

Tahir Azeem

R/o Darhal (Jand K)

mob - 959605664

Paper Code No: M81

Question Booklet No. ....

ENTRANCE EXAMINATION – 2021 – 22

030261

SET – A

SSF JAMIA MILLIA ISLAMIA  
New Delhi

Roll No.

M 8 1 0 3 2 6 1

Signature of Invigilator

Time: 1 Hour 30 Minutes

Total Marks: 100

Instructions to Candidates

1. Do not write your name or put any other mark of identification anywhere in the OMR Response Sheet. IF ANY MARK OF IDENTIFICATIONS IS DISCOVERED ANYWHERE IN OMR RESPONSE SHEET, the OMR sheet will be cancelled, and will not be evaluated.
2. This Question Booklet contains the cover page and a total of 100 Multiple Choice Questions of 1 mark each.
3. Space for rough work has been provided at the beginning and end. Available space on each page may also be used for rough work.
4. There is negative marking in Multiple Choice Questions. For each wrong answer, 0.25 marks will be deducted.
5. USE/POSSESSION OF ELECTRONIC GADGETS LIKE MOBILE PHONE, iPhone, iPad, pager ETC. is strictly PROHIBITED.
6. Candidate should check the serial order of questions at the beginning of the test. If any question is found missing in the serial order, it should be immediately brought to the notice of the Invigilator. No pages should be torn out from this question booklet.
7. Answers must be marked in the OMR Response sheet which is provided separately. OMR Response sheet must be handed over to the invigilator before you leave the seat.
8. The OMR Response sheet should not be folded or wrinkled. The folded or wrinkled OMR/Response Sheet will not be evaluated.
9. Write your Roll Number in the appropriate space (above) and on the OMR Response Sheet. Any other details, if asked for, should be written only in the space provided.
10. There are four options to each question marked A, B, C and D. Select one of the most appropriate options and fill up the corresponding oval/circle in the OMR Response Sheet provided to you. The correct procedure for filling up the OMR Response Sheet is mentioned below.

CORRECT METHOD

(A) (B) (C) (D)

WRONG METHODS

(A) (B) (C) (D) (A) (B) (C) (D) (A) (B) (C) (D) (A) (B) (C) (D) (A) (B) (C) (D) (A) (B) (C) (D)

1. The study of the relationships between living organisms and their physical environment is called

- A environmental science                      B Ecology  
C Environmental studies                      D None of these

2. The study of interrelationships of different groups of organisms is termed as

- A Production ecology                      B Population ecology  
C Habitat ecology                      D None of these

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3. The branch of ecology dealing with energy conservation and flow in the organisms within the ecosystem is known as

- A ecological energetic                      B Ecosystem ecology  
C Habitat ecology                      D None of these

4. The ecological indicator indicates the strong relationship between a

- A Habitat and ecosystem  
☒ B species and environmental gradients  
C equivalent species  
D None of these



5. In troposphere, the temperature decreases with increasing altitude until at the

- A stratosphere                      B Tropopause  
C mid of troposphere              D None of these

6. Which layer of the atmosphere has larger interest in pollution control?

- A Troposphere                      B Mesosphere  
C stratosphere                      D none of these

7. Most of the oxygen present in upper and transition zones of mantle is found in the form of

- A Nitrates                              B silicates  
C phosphates                          D none of these

8. Which phenomenon occurs within the friction layer, i.e., over areas of less than 10 kilometers?

- A mesoscale                              B macroscale  
C microscale                              D none of these ✓

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9. Which one is not a primary periodic factor in the following given options?

- A temperature                              B amount of day light  
C atmospheric humidity                  D none of these

10 Which one is not a direct environmental factor that influences plant growth and distribution directly?

- A light and temperature      B soil texture and soil structure  
C soil water and soil minerals      D none of these

11 In biosphere reserves, in which zone the human settlements occur?

- A core zone      B buffer zone  
C transition zone      D none of these

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12 Which one is not a function of biosphere reserve in the following options?

- A conservation of ecosystems  
B logistic support  
C economic development of ecosystems  
D none of these

13 The zone of oceans where maximum light penetration occurs is called

- A euphotic zone      B disphotic zone  
C aphotic zone      D none of these

14 The amount of light required for the production of carbon compounds by photosynthesis to equal the loss of such compounds through respiration is known as the

- A light absorption point      B light compensation point  
C light saturation point      D none of these

15 The activity rhythm directly induced and controlled by periodically recurrent environmental conditions is termed as

- A composite type      B endogenous type  
C exogenous type      D none of these

16 The high temperature in summer and low temperature in winter occurs in Subtropical regions, which is grouped in the temperature class of

- A megatherms      B mesotherms  
C microtherms      D none of these

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17 The increase in altitude is usually associated with climatic changes. Identify the incorrect option.

- A decrease in temperature      B increase in precipitation  
C decrease in wind velocity      D none of these



18 The locally adapted populations of species adjusted to local environmental conditions is termed as

A ecads

B ecocline

C ~~ecotypes~~

D none of these

19 Which one is not a physical limiting factor that limits population growth?

A/ parasitism

B climate and weather

C absence of water or presence of excess water

D none of these

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20 A local interbreeding group occurring in a particular habitat is called

A agamodeme

B ecodeme

C ~~endodeme~~

D none of these

21 Abiotic components of ecosystem are divided into climatic and edaphic factors. Which one is not an edaphic factor?

A soil

~~B~~ pH

C rain

D none of these

22 The lions and tigers are examples of

A 3<sup>rd</sup> order consumers

B 4<sup>th</sup> order consumers

C 2<sup>nd</sup> order consumers

D none of these

23 Which one is not an example of autotrophs?

A grass

B shrub

C moss

D none of these

24 The flow of energy through various trophic levels of an ecosystem is

A cyclic manner

B unidirectional

C multidirectional

D none of these

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25 Which form of nitrogen is used by the plants for growth and development?

A nitrite

B ammonia

C nitrate

D none of these

26 The cyclic transfer of chemical elements of the biosphere between organisms and environment are called

A biological cycles

B biogeochemical cycle

C chemical transfer cycle

D none of these



- 27 On the basis of components sea bottom is considered to be
- A complete ecosystem      B. special type of ecosystem  
C incomplete ecosystem      D none of these
- 28 A small specific part of a large ecosystem with its own specialization such as a valley ecosystem is known as

- A micro-ecosystem      B macro-ecosystem  
C nano-ecosystem      D none of these

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- 29 The recurrence of life processes such as respiration, growth and reproduction etc. at regular interval in a year and their manifestation in nature is termed as

- A Ecotone      B ecological niche  
C periodicity      D none of these

- 30 A phenomenon of increased variety and intensity of plants at the common junction is called

- A edge effect      B Ecotone  
C eco-balance      D none of these

- 31 Modern cities and industrial green belts are examples of

- A terrestrial ecosystem      B artificial ecosystem  
C lentic ecosystem      D none of these



32 In fresh water ecosystems, an open-water zone where effective penetration of solar light takes place is called

A littoral zone

B profundal zone

☒ C limnetic zone

D none of these

33 The Govindsagar lake at Bhakra-Nangal is an example of

A ☒ Eutrophic lakes

B artificial lakes

C oligotrophic lakes

D none of these

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34 Which zone of ocean receives abundant light and shows high photosynthetic activity?

A bathyal zone

B abyssal zone

C ☒ euphotic zone

D none of these

35 In fresh water ecosystem, which group of organisms are found near the surface of water?

A benthos

B ☒ plankton

C nekton

D none of these

36 The organisms, eurythermal and euryhaline are found in

A pond ecosystem

B lake ecosystem

C estuary

D none of these

37 Which one is an example of temperate deserts?

A Mojave in south California

B Thar in Rajasthan

C Gobi in China

D none of these

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38 In United States and Canada, the temperate grasslands are known as

A Steppes

B Velds

C Prairies

D none of these

39 In tropical rain forests, the top most layer of the tallest broad -leaf evergreen trees is termed as

A emergent layer

B canopy

C understory

D none of these



40 The tropical deciduous forests are found in

- A the areas where dry season is longer
- B a little away from the equator and characterized by warm climate round the year
- C temperate areas with adequate rainfall
- D none of these

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41 The energy flow in the ecosystem takes place

- |                  |                    |
|------------------|--------------------|
| A unidirectional | B multidirectional |
| C cyclic         | D none of these    |

42 The conversion of solar energy captured by the green plants into biochemical energy and then into that of consumer is governed by the

- A 2<sup>nd</sup> law of thermodynamics
- B 1<sup>st</sup> law of thermodynamics
- C 3<sup>rd</sup> law of thermodynamics
- D none of these

43 The universal energy flow model through an ecosystem was explained by

- |                           |                 |
|---------------------------|-----------------|
| A <u>E.P.</u> Odum        | B E.A. Johnson  |
| C Charles S. <u>Elton</u> | D none of these |

44 The maximum rate at which any population can increase under ideal conditions is called biotic potential and it would be represented by

A S - Curve

B J - Curve

C U - Shaped Curve

D none of these

45 The relation among net primary production (NPP), gross primary production (GPP) and the respiratory loss (R) is

A  $NPP = GPP - R$

B  $NPP = GPP + R$

C  $NPP = R - GPP$

D none of these

46 The organisms which can eat both plants and animals are called

A detritivores

B carnivores

C omnivores

D none of these

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47 How much energy is transferred from one trophic level to the next trophic level?

A 10%

B 20%

C 30%

D none of these



48 Which one is a correct option related to properties of food web

- A organisms at higher trophic level feed on a single type of organism at lower trophic level
- B organisms at higher trophic level feed on a number of different organisms at lower trophic level
- C it is a straight pathway through which food energy travels in an ecosystem
- D none of these

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49 In terrestrial ecosystem, the pyramid of biomass is always

- |                       |                 |
|-----------------------|-----------------|
| A inverted            | B upright       |
| C inverted or upright | D none of these |

50 The pyramid of energy indicates the amount of energy that flows into each trophic level in a given time and it is expressed in

- |                               |                                |
|-------------------------------|--------------------------------|
| A $\text{KJ/m}^2/\text{year}$ | B $\text{KJ/m}^2/\text{month}$ |
| C $\text{KJ/m}^2/\text{day}$  | D none of these                |

51 Which one is not an example of gaseous type of biogeochemical cycle?

- |                    |                 |
|--------------------|-----------------|
| A phosphorus cycle | B carbon cycle  |
| C nitrogen cycle   | D none of these |

52 Which step is not involved in the nitrification process of nitrogen cycle?

- A formation of nitrite from ammonia
- B conversion of nitrate to molecular nitrogen
- C formation of nitrate from nitrite
- D none of these

53 The nitrogen can be fixed industrially by Haber's process, where nitrogen reacts with hydrogen at very high temperature and pressure to form

- A protein
- B urea
- C ammonia
- D none of these

54 The third major reservoir of carbon is the ocean which stores carbon more than

- A 20 times as much as the atmosphere
- B 30 times as much as the atmosphere
- C 50 times as much as the atmosphere
- D none of these

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55 In the biosphere, the major portion of water is available in the oceans which contain approximately

- A 97% of the total
- B 67% of the total
- C 73% of the total
- D none of these



56 Which one is considered as a secondary air pollutant?

A  $\text{SO}_2$

B  $\text{O}_3$

C  $\text{NO}_2$

D none of these

57 Smokes are fine particles of liquids or solids having their size ranging from

A 1 to 10  $\mu\text{m}$

B 0.5 to 1  $\mu\text{m}$

C 0.1 to 5  $\mu\text{m}$

D none of these

58 Nitrogen dioxide plays a major role in the production of

A Secondary air pollutants

B primary air pollutants

C nitric oxide

D none of these

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59 The polynuclear aromatic hydrocarbon is considered as air pollutant because of

A irritating property

B highly corrosive in nature

C potentially carcinogenic

D none of these

60 The deterioration of monuments and sculptures are caused by

A the exposure of sulphuric acid aerosols

B the exposure of the byproducts of calcium sulfate

C exposure of dry sulphur dioxide

D none of these

61 Nitric oxide is

- A highly toxic
- C low toxic

- B Inert and moderately toxic
- D none of these

62 The ozone is an extremely active compound and readily oxidizes

- A platinum and rubbers
- C fabrics, dyes and gold

- B elastomers and textile fibers
- D none of these

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63 Carbon monoxide reacts with the hemoglobin of blood to give carboxy hemoglobin which

- A increase the oxygen carrying capacity of the blood
- B decreases the oxygen carrying capacity of the blood
- C affect the central nervous system
- D would not affect the central nervous system

64 The atmospheric concentration of carbon dioxide in pre-industrial revolution era was

- A 320 ppm
- C 280 ppm

- B 200 ppm
- D none of these



65 Among the following, which greenhouse gas has maximum global warming potential?

A.  $\text{CH}_4$

B.  $\text{N}_2\text{O}$

C.  $\text{CO}_2$

D. none of these

66 The rain is termed as acid rain when the pH of rain water equals to or less than

A. 7.00

B. 6.00

C. 5.60

D. none of these

67 The stratospheric ozone is measured in Dobson Unit (DU) and DU is equal to

A. 0.01 mm

B. 0.10 mm

C. 1.00 mm

D. none of these

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68 Which category of UV radiations reaching the earth surface due to depletion of ozone layer?

A. UV - A

B. UV - B

C. UV - C

D. none of these

69 The ambient air quality standard of  $\text{PM}_{2.5}$  (24 hourly average) for industrial, residential, rural and other areas is

A.  $60 \mu\text{g}/\text{m}^3$

B.  $40 \mu\text{g}/\text{m}^3$

C.  $80 \mu\text{g}/\text{m}^3$

D. none of these

70 The ambient air quality standard of CO (1 hourly average) for industrial, residential, rural and other areas is

A  $4 \text{ mg/m}^3$

B  $3 \text{ mg/m}^3$

C  $2 \text{ mg/m}^3$

D none of these

71 Which one of the following would contain water with maximum amount of turbidity?

A lakes

B wells

C rivers

D none of these

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72 The colour of naturally available zeolite is

A white

B green

C yellow

D pink

73 The unit of electrical conductivity (EC) of water is

A millisiemens per liter

B milliequivalents per liter

C milligram/liter

D none of these

74 Which one is not considered to be organic pollutant causing water pollution?

A Bacteria, viruses, protozoa

B Human and animal waste

C Plant nutrients

D None of these



75 The concentration of dissolved oxygen in river that shows good water quality is

- A 7 mg/l
- B 10 mg/l
- C 12 mg/l
- D none of these

76 Eutrophication of water bodies is caused by the

- A discharge of toxic substances
- B excessive discharge of nutrients
- C excessive discharge of suspended solids
- D none of these

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77 Hard ness of water is caused by the presence of the following i n water

- A chlorides and sulphates
- B calcium and magnesium
- C nitrites and nitrates
- D none of these

78 M PN index is a measure of one of the following:

- A coliform organisms
- B protozoa only
- C viruses only
- D none of these

79. The taste and odour producing dissolved gases are

- A.  $\text{H}_2\text{S}$ ,  $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{N}_2$
- B.  $\text{H}_2\text{S}$ ,  $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{O}_2$
- C.  $\text{H}_2\text{S}$ ,  $\text{CH}_4$ ,  $\text{CO}$ ,  $\text{H}_1$
- D. none of these

80. The water borne bacterial disease, cholera causes vomiting and diarrhea is transmitted by

- A. *Salmonella typhosa*
- B. *Vibrio comma*
- C. *Shigella*
- D. *Giardia lamblia*

81. The disease caused by prolonged oral ingestion of cadmium is known as

- A. Itai - Itai
- B. Blue baby disease
- C. Minamata
- D. Cancer

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82. Methemoglobinemia, the 'Blue Baby' syndrome is caused by consuming excessive amount of

- A. fluoride
- B. phosphate
- C. nitrate
- D. nitrite



83 ✓ The presence of fluoride in water greater than permissible level of 1.5mg/l causes

A cardiovascular disease

☒ B mottling of teeth and fluorosis

C methemoglobinemia

D none of these

84 ✗ As per IS: 10500 (1991), in drinking water, the desirable limit of total hardness is

A 300 mg/l

B 400 mg/l

C 500 mg/l

D none of these

85 ✗ As per IS: 10500 (1991) the desirable limit of the nitrate nitrogen in drinking water should be

A ☒ 30 mg/l

B 45 mg/l

C ☒ 1 mg/l

D none of these

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86 ✓ Which one is not a source of fats, oil and grease in wastewater?

A kitchens of restaurants

B garages

☒ C laundry

D none of these

87 ✓ The pH of fresh sewage (municipal waste water) is

A more than ☒ 7

B less than 7

C exactly 7

D none of these

88 Which one is not considered to be a point source of wastewater discharge?

- A factory outlets      B urban streets  
C underground mines      D none of these

89 The amount of oxygen consumed during microbial utilization of organics is called

- A oxygen requirement      B oxygen deficiency  
C biochemical oxygen demand      D oxygen demand

90 The saturation conc. for oxygen in water at 20 °C is

- A 8.5 mg/l      B 9.0 mg/l  
C 8.9 mg/l      D 8.95 mg/l

91 Which of the following is biodegradable?

- A organic pesticides      B tannic and lignic acids  
C protein      D none of these

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92 The quantification of non-biodegradable organics can be quantified by

- A subtraction of  $BOD_5$  from COD  
B addition of BOD and COD  
C subtraction of  $BOD_u$  from COD  
D none of these



93 The value of reaction rate 'k' for any organics is dependent on temperature; hence the value of 'k' increases with

- A decreasing temperature      B maintaining temperature  
C increasing temperature      D none of these

94 The rate at which organics are utilized by microorganisms is assumed to be of

- A second order reaction      B first order reaction  
C third order reaction      D none of these

95 Which one of the following is a major source of the atmospheric  $\text{CO}_2$ ?

- A plants respiration  
B human respiration  
C soil organic matter decomposition  
D none of these

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96 Which one of the following is not considered as macronutrient?

- A potassium      B manganese  
C magnesium      D none of these

97 The rate of decomposition is expressed as a "persistency value", i.e., DT50 (disappearance time for 50% of the compound). Normally the time is considered

in

A days

C minutes

B hours

D none of these

98 Which one is not agricultural source of soil pollution?

A accumulation of animal manures

B excessive input of chemical fertilizers

C improper sanitation

D none of these

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99 In case of STP, the treated effluent discharge standard (for all mode of disposal) with respect to total suspended solids (TSS) is

A < 50 mg/l

C 150 mg/l

B 100 mg/l

D none of these

100 In case of STP, the treated effluent discharge standard (for all mode of disposal) with respect to Biochemical Oxygen Demand (BOD) is

A 10 mg/l

C 30 mg/l

B 20 mg/l

D none of these

[25]

Entrance Examination - 2021 - 22