

[16]

SARDAR PATEL UNIVERSITY
M.Sc. (EST) (First Semester) Examination

Tuesday, 25 October, 2016

Time: 10.00 am to 1.00 pm

PS01CEST08: Air Pollution and Climate Change

Max. Marks: 70

[08]

Q.1. Multiple Choice Questions (Choose Correct Answer)

- (1) 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
- (2) Photochemical smog does not contain
(a) HNO₃ (b) PAN (c) O₃ (d) HC
- (3) Phosgene is synonymous to
(a) Carbonyl Sulphate (b) Carbonyl Phosphate (c) Carbonyl Nitrate (d) Carbonyl Chloride
- (4) Following is a carcinogenic HC, which causes Liver Cancer.
(a) Vinyl Sulphate (b) Vinyl Phosphate (c) Vinyl Nitrate (d) Vinyl Chloride
- (5) At 20,000 ppm, Benzene causes
(a) ENT infections (b) Lung cancer (c) CNS disorders (d) Death
- (6) Insoluble aerosols are carried to the _____ system of human body.
(a) lymphatic (b) pneumatic (c) circulatory (d) respiratory
- (7) Greenhouse gas emission is minimized by
(a) Gasoline (b) Corn ethanol (c) Cellulosic ethanol (d) Sugarcane ethanol
- (8) Commercial production of penicillin is done from
(a) *Aspergillus niger* (b) *Penicillium notatum* (c) *Saccharomyces cerevisiae*
(d) *Penicillium chrysogenum*

Q.2. Write a Short Note on followings (Any Seven).

[14]

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

Q.3. (a) Describe the health effects of air pollution in detail with suitable examples.

[06]

(b) Write a note on salient features of PM, NO_x, SO_x, CO_x, HC and O₃.

[06]

OR

(b) Draw a flowchart to depict industrial manufacturing of beer. What do you understand by top and bottom fermenting yeast? Explain.

[06]

Q.4. (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.5. (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.6. (a) Briefly describe the effects of air pollution on plants, animals, and materials. [06]
(b) Briefly explain the effects of NO_x 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]

