

**PART I:**

**For the followings (#1~#10), please choose ONE most appropriate answer from the selections on the right. (2% for each question)**

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|-------------------------------|---|
| 1) Environmental health       | A) usually shielded against by using plastic or light metals  |
| 2) Stochastic effects         | B) deterministic effects  |
| 3) Route of exposure          | C) the probability that an event will occur, e.g., that an individual will become ill or die within a stated period of time                                   |
| 4) Exposure assessment        | D) the years that it takes for a cancer to develop after exposure   |
| 5) Latency period             | E) which is external to the individual human host   |
| 6) Beta ( $\beta$ ) radiation | F) everyone eventually must have access to the environmental resources that meet their needs  |
| 7) Health effect              | G) resistant to biological, chemicals, and photolytic breakdown   |
| 8) Sustainable development    | H) critical periods of fetal development by organ system  |
| 9) $\text{Cr}^{3+}$           | I) pollution standard index   |
| 10) POPs                      | J) those aspects of human health, including quality of life, that are determined by physical, biological, social, and psychosocial factors in the environment |
|                               | K) ingestion  |
|                               | L) specific damage to health that an environmental hazard can cause in an individual person   |
|                               | M) misuse of chemicals  |
|                               | N) the study of the distribution and determinants of health-related states of events in specified populations   |
|                               | O) injuries   |
|                               | P) respect for nature and control of environmental degradation  |
|                               | Q) essential element  |
|                               | R) estrogen-mimicking effect  |
|                               | S) wildlife animals   |
|                               | T) measurement of levels of exposure to an environmental pollutant or hazard  |
|                               | U) non-threshold effects  |
|                               | V) when inhaled or ingested, ionize atoms in living cells   |
|                               | W) a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity  |

見背面

※ 注意：本大題請於試卷上「選擇題作答區」依序作答。

**PART II:**

For the followings (#11~#25), please choose ONE most appropriate answer. (2% for each question)

- 11) When a person is first exposed to hazardous levels of noise, the initial change usually observed is a loss of hearing about \_\_\_\_\_ Hz. A) 1,000 Hz B) 2,000 Hz C) 3,000 Hz D) 4,000 Hz
- 12) The critical organ for consideration of biological damage to humans from laser exposure is the: A) Whole body B) Eye C) Skin D) Immune system
- 13) In heat stress science and calculation of heat stress on the body, metabolism is always: A) Negative B) Positive C) Can be both positive and negative D) Always negative can never be positive
- 14) What is gamma emission? A) Atomic characteristic radiation B) Two protons and two neutrons at nuclear distances C) Characteristic nuclear radiation D) Any photon radiation in the ionizing region
- 15) Regarding the management of hazardous wastes, TCLP refers to: A) The fourth characteristic of a hazardous waste B) An extraction procedure for waste samples C) The analytical procedure for land disposal purposes D) A sophisticated analytical instrument
- 16) A substance that has an LD50 of 5 mg/kg is more toxic than one that has an LC50 of \_\_\_\_\_ ppm. A) 4 B) 6 C) 8 D) Not a valid comparison
- 17) Chloracne might most likely be caused due to the exposure of: A) Chromium B) Chlorine C) TCDD D) PCBs
- 18) Inconsistencies may be observed between the information from air monitoring and biological monitoring due to: A) Physiological makeup and health status of the worker B) Occupational exposure factors, such as, the work rate, duration, skin exposure, work habits and the variable effectiveness of personal protective equipment C) Nonoccupational exposure factors, such as, community pollutants, diet, hobbies, smoking, alcohol and drug intake D) All of the above
- 19) Define ionizing radiation: A) X-rays and gamma rays B) X-rays, gamma rays, cosmic rays C) Any particle or photon with enough energy to ionize D) Alpha, beta, gamma, x-rays
- 20) Meteorologically, the change in air temperature with pressure and altitude causes a variation in air pollution. This phenomenon is referred to as? A) Temperature inversion B) Fanning C) Adiabatic lapse rate D) Coning
- 21) Chronic inhalation exposure to manganese dioxide over a period of years has been associated with a disease from which they are slow to recover. The disease resembles: A) Cancer of the liver B) Parkinson disease C) Peripheral neuropathy D) Hepatotoxic flu
- 22) Exposure to which of the following irritant gases would most likely irritate the lower reaches of the respiratory tract? A) Chlorine B) Nitrogen dioxide C) Ammonia

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D) Hydrogen chloride

- 23) For air sampling, three bubblers are operated in series to absorb the chemical from air which is passed through the bubblers. If the collection efficiency of each bubbler is 30%, what is the overall efficiency of the sampling train? A) 30% B) 66% C) 90% D) 97.3%
- 24) \_\_\_\_\_ can be expressed as an effect on the body system after a chemical has been absorbed and spread by the blood throughout the body.  
A) Systemic toxicity B) Organ-specific toxicity C) Skin toxicity D) Immunotoxicity
- 25) Which of the followings are not correct? A) Environmental health standards are usually the same as the occupational health standards. B) The only possible exposure of pesticides comes from occupational exposure. C) Environmental health hazards have often been first identified from observations of adverse health effects in workers D) Substituting one substance for another that is less acutely toxic may make good occupational health sense. (本題複選)

**PART III:**

Answer the following questions.

- 26) What is the difference between "food poisoning" and "digestive organs infections / gastrointestinal infections"? As an environmental health worker, how can you make your first judgment for the cause of a patient who has syndromes like diarrhea and vomit? (10%)
- 27) What is green house gas? Describe the relationships between the green house gas emissions and the "Kyoto Protocol". What are the key issues in the Kyoto Protocol? (10%)
- 28) Describe the role of "bioremediation" for pollution control. What is the difference between "bioremediation" and "biodegradation"? (10%)
- 29) A water sample contains 360 mg/L of glucose. What is the COD concentration of this sample? For this water sample, is it true that the BOD measured will be identical to the COD calculated? (10%)
- 30) Define the "hazardous wastes". Describe the major differences between the management of hazardous wastes and solid wastes. (10%)