

B.Sc Sem.-5 (F&S) Examination

CC 3

Combustion Products & Its Effects (N)

Time : 2-30 Hours]

November-2024

[Max. Marks : 70

Q 1 (I) Write down various Organic Irritants with their characteristics properties and how these are generated during fire. 7

(ii) What is Asphyxiation? Describe how HCN and CO create the effect of asphyxiation on the human body. 7

OR

(i) Define following terms with suitable examples: 7

- a) Cardiac Arrhythmia
- b) Bronchoconstriction

(ii) What are the various products of combustion and its effects on health as toxic properties? 7

Q 2 (i) What is Acid Rains? How it is formed? Explain its adverse effect on environment. 7

(ii) How chemical smog is formed? State adverse effect of chemical smog. 7

OR

(i) Explain with illustration how formation of the main toxic combustion product may be predicted from knowledge of composition of material. 7

(ii) Explain various devices available to reduce particle emissions from environment. 7

Q 3 (i) How can an employers and employees help in prevention of CO poisoning? 7

(ii) What is Hazard Management Plan? State important recommendations referred to the hazard management plan. 7

OR

(i) What are the symptoms and remedial actions for CO poisoning? How it affect the human body? 7

(ii) Write symptoms of Smoke Inhalation and remedial actions. 7

(P.T.O.)

- Q 4 (i) What are the important actions required for the assessment of a patient who is affected due to smoke inhalation in a structure fire. 7
 (ii) Define pulmonary ventilation and perfusion? What is its significance? 7

OR

- (i) Write short note on Inhalation Burns. Give important control measures. 7
 (ii) What are the delayed Signs, Symptoms and long-term consequences of smoke exposure among civilian victims and fire fighters? 7

Q-5 MCQ Attempt any seven out of twelve) 14

1. Asymptotic values means - as a variable or an expression containing a variable approaches a limit, usually zero. [True/False]
2. Isocyanates can be formed in fire when burns:
 - a. Nylons
 - b. Acrylic fibre
 - c. Polyurethane
 - d. All the above
3. Pulmonary edema can occur due to effect of :
 - a. Toxicant
 - b. Irritants
 - c. Smog
 - d. Aerosol
4. Ground-level ozone (O_3) is one of the cause of formation of
 - a. Ozone depletion
 - b. Vehicular pollution
 - c. Toxic Smoke
 - d. Chemical Smog
5. A colourless flammable highly poisonous gas is formed by oxidation of hydrogen cyanide is known as:
 - a. Cyanogen
 - b. Phosgene
 - c. Hydrogen Sulphide
 - d. Ozone
6. An air pollution alert is needed to declare if particle concentration found beyond Microgram/cubic meter.
 - a. 325
 - b. 375
 - c. 425
 - d. 500
7. Statistical analysis does not indicate a positive relation between NO_2 concentration and a higher mortality rate from heart diseases and cancer. (True/False)

8. Full form of TARP :
9. Cardiac toxicity caused due to:
 - a. Exposure of HCN
 - b. Exposure of CO
 - c. Exposure of CO₂
 - d. Exposure of Ultrafine particles
10. Chronic carbon monoxide exposure might increase the risk of developing the diseases in arteries :
 - a. Anoxia
 - b. Hypoxemia
 - c. Atherosclerosis
 - d. Pulmonary Edema
11. Lactic acid is produced that leads to pH drops in the cell due to effect of :
 - a. H₂S
 - b. CO
 - c. CO₂
 - d. HCN
12. Inhaling steam is particularly damaging to the lungs since the low-density vapour is easily inhaled into the alveoli, causing
 - a. Atherosclerosis
 - b. Pulmonary edema
 - c. Atelectasis
 - d. (b) & (c)