------on evapotranspiration.
(A) Wind, relative humidity **(B)** Wind , rain
(C) Rain, relative humidity **(D)** Wind, temperature

17. Adsali sugarcane is planted in the month of…….
(A) February **(B)** July
(C) October **(D)** December

18. Indo-Gangetic plains were developed by…….
(A) Alluvial materials **(B)** Aeolian materials
(C) Colluvial materials **(D)** Clayey loam materials

19. Earthworms increase the highest availability of…….
(A) K **(B)** Mg
(C) N **(D)** P

20. Indian Institute of Remote Sensing is located at …..
(A) Izatnagar **(B)** Karnal
(C) Dehradoon **(D)** New Delhi

21. Which type of onion varieties have good storage capacity?
(A) Red skin varieties **(B)** White skin varieties
(C) Yellow skin varieties **(D)** White and yellow skin varieties

22. The yellow Revolution is related with?
(A) Oilseed production **(B)** Fish production
(C) Food grain production **(D)** Milk production

23. Which is the longest irrigation canal of India?
(A) Sirhind canal **(B)** Indra Gandhi canal
(C) Yamuna canal **(D)** Upper Bari Doab canal

24. The western part of Kerala represents…..

(A) Mountain climate
(B) Equatorial climate
(C) Tropical savanna climate
(D) Tropical Rainy climate

25. 'Amrapali' mango is a cross between------

(A) Dashehari x Neelum
(B) Neelum x Dashehari
(C) Ratna x Alphonso
(D) Neelum x Alphonso

26. In a study evaluating the impact of different irrigation methods on water conservation in agricultural fields, which research design would best address potential confounding variables and ensure robust results?

(A) Cross-sectional survey
(B) Experimental design with randomized controlled trials
(C) Case study analysis
(D) Longitudinal cohort study

27. In a research project aiming to assess the effectiveness of community-based water conservation programs, which sampling method would best ensure that the study results are representative of diverse community perspectives?

(A) Convenience sampling
(B) Snowball sampling
(C) Stratified random sampling
(D) Systematic sampling

28. Which of the following is the most effective way to ensure that a soil conservation research study is both rigorous and generalizable across different types of agricultural systems?

(A) Implementing a cross-sectional survey to collect data on current soil conservation practices from a variety of stakeholders
(B) Using a randomized controlled trial across multiple agricultural systems with varying soil types, climates, and land management practices
(C) Conducting a case study in a single, homogeneous farming environment and extrapolating the results to other contexts
(D) Relying solely on historical data and expert opinion to make recommendations for soil conservation practices

29. Which of the following research designs would best allow for the assessment of the long-term impacts of a soil conservation intervention on soil health and productivity?

(A) A one-time survey of farmers' perceptions about soil health improvements due to the intervention.
(B) A retrospective case study analyzing historical soil health data before and after the intervention.
(C) A longitudinal study with periodic measurements of soil health indicators and crop productivity over several years.
(D) A cross-sectional study comparing soil health indicators between regions with and without the intervention.

30. In a study comparing the efficiency of different micro irrigation systems (drip vs. sprinkler), which research design would be most effective to control for soil variability across multiple test sites?

(A) Cross-sectional design
(B) Longitudinal design
(C) Randomized controlled trial (RCT)
(D) Case study approach

31. In a study aiming to optimize water usage in micro irrigation systems, you have data from several different types of micro irrigation systems. How would you best analyze the data to identify the system with the highest water use efficiency?

(A) Use a t-test
(B) Perform a regression analysis
(C) Apply a one-way ANOVA
(D) Conduct a descriptive statistical analysis

32. After analyzing the results of your micro irrigation research, you find that one system consistently performs better in terms of water use efficiency and crop yield. What would be the most appropriate next step to ensure the robustness of your findings?

(A) Publish the results immediately without further testing.
(B) Conduct a follow-up study with a larger sample size and under different environmental conditions.
(C) Disregard the results if they are inconsistent with previous studies.
(D) Focus solely on the most recent study to confirm the findings.

33. A researcher is conducting a study to evaluate the impact of climate change on irrigation water requirements in different regions. The study uses a mixed-methods approach, combining both qualitative and quantitative data. What is the major benefit of using a mixed-methods approach?

(A) Increased precision
(B) Increased validity
(C) Increased generalizability
(D) Increased cost-effectiveness

34. Which of the following best illustrates the principle of "integrated" in Integrated Water Resources Management (IWRM)?

(A) Managing water resources based solely on hydrological boundaries without considering social and economic factors.
(B) Coordinating water management across different sectors and stakeholders to balance ecological, social, and economic needs.
(C) Prioritizing the development of large-scale infrastructure projects to increase water availability.
(D) Implementing water conservation measures only within urban areas.

35. In the context of IWRM, what is the significance of managing water resources at the river basin scale?

(A) It helps to standardize water management practices across different regions without considering local variations.
(B) It focuses on increasing water storage capacity in specific areas without considering downstream effects.
(C) It promotes the construction of large dams to control water flow regardless of the surrounding environment.
(D) It allows for a holistic approach that integrates the management of water resources, land use, and ecosystem services within a natural hydrological unit.

36. Which of the following best explains the shift from traditional to modern cropping patterns in response to climate change?

(A) Adoption of diverse crop rotations and integrated pest management to enhance resilience.
(B) Increased reliance on monoculture systems to maximize profits.
(C) Expansion of irrigated areas without considering the ecological impact.
(D) Exclusive use of genetically modified organisms (GMOs) for all crops.

37. In a region experiencing soil degradation due to traditional farming methods, which of the following sustainable practices would be most effective in restoring soil health and why?
- **(A)** Implementing crop rotation and cover cropping
- **(B)** Using synthetic fertilizers to increase crop yield
- **(C)** Expanding the area under monoculture
- **(D)** Increasing the frequency of tillage

38. Evaluate the impact of integrating agroforestry practices into a monoculture-based farming system. What would be the most significant benefit of this integration?
- **(A)** Increased monoculture crop yields
- **(B)** Higher use of chemical inputs
- **(C)** Reduction in soil erosion and enhancement of soil fertility
- **(D)** Reduced plant diversity

39. In soil formation research, what does the term 'pedogenic factors' refer to?
- **(A)** Factors that influence the rate of soil erosion
- **(B)** Factors that inhibit soil formation
- **(C)** Components of soil organic matter
- **(D)** Processes that modify soil properties

40. What type of research design is often used to evaluate the impact of different vegetation types on soil formation?
- **(A)** Cross-sectional study
- **(B)** Longitudinal study
- **(C)** Experimental study
- **(D)** Case study

41. What is the primary goal of watershed management?
- **(A)** To maximize agricultural output
- **(B)** To enhance recreational facilities
- **(C)** To increase urban development
- **(D)** To control soil erosion and manage water resources

42. Which statistical technique is often used to analyze water quality data in watershed research?
- **(A)** Regression analysis
- **(B)** Chi-square test
- **(C)** ANOVA (Analysis of Variance)
- **(D)** Descriptive statistics

43. What is a 'watershed model'?
- **(A)** A physical model used to demonstrate water flow
- **(B)** A theoretical framework to predict watershed behavior
- **(C)** A set of policy recommendations for watershed management
- **(D)** A software program for data analysis

44. What is the primary goal of research design in groundwater management?
- **(A)** To identify new groundwater sources
- **(B)** To develop new water purification technologies
- **(C)** To systematically collect and analyze data to understand and manage groundwater resources
- **(D)** To increase groundwater usage in agricultural practices

45. What type of sampling technique is most appropriate for assessing spatial variability in groundwater contamination?

(A) Random sampling
(B) Stratified sampling
(C) Systematic sampling
(D) Convenience sampling

46. Which research design is most appropriate for assessing the impact of a new water purification technology on drinking water quality?

(A) Experimental Design
(B) Case Study
(C) Cross-Sectional Survey
(D) Historical Analysis

47. What is a common method for ensuring the reliability of data in a survey-based study on public perceptions of drinking water quality?

(A) Using a non-random sample of respondents
(B) Employing a high margin of error in the survey results
(C) Implementing a well-structured questionnaire and pre-testing it
(D) Relying solely on qualitative feedback from open-ended questions

48. In land capability classification, which system categorizes land into classes based on its suitability for agricultural use?

(A) FAO Land Evaluation Framework
(B) Thematic Mapper Classification System
(C) Soil Taxonomy System
(D) USDA Land Capability Classification System

49. Which land capability class indicates the highest suitability for intensive agriculture?

(A) Class II
(B) Class IV
(C) Class VI
(D) Class VIII

50. What is the term for a research method that involves detailed, in-depth analysis of a single subject or group?

(A) Survey research
(B) Experimental research
(C) Case study
(D) Correlational research

****