

**Started on** Saturday, 2 September 2023, 1:05 PM

**State** Finished

**Completed on** Saturday, 2 September 2023, 1:24 PM

**Time taken** 19 mins 53 secs

**Grade** 6.50 out of 10.00 (65%)

**Question 1**

Incorrect

Mark 0.00 out of  
1.00

Which of the components of particulate matter is primary in nature?

Select one:

- ☐ a. organic carbon
- ☐ b. black carbon
- ☒ c. water soluble inorganic ions ✖
- ☐ d. polycyclic aromatic hydrocarbon

The correct answer is: black carbon

**Question 2**

Correct

Mark 1.00 out of  
1.00

A cohort of 50 people was followed for air pollution exposure assessment. Their daily routine involved 8 hours of office work, 3 hours in commute through road, and 13 hours of stay in the housing community. At Three environment the average concentration of  $\text{PM}_{2.5}$  was measured as  $55 \mu\text{g m}^{-3}$ ,  $395 \mu\text{g m}^{-3}$  and  $220 \mu\text{g m}^{-3}$ . Calculate the total daily exposure (in  $\text{mg day}^{-1}$ ) of a person in the cohort. **Roundoff answer up to 3 decimal places.**

**Table 1: Data for exposure calculation in all three environments**

Data heading	Values
Age group	30-50
Gender	Male
Inhalation rate ( $\text{m}^3 \text{h}^{-1}$ )	0.6

2.691



One possible correct answer is: 2.691

**Question 3**

Correct

Mark 1.00 out of  
1.00

Identify the parameter which is commonly used to represent salinity

Select one:

- ☐ Color
- ☐ BOD
- ☐ Turbidity
- ☒ TDS

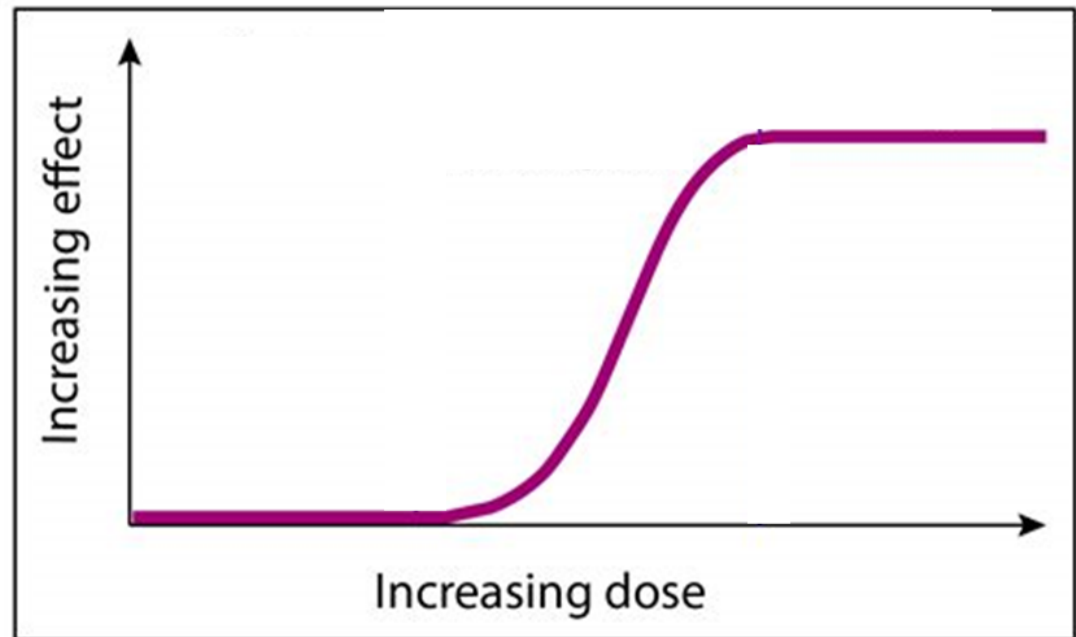
The correct answer is: TDS

#### Question 4

Correct

Mark 1.00 out of  
1.00

Identify the nature of the pollutant from the dose-response curve.



Select one:

- ☐ Essential nutrient
- ☐ No adverse effect pollutant
- ☐ Carcinogenic pollutant
- ☒ Non carcinogenic pollutant ✓

The correct answer is: Non carcinogenic pollutant

**Question 5**

Correct

Mark 1.00 out of  
1.00

The AQI of the day was displayed as 325 using observed concentrations of PM<sub>2.5</sub>.  
What would be the concentration of PM<sub>2.5</sub>? **Roundoff answer to one decimal place.**

**Table 3.11 Proposed Breakpoints for AQI Scale 0-500**  
(units:  $\mu\text{g}/\text{m}^3$  unless mentioned otherwise)

AQI Category (Range)	PM <sub>10</sub> 24-hr	PM <sub>2.5</sub> 24-hr	NO <sub>2</sub> 24-hr	O <sub>3</sub> 8-hr	CO 8-hr (mg/ m <sup>3</sup> )	SO <sub>2</sub> 24-hr	NH <sub>3</sub> 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5-1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

*\*One hourly monitoring (for mathematical calculation only)*

Select one:

- ☒ a. 152.3 ✓
- ☐ b. 159.7
- ☐ c. 165.4
- ☐ d. 140.5

The correct answer is: 152.3

**Question 6**

Incorrect

Mark 0.00 out of  
1.00

A farmer has been consuming vegetables contaminated with pesticide A during his lifetime. Recent studies indicated that it is a potential carcinogen and the chronic daily intake of the farmer is estimated to be 7.4 mg/kg/day. Estimate the total cancer risk (rounded off to 2 decimals) assuming that he is not getting exposed to this pesticide in any other manner.

Inhalational slope factor for Pesticide A= 0.01 kg.day/mg

Oral slope factor for Pesticide A=0.07 kg.day/mg

Reference dose=8.7 mg/kg/day

Answer: 0.59 ✖

The correct answer is: 0.52

**Question 7**

Correct

Mark 1.00 out of  
1.00

The Bureau of Indian standards for drinking water is IS.....

Select one:

- ☐ 1050
- ☒ 10500 ✔
- ☐ 15500
- ☐ 1500

The correct answer is: 10500

**Question 8**

Partially correct

Mark 0.50 out of  
1.00

Detrimental effect of SO<sub>2</sub> on monument is not a result of

Select one or more:

- ☒ a. Solubility of CaCO<sub>3</sub> in water ✔
- ☒ b. Reduction reaction ✖
- ☐ c. Formation of CaSO<sub>4</sub>
- ☐ d. Catalytic reaction due to Fe

The correct answers are: Catalytic reaction due to Fe, Solubility of CaCO<sub>3</sub> in water

**Question 9**

Correct

Mark 1.00 out of  
1.00

A region is said to be water-stressed when

Select one:

- ☐ Water demand in the region is declining
- ☒ Water demand exceeds the water availability in the region ✓
- ☐ None of the options
- ☐ Water abstraction exceeds the water demand in the region

The correct answer is: Water demand exceeds the water availability in the region

**Question 10**

Incorrect

Mark 0.00 out of  
1.00

Determine the concentration of  $\text{SO}_2$  in ppm if the given concentration is  $500000000 \text{ nano gram m}^{-3}$ .

[Molecular weight of  $\text{SO}_2 = 64 \text{ g/mole}$ ; 1 mole occupies 22.4 liter]. **Roundoff answer to one decimal place.**

 ✗

One possible correct answer is: 175

◀ Air pollution Lecture 1 updated Aug 28 2023

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Air Pollution\_Source monitoring ▶