

Time: 3Hrs.

Marks: 75

Q.No.1	Attempt all multiple choice questions	20 M
1.	Secondary pollutants are those which are produced in the atmosphere when _____ reactions take place among primary pollutants	
a.	Physical	
b.	Chemical	
c.	Biological	
d.	Analytical	
2.	Acid rain is caused by the oxides of	
a.	Phosphorous & carbon	
b.	Sulfur & Nitrogen	
c.	Sulfur & Phosphorous	
d.	Nitrogen & Carbon	
3.	Air Pollution is	
a.	Chemical Alteration to Air	
b.	Physical Alteration to Air	
c.	Biological Alteration to Air	
d.	A physical, biological or chemical alteration to the air	
4.	What are the three groups of the biotic factors of Ecosystem?	
a.	Consumer, Water, and Producer	
b.	Decomposer, Consumer, and Rocks	
c.	Producer, Decomposer, and Consumer	
d.	Weather, Consumer, and Decomposer	
5.	----- has the components mentioned as hazard, accident event, probable causes, preventive actions, probability, severity and comments	
a.	PHA prerequisite	
b.	PHA team	
c.	PHA worksheet	
d.	PHA scope	
6.	Aseptic area (sterile area) is	
a.	Class 100 area	
b.	Class 1000 area	
c.	Class 10 area	
d.	Class 10000 area	

7.	Application of air circulation is
a.	Material handling
b.	Repairing
c.	Personal protection
d.	Burning
8.	As per Classification of solvents on the basis of carcinogenicity by the international agency for research on cancer following class of solvents Probably not carcinogenic to humans
a.	Class 1
b.	Class 2 A
c.	Class 3
d.	Class 4
9.	TLV stands for?
a.	Tolerable limit value
b.	Threshold limit value
c.	Threshold lowest value
d.	Tolerable lowest value
10.	For chemical hazard control, what is at the top (Most Effective) of the control pyramid?
a.	Engineering control
b.	PPE
c.	Administrative control
d.	Substitution
11.	_____ must be used while dealing with toxic/corrosive gas leaks or if an oxygen deficient atmosphere exists.
a.	Self-Contained Breathing Apparatus (SCBA)
b.	Nose Mask
c.	PPE
d.	Eye gear
12.	Following type of fires involve ordinary combustible materials like paper, wood and fabrics, rubber
a.	Fire A
b.	Fire B
c.	Fire C
d.	Fire D

<b>13.</b>	_____ is Combustion Control process in which waste gas are piped to remote, usually elevated location & burned in an open flame or in open air.
<b>a.</b>	Flaring
<b>b.</b>	Smothering
<b>c.</b>	Scrubber
<b>d.</b>	Smokeless operations
<b>14.</b>	Special dry powder can be used for ____ fire.
<b>a.</b>	Class A fire
<b>b.</b>	Class B fire
<b>c.</b>	Class C fire
<b>d.</b>	Class D fire
<b>15.</b>	Which Relief system in Preventive and Protective management of Fires & explosion makes use of electrostatic attraction?
<b>a.</b>	Scrubbers
<b>b.</b>	Sprinklers
<b>c.</b>	Passivation
<b>d.</b>	Fire walls
<b>16.</b>	Explosion of heated pressure cooker is type of _____ Hazard
<b>a.</b>	Mechanical
<b>b.</b>	Fire
<b>c.</b>	Pressure
<b>d.</b>	Gas evolution
<b>17.</b>	How is COD calculated?
<b>a.</b>	Waste water is oxidised chemically using bromine in acid solutions
<b>b.</b>	Waste water is oxidised chemically using sodium in acid solutions
<b>c.</b>	Waste water is oxidised chemically using dichromate in acid solutions
<b>d.</b>	Waste water is oxidised chemically using potassium in acid solutions
<b>18.</b>	What is FMEA
<b>a.</b>	Fast mode and effect analysis
<b>b.</b>	Front mode and effect analysis
<b>c.</b>	False mode and effect analysis

<b>d.</b>	Failure mode and Effect Analysis
<b>19.</b>	Lack of knowledge or skills is-----cause of Accident
<b>a.</b>	Indirect
<b>b.</b>	Direct
<b>c.</b>	Unsafe Act
<b>d.</b>	Unsafe Condition
<b>20.</b>	Two types of Solids in waste water TSS and TDS stands for
<b>a.</b>	Total Suspended Solids and Total Dispersed Solids
<b>b.</b>	Total Suspended Solids and Total Dissolved Solids
<b>c.</b>	Total Simple Solids and Total Dissolved Solids
<b>d.</b>	Total Simple solids and Total Dispersed Solids

**Q.2. Solve any two from the following three Questions****20 M**

- 1a.** Explain objective and Application of Air handling system in pharmaceutical manufacturing unit. Enlist components of HVAC
- 1b.** Discuss PHA with reference to its scope, benefits and procedures
- 2a.** What are treatment levels and treatment mechanisms of ETP. Explain in detail secondary treatment level.
- 2b.** Elaborate quality risk management process as per ICH Q9 guidelines and provide list of various tools used in risk management
- 3a.** What are TLV and STEL concepts? Explain their application for protection of workers to chemical exposure.

**3b.**

	Hazard		Harm Caused
a	Benzene	i	Leukemia
b	Asbestos	ii	Mesothelioma
c	Electricity	iii	electrocution
d	Wet floor	iv	Slips, falls
e	Conc. H <sub>2</sub> SO <sub>4</sub>	v	Bronchitis
f	Sodium metal	vi	Fire & explosion

**Q.3 Solve any seven from the following****35 M**

- 1 How is the air circulation maintained in industry for sterile area?
- 2 Explain in detail Hazards of organic synthesis
- 3 Explain terms with ref to preventive and protective management for fires and explosion:  
i) Passivation, ii) Ventilation, iii) Sprinkling, iv) Proofing
- 4 Write short notes on: (a) Ecological pyramids, (b) Structure and functions of ecosystems
- 5 Explain terms: Dust explosion, Electrical hazards, Arc flash, Mechanical hazards
- 6 What is meant by fire triangle? Explain how the knowledge about this helps in prevention of fire.
- 7 Enlist Technical measures to prevent chemical hazards. Explain Substitution and engineering control along with example.
- 8 Explain in brief: Radiation hazards, biological hazard
- 9 Match the following

1. Stored Pressure	A. The maintenance is a bit more difficult, requiring weighing of the gas cartridge and checking the condition of the dry chemical
2. Foam Type	B. They are easy to operate, just pull the pin and squeeze the lever.
3. Carbon Dioxide	C. should not be used for fires involving electrical equipment.
4. Chemical Extinguishers	D. The method of operation for a stored pressure extinguisher is simply to squeeze the handle or turn a valve.

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