

SEAT No. \_\_\_\_\_

[A-6]

No. of Printed Pages : 02 sc

Sardar Patel University

Vallabh Vidyanagar - 388 120

M. Sc. Industrial Hygiene & Safety

PS01CIHS21: Introduction to Industrial Hygiene, Occupational Health & Environmental Toxicology

Monday, 6 - 11 - 2017, Time: 10:00 pm to 1:00 pm

Total Marks : 70

**NOTES :**

1. Number to the right represent total marks for the question
2. Draw figures wherever necessary
3. All questions are compulsory

**Multiple Choice Questions**

- Q.1 Choose appropriate answer from given alternatives (8)
- i) Vinyl chloride is a \_\_\_\_\_  
(a) Hepatotoxin (b) Hematotoxin (c) Nephrotoxin (d) Neurotoxin
- ii) TLV-TWA is measured for  
(a) 10 hours (b) 6 hours (c) 8 hours (d) 15 minutes
- iii) SiO<sub>2</sub> describes  
(a) silicate (b) free silica (c) silicone (d) silicosis
- iv) A highly toxic chemical coming in contact with skin will usually cause  
(a) Infectious dermatitis (b) Irritant dermatitis  
(c) Allergic dermatitis (d) Mechanical dermatitis
- v) As per the Indian Factories Act, 1948, the Permissible Exposure level for noise as per is  
(a) 80dB (b) 90dB (c) 70 dB (d) 75dB
- vi) Coal Worker's Pneumoconiosis is usually reported from which part of India  
(a) West (b) East (c) South (d) North
- vii) A worker having FEV<sub>1</sub>/FVC ratio < 70% of the predicted value is said to have \_\_\_\_\_  
(a) Restrictive impairment (b) Combined impairment  
(c) Obstructive impairment (d) No impairment
- viii) Beat knee is usually seen in  
(a) Underground miner (b) Surface miner  
(c) Health care worker (d) Agriculture workers

Q.2 Write short notes on (Any Seven) (14)

- 1 Reactive airways distress syndrome
- 2 Difference between personal and area monitoring
- 3 Substitution
- 4 Local Exhaust Ventilation
- 5 Bursitis
- 6 Control of heat hazards
- 7 Patch testing
- 8 Industrial hygiene
- 9 Miner's nystagmus

**Descriptive Questions**

**(48)**

- Q.3(a) Define pneumoconiosis. Describe sources of exposure to asbestos. Describe the significance of asbestos bodies. (6)
- (b) What are the different types of occupational asthma? Describe the procedure and uses of carrying out serial PEFr test. (6)

**O R**

- (c) Enumerate the occupational health hazards among agriculture workers. Describe in details the zoonosis giving any two examples. (6)

Q4 (a) Explain Nephrotoxicity. (6)

(b) Explain Hematotoxicity (6)

**O R**

(c) Mechanisms for Neurotoxicity and explain clinical neurological examination (6)

Q 5 (a) Importance of Occupational Health Centre in Industries. (6)

(b) Absorption, distribution, and excretion of toxic substances (6)

**O R**

(c) Acute & chronic toxicity (6)

Q 6 (a) Write historical aspects of Industrial Hygiene (6)

b) Hierarchy of Control (6)

**O R**

c) Introduction of ACGIH (6)

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[A30]

SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

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Sardar Patel University  
M. Sc. (Industrial Hygiene & Safety)  
PS01CIHS22: Safety Management

Tuesday, 7- 11 - 2017,

Time: 10:00 am to 1: 00pm

Total Marks: 70

PS01CIHS22 : SAFETY MANAGEMENT

- Q1 Multiple Choice. 8
- a. Which number domino should be lifted first for injury prevention?  
a. First b. Last c. Second d. Third
  - b. Which of the following is the first specific point suggested by Heinrich? ...  
a. Selection of Remedy b. Application of Remedy c. Organization d. Fact Finding
  - c. The feature of the third domino according to Frank Bird is...  
a. Symptoms b. Contact c. Origin d. Result
  - d. Health & Safety Policy should be signed by the...  
a. Owner b. Manager c. Occupier d. Supervisor
  - e. Which of the following method is the cheapest and most effective?..  
a. Praise b. Award c. Reward d. Promotion
  - f. Which leadership style is most preferred for safety officer?...  
a. Autocratic b. Democratic c. Free-rein d. X-Y
  - g. Which of the following is safety plan as well as safety control too?...  
a. Procedure b. Rule c. Budget d. Policy
  - h. Budget helps in safety performance  
a. True b false c. Unknown d. All
- Q2 Attempt any Seven from the following. 14
- a. Name the types of members of the safety committee.
  - b. Differentiate Fatigue and Boredom.
  - c. Classify Safety Organizations.
  - d. Define: Accident, Near Miss
  - e. Enlist 5 E's of Safety.
  - f. Span of Management
  - g. Name varieties of Risk.
  - h. Safety Promotion
  - i. What are the sources of information we can get for EHS.

**Descriptive questions-**

[48]

- Q3a. Write short note: Employee Participation in Safety Management 6
- b. What is role of supervisor in Safety Management. 6
- OR**
- b. What are the barriers and breakdowns in safety communication ? 6
- Q4a. What is B.B.S.? Classify the factory affecting human behaviour. 6

(1)

(PTO)

- b. Write short note: Motivation Theories applied to Safety Management. 6
- OR**
- b. What is delegation and decentralization of authority. 6
- Q5a. What is M.I.S.? Sketch flow of safety management function v/s Information. 6
- b. Write short note: Iceberg of Accident Costs 6
- OR**
- b. Safety Promotion is important ? How its done. 6
- Q6a. Dead Vs Live resource 6
- b. As the place of industry in society is inevitable, safety in it is also inevitable . Justify 6
- OR**
- b. H.W. Heinrich's Ten Axioms of industrial safety 6

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(A-20)

SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

Sardar Patel University, Vallabh Vidyanagar - 388 120

M. Sc. (Industrial Hygiene and Safety)

PS01CIHS23: AIR SAMPLING ANALYSIS

Wednesday, 8 - 11 - 2017

Time: 10:00 pm to 1:00 pm

Total Marks: 70

Note: Figures to the right indicate maximum marks.

- Q1. **Multiple Choice Questions-** [8]
- (1) Gas offers least difficulty in air sampling [1]  
(a) True b) False c) Unknown d) All
  - (2) \_\_\_\_\_ is used for Arsenic Sampling [1]  
(a) Silver b) Bag c) MCE d) Glass Fibre
  - (3) Dual range pumps can measure high and low flow rates [1]  
(a) True b) False c) Unknown d) High
  - (4) Dragger tubes are used for \_\_\_\_\_ sampling [1]  
(a) Instantaneous b) Passive c) Long term d) Unknown
  - (5) The lower the boiling point of a substance, the more \_\_\_\_\_ is produced. [1]  
(a) Solid b) Vapour c) Sound d) Temperature
  - (6) Viable bacteria are sampled using [1]  
(a) Silver filters b) PVC c) Agar d) Glass Fibers
  - (7) Sampling time for Bioaerosols are very long [1]  
(a) True b) False c) Unknown d) 16 hrs
  - (8) TLV -C where C means [1]  
(a) Cancelled b) Ceiling c) Chemical d) Creatinine

Q2. **Short answer type questions — Attempt any 7** [14]

- (a) Basic hazard recognition procedures [2]
- (b) Dust control System [2]
- (c) Sampling shipment form [2]
- (d) What is breakthrough. [2]
- (e) TLV-TWA [2]
- (f) Bioaerosols [2]
- (g) FTIR [2]
- (h) Filters [2]
- (i) IOM [2]

**Descriptive questions-** [48]

- Q3. (a) Draw respiratory system and explain correlation with respirable, inhalable and total dust [6]
- (b) What is dust and how its generated. [6]
- OR
- (c) Explain types of sampling . [6]
- Q4. (a) Sampling Train [6]
- (b) Cyclone sampling for respirable dust is usually done why. [6]
- OR
- (c) Explain Sampling Strategy and how we determine whom to sample during the air sampling. [6]
- Q5. (a) A worker is exposed to solvents for full shift and short term. (all values in ppm) [6]

Agent	Full Shift	TLV/TWA	Short term	TLV-STEL
Acetone	160	250	470	500
Sec butyl acetate	25	200	160	N/A
MEK	100	200	200	300

All are having irritation effects hence are additive .Calculate to find that full and short term exposure are high or less.

(b) Draw a dragger tube and explain its importance related to sampling. [6]

OR

(c) Direct Reading monitors. [6]

Q6. (a) Advantages and Disadvantages of passive sampling [6]

(b) Explain Passive sampling in detail. [6]

OR

(c) Explain GC. [6]

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(2)

PS01CIHS24 : SAFETY ENGINEERING – ITotal Marks 70

- Q1 Multiple Choice. 8
- Which of the following is the occupational disease of work at much depth?  
a. Caission b. Kaizen c. Keizon d. Amazon
  - Which of the following is the best PPE for work at elevation? ...  
a. Full body b. Safety arrester c. Double life line d. Combined of all of the above
  - Which of the following is used to trip the unloading pump of inflammable if grounding is opened out ...  
a. Fuse b. Relay c. Idlers d. Circuit breaker
  - Which of the following has the least electrical resistance?...  
a. Dry skin b. Wet skin c. Skin of woman d. Wet skin of pregnant woman
  - By which of the following method aircraft fire is prevented due to static?..  
a. Grounding b. Bonding c. Discharging charge in plenty air d. Dry chemical powder
  - Name inherent static electrical phenomenon phase...  
a. Generation b. Accumulation c. Discharge d. Fire
  - The fifth element of Fire Pentagon is...  
a. M.O.C. b. M.I.E. c. L.E.L. d. None
  - Fire Tender is...  
a. Fixed system b. Portable system c. All of the above d. None of the above
- Q2 Attempt any Seven from the following. 14
- Name: i) Substance which burns with contact of air ii) Burning process in less air
  - Differentiate Deflagration and Detonation.
  - Classify Fire Protection Systems.
  - Total Productive Maintenance.
  - Where explosion is possible in Sugar Industry?
  - Need of planning and follow-up is important .Why?.
  - Importance of maintenance for lighting.
  - Zero mechanical state
  - Main causes of tool accidents. Prevention and control of such accidents.
- Descriptive Questions** 48
- Q3a. Sketch Fire Pentagon with nomenclature. 6
- Classify Fire with illustration and suggest suitable fire extinction medium. 6
- OR**
- Enlist types of fire and explain each of them. 6
- Q4a. Enlist electrical overload protection devices. 6
- Explain Hazardous Zoning. 6
- OR**
- Write short note: Phases of Static Electrical Phenomenon. 6
- Q5a. Concept of 5s in detail 6
- Citing Criteria is important before starting of plants . Justify 6
- OR**
- Name atleast Two machines you saw at College workshop. Explain Hazards and safety measures. 6

- Q6a. Explain Purpose and benefits of good lighting. 6
- b. Log Out and Tag Out. 6
- OR
- b. What are Built in safety devices and how its better than fabricated to use ones. 6

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SEAT No. \_\_\_\_\_

No. of Printed Pages : 3

**SARDAR PATEL UNIVERSITY**  
**M.SC.(INDUSTRIAL HYGINE AND SAFETY)**  
**(FIRST SEMISTER)**

**(INTRODUCTION TO HUMAN PHYSIOLOGY, BIostatISTICS AND EPIDEMIOLOGY)**

Friday, Date :10/11/17 Time ; 10:00 a.m to 1:00 p.m.

P501FIHS21

Section 1

Total marks 70

**Q 1. Multiple choice questions (Encircle your option)**

**8(One mark each)**

1. Normal cardiac output in healthy adult is :  
a) 2L/min                      b) 8L/min  
c) 3L/min                      d) 5L /min
2. Nephrotoxicity is toxicity of :  
a) liver                         b) kidney  
b) brain                        c) skin
3. Movement of Intestine is called as :  
a) Peristalsis                 b) Vomiting  
b) Deglutition                c) Defecation.
4. Which is not a part of brain :  
a) Cerebellum                 b) Cerebrum  
c) Occupation                d) Marital status
5. If 210 values are arranged in ascending order, the most commonly occurring value is called :  
a) Mean                        b) Median  
c) Mode                        d) 40th percentile
6. Most appropriate study design for finding incidence rate is  
a) Case – control study                      b) Cross sectional study  
c) Cohort study                                d) Ecological study
7. Selection bias can be reduced by  
a) Random sampling                            b) Snow ball sampling  
c) Quota sampling                              d) Convenient sampling
8. Which of the following is a continuous variable  
a) Time                         b) Gender  
c) Occupation                d) Marital status

**Q2. Short answer questions (any seven)**

**14(Two marks each)**

- a) What is normal heart rate and give any two factors affecting heart rate.
- b) Functions of skin
- c) Structure and functions of kidney.
- d) Enumerate the pulmonary function tests.
- e) What is an observational study? Give two examples of observational study.
- f) What is a median? Can there be more than one median for some data?
- g) What is qualitative data? Mention the 2 types of qualitative data.
- h) Define incidence rate? Give an example.

i) Nephrotoxicity *Descriptive Questions*

**(48) Marks  
12(Six marks each)**

**Q3. Write in brief**

- a) Enumerate the functions of blood.
- Or
- a) Classify the WBCs and write down the functions of each of them.
  - b) Define blood pressure. Give its normal value. Write down the factors affecting blood pressure.

**Section II**

**Q.4. Write in brief :**

**12(Six marks each)**

- a) Enumerate the functions of Growth hormone.
- Or
- a) Enumerate the functions of Thyroid hormone.
  - b) Enumerate the parts of respiratory system. Write down the functions of each part.

**Q5. Write in brief**

**12(Six marks each)**

- a) Design a study to find the number of people of different cadre using appropriate safety equipment in an industry. Name 3 variables you would collect for the study and mention one possible inherent bias in the study design which is appropriate for the situation? Would the data you collect be called a primary or secondary data?
- b) Draw appropriate graph for the following data

	Injured	Safe
Male	64	20
Female	38	52

OR

- b) The mean marks scored by 20 boys is 70 and that by 30 girls is 76. What is the overall mean marks scored by all 50 students?

**Q6. Write in brief :**

**12 (six marks each).**

- a) Name 2 graphical presentations of qualitative data and explain them with examples.

- b) The following table shows the persons suffering with respiratory illness in different groups:

Respiratory illness	Children	Adult	Total
Present	76	65	141
Absent	54	89	143
Total	130	154	284

Is the proportion of persons suffering from respiratory illness in children same as that in adults? (Table value 3.84 at 5% LOS and 1 df)

OR

- b) Describe the application of knowledge of Epidemiology and Bio-statistics in an industrial setup.

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