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**SARDAR PATEL UNIVERSITY**  
**M.Sc. (EST) (First Semester) Examination (NC)**  
**Monday, 10 April, 2017**  
**Time: 10.00 am to 1.00 pm**  
**PS01CEST08: Air Pollution and Climate Change**

Max. Marks: 70

**Q.1. Multiple Choice Questions (Choose Correct Answer) [08]**

- (1) Commercial production of penicillin is done from  
 (a) *Aspergillus niger* (b) *Penicillium notatum* (c) *Saccharomyces cerevisiae*  
 (d) *Penicillium chrysogenum*
- (2) Greenhouse gas emission is minimized by  
 (a) Gasoline (b) Corn ethanol (c) Cellulosic ethanol (d) Sugarcane ethanol
- (3) Insoluble aerosols are carried to the \_\_\_\_\_ system of human body.  
 (a) lymphatic (b) pneumatic (c) circulatory (d) respiratory
- (4) At 20,000 ppm, Benzene causes  
 (a) ENT infections (b) Lung cancer (c) CNS disorders (d) Death
- (5) Following is a carcinogenic HC, which causes Liver Cancer.  
 (a) Vinyl Sulpahte (b) Vinyl Phospahte (c) Vinyl Nitrate (d) Vinyl Chloride
- (6) Phosgene is synonymous to  
 (a) Carbonyl Sulpahte (b) Carbonyl Phospahte (c) Carbonyl Nitrate (d) Carbonyl Chloride
- (7) Photochemical smog does not contain  
 (a) HNO<sub>3</sub> (b) PAN (c) O<sub>3</sub> (d) HC
- (8) In atmosphere, the ratio of Oxygen and Nitrogen is  
 (a) 1: 3.33 (b) 1: 3.77 (c) 1: 3.37 (d) 1: 3.73

**Q.2. Write a Short Note on followings (Any Seven). [14]**

- (1) Yeast is a better starter than a bacterial culture – Justify.
- (2) Tabulate - Hazardous health effects of carcinogenic hydrocarbons
- (3) Sketch & Label: Pollen Grains
- (4) PAP, OAP, CAP
- (5) Explain the concept of synergesis using yogurt starter as an example.
- (6) Explain the concept of fermentation with examples. Enlist its uses and disadvantages.
- (7) Enlist the indoor air pollutants along with its sources.
- (8) Definitions of air pollution (as per WHO and H. Perkins, 1974)
- (9) Composition of air

- Q.3. (a) Briefly describe the effects of air pollution on plants, animals, and materials. [06]**  
**(b) Briefly explain the effects of NO<sub>x</sub> on plants, human health, and materials. [06]**

OR

- (b) Draw a flowchart to depict the industrial manufacturing of citric acid. Name the culture used for citric acid production. Give reason why acidic pH is maintained during citric acid production? [06]**

- Q.4. (a) Write a detailed note on aeroallergens with special emphasis on RAST. [06]**  
**(b) Explain in detail the process of acid deposition in atmosphere, and its effects on terrestrial ecosystem with suitable diagrams. [06]**

OR

- (b) Draw a diagram of fixed dome biogas plant. Name the microbial culture used for biogas production. Give reasons that why the considered microorganism is an example of *Archea* bacteria? [06]**

- Q.5. (a) Describe the man-made sources of air pollution. [06]**  
**(b) Write a note on natural sources of air pollution. Enlist the types of major air pollutants. [06]**

OR

- (b) Describe batch, fed batch and continuous fermentation. Draw a labeled diagram of fermenter. Enlist the functions of impeller, sparger, and baffle. [06]**

- Q.6. (a) Describe the health effects of air pollution in detail with suitable examples. [36]  
(b) Write a note on salient features of PM, NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>x</sub>, HC and O<sub>3</sub>. [06]
- OR**
- (b) Draw a flowchart to depict industrial manufacturing of beer. What do you understand by top and bottom fermenting yeast? Explain. [06]