

Seat No.	
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M.Phil./Ph.D. Entrance Examination, May - 2019 (Special Drive)
ENVIRONMENTAL SCIENCE & ENGINEERING
(For M.E., M. Tech. Students)

Day and Date : Tuesday, 21 - 05 - 2019

Total Marks : 100

Time : 4.00 p.m. to 6.00 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Each question carries 2 marks.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Use black ball point pen only for marking the circle. Do not make any stray mark on the OMR Answer Sheet.
 - 5) Follow the instructions given on OMR Sheet.
 - 6) Rough work shall be done on the sheet provided at the end of question paper.
 - 7) Only non programmable calculators are allowed.

- 1) The correct relationship between Total Organic Carbon (TOC), Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) is given by
 - A) $TOC > BOD > COD$
 - B) $TOC > COD > BOD$
 - C) $COD > BOD > TOC$
 - D) $BOD > COD > TOC$

- 2) The colour of water is expressed in numbers of
 - A) Silica scale
 - B) pO value
 - C) Cobalt scale
 - D) None of these

- 3) At Break point Chlorination the residual Chlorine is
 - A) Zero
 - B) Maximum
 - C) Minimum
 - D) Reappears

P.T.O.

- 4) Low turbidity can of water can be determined by
- A) Turbidity tube
 - B) Jacksons turbidimeter
 - C) Baylis turbidimeter
 - D) Hellige turbidimeter
- 5) The pH value of water public supplies is limited from
- A) 2.5 to 6.5
 - B) 6.5 to 8.5
 - C) 8 to 10.5
 - D) 10.5 - 15
- 6) Imhoff cone is used to measure in sewage
- A) Total solids
 - B) Total Organic solids
 - C) Total Inorganic solids
 - D) Settleable solids
- 7) In a rapid sand Filter, the filter head varies from
- A) 1 to 1.5m
 - B) 1.5 to 2m
 - C) 2 to 4m
 - D) 4 to 5m
- 8) The relative stability of a sewage sample whose DO equals the total oxygen required to satisfy its BOD is
- A) Zero
 - B) 1%
 - C) 100%
 - D) Infinity

- 9) The Ultimate BOD value of a waste
- A) Increases with temperature
 - B) Decreases with temperature
 - C) Remains the same at all temperature
 - D) Doubles every 10 degree C rise in temperature
- 10) The maximum allowable concentration of Lead for domestic supplies
- A) 0.01 ppm
 - B) 0.05 ppm
 - C) 0.5 ppm
 - D) 1 ppm
- 11) Copper sulphate is the most common chemical used for controlling
- A) Bacteria
 - B) Algae
 - C) Silt
 - D) Mineral matter
- 12) Membrane Filter technique is used for testing
- A) E coli
 - B) Copper
 - C) Pathogenic Bacteria
 - D) None of these
- 13) The maximum allowable concentration of fluorine for domestic supplies
- A) 0.01 ppm
 - B) 1.5 ppm
 - C) 0.5 ppm
 - D) 15 ppm

- 14) Sphere shaped Bacteria are called
- A) Spirilla
 - B) Bacilli
 - C) Cocci
 - D) Trichobacteria
- 15) The effective size of sand particles for slow sand filters varies from
- A) 0.30-0.35 mm
 - B) 0.35-0.5 mm
 - C) 0.50-0.65 mm
 - D) 0.65-0.75 mm
- 16) The minimum DO required in water to save the aquatic life is
- A) 1 ppm
 - B) 2 ppm
 - C) 4 ppm
 - D) 8 ppm
- 17) What does super saturation of a water body with DO cause?
- A) Eutrophication
 - B) Gas bubble disease in fish
 - C) Methaemoglobinemia
 - D) Endemic goiter
- 18) The re oxygenation coefficient K of a stream is 0.3 at 20°C. Its K value at 22°C is likely to be
- A) 0.31
 - B) 0.32
 - C) 0.35
 - D) 0.34

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- 19) The Lower portion of Manhole is known as
- A) access shaft
 - B) base
 - C) working chamber
 - D) cover
- 20) Which of the following sewage treatment units has a parshall flume
- A) Trickling Filter
 - B) Oxidation Pond
 - C) Grit Chamber
 - D) Aerated Lagoon
- 21) Where does sloughing occur
- A) Grit Chamber
 - B) Biological treatment unit
 - C) Trickling filter
 - D) Septic tank
- 22) Zeolite is
- A) Hydrated Silica
 - B) Sodium Silicate
 - C) Dehydrated Calcium Silicate
 - D) Pathogenic bacteria
- 23) Which type of Plume may occur during winter nights
- A) Looping
 - B) Inversion
 - C) Coning
 - D) Lofting
- 24) Which one of the following methods can be employed for plastic and rubber waste disposal
- A) Incineration
 - B) Composting
 - C) Pyrolysis
 - D) Sanitary Landfill

- 25) The pH of fresh sewage is usually
- A) Less than 7
 - B) More than 7
 - C) Equal to 7
 - D) Equal to zero
- 26) The format of thesis writing is same as in
- A) Preparation of research article
 - B) Writing of seminar presentation
 - C) A research dissertation
 - D) Presenting a workshop
- 27) Ethical norms in research do not involve guidelines for
- A) Thesis format
 - B) Copyright
 - C) Patenting Policy
 - D) Data sharing Policies
- 28) A cluster of propositions with a structure that exhibits some inference is called
- A) An inference
 - B) An Argument
 - C) An explanation
 - D) A valid argument
- 29) The First step of research is
- A) Identification of Problem
 - B) Searching a Problem
 - C) Selecting a Problem
 - D) Finding a Problem
- 30) The conclusion of which type of research cannot be generalized to other situations
- A) Historical research
 - B) Descriptive research
 - C) Experimental research
 - D) Casual comparative research

- 31) What is a research design?
- A) A way of conducting research that is not grounded in theory
 - B) Choice between Quantitative and Qualitative methods
 - C) The style in which you present your research findings
 - D) A framework for every stage of collection and analysis of data
- 32) Bibliography given in a research project
- A) Helps those interested in further research
 - B) Has no relevant to research
 - C) Shows vast knowledge of researcher
 - D) All of these
- 33) A ratio represents the relation between
- A) Part and part
 - B) Part and Whole
 - C) Whole and whole
 - D) All the above
- 34) Sampling cases means
- A) Sampling using sampling frame
 - B) Identifying people who are suitable for research
 - C) Literally the researcher's brief case
 - D) Sampling of people, news paper etc.

- 35) Generalized Conclusion on the basis of a sample is technically known as
- A) Data analysis and interpretation
 - B) Parameter inference
 - C) Statistical inference
 - D) All the above
- 36) To test Null Hypothesis, a researcher uses
- A) T test
 - B) ANOVA
 - C) X²
 - D) Factorial Analysis
- 37) The frequency distribution of a research data which is symmetrical in shape similar to a normal distribution but center peak is much higher is
- A) Skewed
 - B) Mesokurtic
 - C) Leptokurtic
 - D) Platykurtic
- 38) When planning to do a social research, it is better to
- A) Approach the topic with an open mind
 - B) Do a pilot study before getting stuck into
 - C) Be familiar with the literature on the topic
 - D) Forget about theory as it is practical

39) Research is

- A) Searching again and again
- B) Finding solution to any Problem
- C) Working in a scientific way to search for truth of any problem
- D) None of the above

40) Which one of the following is not a source of data.

- A) GIS
- B) Census
- C) Administrative records
- D) Population data

41) Research is considered not ethical if

- A) Does not ensure privacy of the respondent
- B) Does not investigate the data scientifically
- C) Is not of very high standard
- D) Tries to prove a particular point

- 42) Newton gave three basic laws of motion. This research is Categorized as
- A) Descriptive research B) Sample survey
C) Fundamental Research D) Applied research
- 43) A research paper is a brief report of research work based on
- A) Primary data only B) Secondary data only
C) Primary and secondary data only D) None of these
- 44) The Process not needed in the experimental research is
- A) Manipulation B) Observation
C) Controlling D) Content Analysis
- 45) Controlled group condition is applied in
- A) Survey research
B) Historical research
C) Experimental research
D) Descriptive research
- 46) We use Factorial Analysis
- A) To know the relationship between two variables
B) To test the hypothesis
C) To know the difference between two variables
D) To know the difference among many variables

- 47) Action Research is
- A) An applied research
 - B) A Longitudinal research
 - C) A research carried out to solve immediate problems
 - D) All the above
- 48) A thesis statement is
- A) An observation
 - B) A Fact
 - C) An assertion
 - D) A discussion
- 49) A Research approach of Max Weber to understand how people create meaning in natural settings identified as
- A) Positive Paradigm
 - B) Natural Paradigm
 - C) Critical Paradigm
 - D) Interpretative Paradigm
- 50) Which one of the following is a non probability sampling.
- A) Simple Random
 - B) Purposive
 - C) Systematic
 - D) Stratified



Rough Work