ALLEN CAREER INSTITUTE KOTA (RAJASTHAN)

path to success

PRE-MEDICAL

ORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER

EXERCISE

Environmental Chemistry and Qualitative and Quantitative analysis of organic compounds

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions) — Build Up Your Understanding

1. Consider following gases :-
(a) CO_2 (b) methane
(c) Ozone (d) CFC
(e) Water vapour (f) N_2O
Which is/are considered as green house gases.
(1) a, b, d, f (2) a, b, d, e, f
(3) a, b, c, d, e, f (4) a, d only
EM0054

2. Which is not correct set of green house gas.
(1) N_2O & CO_2 (2) O_3 & SO_2
(3) O_3 & H_2O vapour (4) CO_2 & CH_4
EM0055

3. When vegatation is burnt in the absence of oxygen which green house gas is produced naturally.
(1) CO (2) CO_2
(3) CH_4 (4) 1 & 2 both
EM0056

4. What CO_2 level causes global warming :-
(1) More than 0.3% (2) More than 0.03%
(3) More than 3% (4) More than 0.003%
EM0057

5. Maximum prescribed concentration of $F^{\ominus}$ ion, lead, and nitrate respectively in drinking water :
(1) 10 ppm, 50 ppm, 50 ppm
(2) 10 ppm, 5 ppb, 5 ppm
(3) 10 ppm, 500 ppb, 50 ppm
(4) 10 ppm, 50 ppb, 50 ppm
EM0058

6. Which of the following is the non conventional source of energy
(1) Coal
(2) Petroleum
(3) Electricity from nuclear power plants
(4) Solar radiations
EM0007

7. Petroleum resource is
(1) Renewable
(2) Non renewable
(3) Synthetic & biodegradable
(4) Infinite & unconventional
EM0008

8. The main aim of plant conservation is -
(1) To conserve the necessary ecological activities and life supporting systems
(2) To conserve species diversity and range of genetic material
(3) Both the above
(4) None of the above
EM0009

9. Which will not cause any atmospheric pollution
(1) Hydrogen
(2) Sulphur dioxide
(3) Carbon dioxide
(4) Carbon monoxide
EM0010

10. Which of the following is the main factor of water pollution
(1) Smoke
(2) Industrial waste
(3) Detergent
(4) Ammonia
EM0011

11. Main air pollutant among the following is
(1) CO (2) CO_2
(3) N_2 (4) Sulphur
EM0012

12. Which is main for water pollutant :
(1) Sound (2) SO_2
(3) Salts of arsenic (4) Sewage
EM0013

13. Pollution can be controlled by
(1) Sewage treatment
(2) Checking atomic blasts
(3) Manufacturing electrically operated vehicles
(4) All the above
EM0014

14. Which is the major contributor for air pollutant these days
(1) Factories
(2) Motor vehicles
(3) Domestic appliances
(4) animals
EM0016

15. Removal of the soil by the action of wind and water is known as
(1) Erosion (2) Fossilization
(3) Leaching (4) Calcification
EM0017

16. Ozone layer of upper atmosphere is being destroyed by
(1) Sulphurdioxide (2) Carbondioxide
(3) Chlorofluorocarbon (4) Smog
EM0020

17. Most hazardous metal pollutant of automobile exhaust is
(1) Hg (2) Cd (3) Pb (4) Cu
EM0021

18. SO_2 pollution is indicated by
(1) Grasses (2) Mosses (3) Lichens (4) Fossils
EM0022

19. B.O.D. is connected with
(1) Organic matter (2) Microbes
(3) Both (4) None
EM0023

20. Acid rain is due to increase in atmospheric concentration of
(1) Ozone and dust (2) CO_2 and CO
(3) SO_3 and CO (4) SO_2 and NO_2
EM0024

21. Soil conservation is the process where
(1) Soil is aerated
(2) Soil erosion is allowed
(3) Soil is protected against loss
(4) Sterile soil is converted into fertile soil
EM0027

22. Ether and benzene can be separated by :-
(1) Filtration (2) Distillation
(3) Crystallization (4) Sublimation
PO0028

23. The presence of ozone in the stratosphere prevents from :-
(1) 90% UV radiation
(2) 99.5% UV radiation
(3) 80% UV radiation
(4) 75% UV radiation
EM0059

24. Which of the following is not correct regarding NO_2 gas ?
(1) High concentration of NO_2 damage the leaves of plants.
(2) It retards the rate of photosynthesis.
(3) It is a lung irritant that can lead to an acute respiratory disease in children.
(4) High concentration of NO_2 causes irritation to eyes, resulting in tears and redness.
EM0060

25. Which of the following is viable particulate pollutants?
(I) Bacteria (II) Fungi
(III) Moulds (IV) Algae
(1) I & II (2) II & III
(3) III & IV (4) I, II, III & IV
EM0061

26. Classical smog occurs in :-
(1) Cool and humide climate
(2) Sunny and dry climate
(3) Humid and dry climate
(4) Cool and dry climate
EM0062

27. Photochemical smog also known as :-
(1) Reducing smog
(2) Oxidising smog
(3) Both reducing and oxidising
(4) None
EM0063

28. Classical smog is :-
(1) Reducing smog
(2) Oxidising smog
(3) Both reducing and oxidising
(4) None
EM0064

29. Which of the following is not the component of photochemical smog?
(1) O_3, NO
(2) $CH_3-\overset{\overset{O}{\|}}{C}-O-O-NO_2$
(3) $CH_2=CH-CHO$
(4) Chloro fluoro carbon
EM0065

30. Primary precursors of photochemical smog are :-

(1) NO_2 & Hydrocarbon

(2) O_3 & PAN (Peroxyacetyl nitrate)

(3) NO_2 & O_3

(4) Hydrocarbon & $CH_3-\overset{\overset{O}{\|}}{C}-O-O-NO_2$ (PAN)

EM0066

31. Catalytic converters are used in automobiles, which prevents the release of :-

(1) NO and Hydrocarbon

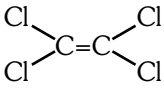
(2) SO_2 and Hydrocarbon

(3) O_3 and Hydrocarbon

(4) NO_2 and SO_2

EM0067

32. Which of the following can be used for dry cleaning clothes?

(1) 

(2) Liquified CO_2 with suitable detergents

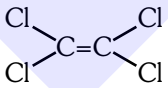
(3) H_2O_2

(4) Both 1 and 2

EM0068

33. For bleaching clothes, which of the following is used now a days :-

(1) O_3 (2) H_2O_2

(3) $KMnO_4$ (4) 

EM0069

34. In Dumas method, nitrogen containing organic compound threated with

(1) CuO (2) H_2SO_4 (3) $CuSO_4$ (4) Al_2O_3

PO0070

35. The role of aqueous solution of KOH in Dumas method is :-

(1) To make alkaline solution for reaction

(2) To absorb carbon dioxide

(3) To dissolve CuO

(4) To release N_2 gas from organic compound

PO0071

36. A sample of 0.50 g of an organic compound was treated according to Kjeldahl's method. The ammonia evolved was absorbed in 50 ml of 0.5 M H_2SO_4. The residual acid required 60 ml of 0.5 M solution of NaOH for neutralisation. Find % composition of nitrogen in the compound.

(1) 56% (2) 65% (3) 36% (4) 63%

PO0072

37. 0.3780 g of an organic chloro compound gave 0.5740 g of silver chloride in carius estimation. Calculate the % of chlorine present in the compound.

(1) 37.57% (2) 43.12%

(3) 57% (4) 85%

PO0073

38. Solid substances change from solid to vapour state without passing through liquid state is known as -

(1) Distillation (2) Crystallisation

(3) Sublimation (4) Chromatography

PO0074

39. Method which is based on the difference in the solubilities of the compound -

(1) Crystallisation (2) Distillation

(3) Sublimation (4) All

PO0075

40. Different fractions of crude oil are separated by -

(1) Simple distillation (2) Fractional distillation

(3) Steam distillation (4) Vacuum distillation

PO0076

41. On treating sodium fusion extract with sodium nitroprusside, appearence of a violet colour indicates the presence of sulphur, appearence of violet colour due to -

(1) $[Fe(CN)_5NO]^{-2}$ (2) $[Fe(CN)_5NOS]^{-4}$

(3) $[Fe(SCN)]^{+2}$ (4) PbS

PO0077

42. Which process is used for purification of liquids having high B.P. and decomposition below their B.P.

(1) Distillation

(2) Steam distillation

(3) Distillation under reduced pressure

(4) Differential extraction

PO0078

43. Mixture | Purification technique

A) Chloroform & aniline | P) Distillation

B) Glycerol & spent lye | Q) Chromatography

C) Aniline & water | R) Steam distillation

D) Amino acid | S) Distillation under reduced pressure

Correct match

(1) A–P, B–Q, C–R, D–S

(2) A–P, B–S, C–R, D–Q

(3) A–P, B–R, C–S, D–Q

(4) A–R, B–S, C–P, D–Q

PO0079

44. During Lassaigne's test for nitrogen, the prussian blue colour is obtained due to formation of

(1) $Na_4[Fe(CN)_6]$ (2) $Fe_4[Fe(CN)_6]_3$

(3) $Fe_2[Fe(CN)_6]$ (4) $Fe_3[Fe(CN)_6]_4$

PO0080

45. The best and latest technique for isolation, purification and separation of organic compounds is

(1) Crystallisation

(2) Distillation

(3) Sublimation

(4) Chromatography

PO0081

46. Aniline is purified by :-

(1) Azeotropic distillation

(2) Steam distillation

(3) distillation in presence of magnesium

(4) Fractional distillation

PO0101

EXERCISE-I (Conceptual Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**3**	**2**	**3**	**2**	**4**	**4**	**2**	**1**	**1**	**2**	**1**	**3**	**4**	**2**	**1**
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	**3**	**3**	**3**	**3**	**4**	**3**	**2**	**2**	**4**	**4**	**1**	**2**	**1**	**4**	**1**
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	**1**	**4**	**2**	**1**	**2**	**1**	**1**	**3**	**1**	**2**	**2**	**3**	**2**	**2**	**4**
Que.	46														
Ans.	**2**														

EXERCISE-II (Previous Year Questions) AIPMT/NEET

AIPMT 2008

1. An organic compound contains carbon, hydrogen and oxygen. Its elemental analysis gave C, 38.71% and H, 9.67%. The empirical formula of the compound would be :-
(1) CHO (2) CH_4O (3) CH_3O (4) CH_2O

PO0029

AIPMT Pre.-2011

2. Which one of the following statement is not true ?
(1) pH of drinking water should be between 5.5–9.5
(2) Concentration of DO below 6 ppm is good for the growth of fish
(3) Clean water would have BOD value of less then 5 ppm
(4) Oxides of sulphur, nitrogen and carbon are the most widepread air pollutant

EM0030

3. In Duma's method of estimation of nitrogen 0.35g of an organic compound gave 55 mL of nitrogen collected at 300 K temperature and 715 mm pressure. The percentage composition of nitrogen in the compound would be :
(Aqueous tension at 300 K = 15 mm)
(1) 15.45 (2) 16.45 (3) 17.45 (4) 14.45

PO0031

4. The Lassaigne's extract is boiled with conc. HNO_3 while testing for the halogens. By doing so it :-
(1) decomposes Na_2S and NaCN, if formed
(2) helps in the precipitation of AgCl
(3) increases the solubility product of AgCl
(4) increases the concentration of NO_3^- ions

PO0032

AIPMT Pre.-2012

5. Which one of the following statements regarding photochemical smog is not correct?
(1) Photochemical smog is formed through photochemical reaction involving solar energy
(2) Photochemical smog does not cause irritation in eyes and throat.
(3) Carbon monoxide does not play any role in photochemical smog formation
(4) Photochemical smog is an oxidising agent in character

EM0033

AIPMT 2014

6. Which one of the following is **not** a common component of Photochemical Smog?
(1) Ozone
(2) Acrolein
(3) Peroxyacetyl nitrate
(4) Chlorofluorocarbons

EM0035

7. In the Kjeldahl's method for estimation of nitrogen present in a soil sample, ammonia evolved from 0.75 g of sample neutralized 10 mL of 1 M H_2SO_4. The percentage of nitrogen in the soil is:
(1) 37.33 (2) 45.33
(3) 35.33 (4) 43.33

PO0036

AIPMT 2015

8. In Duma's method for estimation of nitrogen, 0.25 g of an organic compound gave 40 mL of nitrogen collected at 300 K temperature and 725 mm pressure. If the aqueous tension at 300 K is 25 mm, the percentage of nitrogen in the compound is :-
(1) 18.20 (2) 16.76
(3) 15.76 (4) 17.36

PO0038

NEET(UG) 2017

9. The most suitable method of separation of 1 : 1 mixture of ortho and para-nitrophenols is :
(1) Chromatography
(2) Crystallisation
(3) Steam distillation
(4) Sublimation

PO0040

10. Which of the following is a sink for CO ?
(1) Micro organism present in the soil
(2) Oceans
(3) Plants
(4) Haemoglobin

EM0041

NEET(UG) 2018

11. Which oxide of nitrogen is ***not*** a common pollutant introduced into the atmosphere both due to natural and human activity ?
(1) N_2O_5 (2) NO_2
(3) N_2O (4) NO

EM0043

NEET(UG) 2019

12. Among the following, the one that is **not** a green house gas is :-

(1) nitrous oxide

(2) methane

(3) ozone

(4) sulphur dioxide

EM0082

NEET(UG) 2020

13. Paper chromatography is an example of:

(1) Column chromatography

(2) Adsorption chromatography

(3) Partition chromatography

(4) Thin layer chromatography

PO0102

14. Which of the following is **not** correct about carbon monoxide?

(1) It is produced due to incomplete combustion

(2) It forms carboxyhaemoglobin

(3) It reduce oxygen carrying ability of blood

(4) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

EM0103

NEET(UG) 2020 (COVID-19)

15. Which of the following statement is **NOT** true about acid rain ?

(1) It is due to reaction of SO_2, NO_2 and CO_2 with rain water

(2) Causes no damage to monuments like Taj Mahal.

(3) It is harmful for plants.

(4) Its pH is less than 5.6

EM0104

16. A liquid compound (x) can be purified by steam distillation only if it is

(1) Steam volatile, immiscible with water

(2) Not steam volatile, miscible with water

(3) Steam volatile, miscible with water

(4) Not steam volatile, immiscible with water

PO0105

NEET(UG) 2021

17. Match **List-I** with **List-II** :

	List-I		**List-II**
(a)	$2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$	(i)	Acid rain
(b)	$HOCl(g) \xrightarrow{h\nu} \overset{\bullet}{O}H + \overset{\bullet}{Cl}$	(ii)	Smog
(c)	$CaCO_3 + H_2SO_4 \rightarrow CaSO_4 + H_2O + CO_2$	(iii)	Ozone depletion
(d)	$NO_2(g) \xrightarrow{h\nu} NO(g) + O(g)$	(iv)	Tropospheric pollution

Choose the **correct** answer from the options given below.

(1) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

(2) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

(3) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

(4) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)

EM0106

NEET(UG) 2021(Paper-2)

18. Poisonous gas present in the exhaust fumes of car is

(1) CH_4 (2) CO

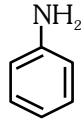
(3) CO_2 (4) C_2H_2

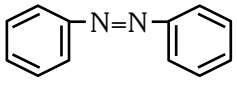
EM0107

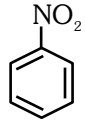
NEET(UG) 2022

19. The Kjeldahl's method for the estimation of nitrogen can be used to estimate the amount of nitrogen in which one of the following compounds ?

(1) 

(2) 

(3) 

(4) 

PO0108

20. The pollution due to oxides of sulphur gets enhanced due to the presence of:

(a) particulate matter

(b) ozone

(c) hydrocarbons

(d) hydrogen peroxide

Choose the most appropriate answer from the options given below:

(1) (a),(b),(d)only (2) (b),(c),(d)only

(3) (a), (c),(d) only (4) (a), (d) only

EM0109

NEET(UG) 2022 (OVERSEAS)

21. Match **List-I** with **List-II** :

List-I	**List-II**
(a) Separation of aniline-water mixture	(i) Fractional distillation
(b) Separation of aniline-chloroform mixture	(ii) Distillation under reduced pressure
(c) Separation of glycerol from spent-lye	(iii) Distillation
(d) Separation of different fractions of crude oil	(iv) Steam distillation

Choose the **correct answer** from the options given below :

(1) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

(2) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)

(3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(4) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

PO0110

22. A student collected samples from two water bodies A and B in a metro city. The biochemical oxygen demand for 'A' is 3 ppm while for B is found to be 18 ppm. Which one of the following is **true**?

(1) Both A and B are polluted.

(2) A is clean but B is polluted.

(3) A is polluted but B is clean.

(4) Both A and B are clean.

EM0111

Re-NEET(UG) 2022

23. Match List-I with List-II :

List-I		**List-II**	
(a)	Biochemical oxygen demand	(i)	Oxidising mixture
(b)	Photochemical smog	(ii)	Polar stratospheric cloud
(c)	Classical smog	(iii)	organic matter in water
(d)	Ozone layer depletion	(iv)	reducing mixture

Choose the correct answer from the options given below :

(1) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

(2) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

(3) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

EM0112

EXERCISE-II (Previous Year Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**3**	**2**	**2**	**1**	**2**	**4**	**1**	**2**	**3**	**1**	**1**	**4**	**3**	**4**	**2**
Que.	16	17	18	19	20	21	22	23							
Ans.	**1**	**3**	**2**	**2**	**1**	**3**	**2**	**3**							

EXERCISE-III (Analytical Questions) — Master Your Understanding

1. The term biosphere is used for the zone of the earth where life exists
(1) On the lithospere
(2) In the hydrosphere
(3) In the lithosphere and hydrosphere
(4) In the lithosphere, hydrosphere and atmosphere

EM0044

2. The population of India is 15% of the world but its annual energy consumption is only
(1) 0.2% (2) 2.0% (3) 10% (4) 25%

EM0045

3. Which of the following atmospheric pollutants is not produced by the exhaust of motor vehicle in Delhi
(1) SO_2 (2) Hydrocarbon gases
(3) Fly ash (4) CO

EM0047

4. If water pollution continues at its present rate, it will eventually
(1) Stop water cycle
(2) Prevent precipitation
(3) Make oxygen molecules unavailable to water plants.
(4) Make nitrate molecules unavailable to water plants.

EM0048

5. Recent reports of acid rains industrial cities are due to the effect of atmospheric pollution by
(1) Excessive release of NO_2 and SO_2 by burning of fossil fuels.
(2) Excessive release of CO_2 by burning of fuel like wood and charcoal, cutting of forests and increased animal population.
(3) Excessive release of NH_3 by industrial plants and coal gas.
(4) Excessive release of CO in atmosphere by incomplete combustion of cock, charcoal and other carbonaceous fuels in pancity of oxygen

EM0049

6. Pollution is a change in physical, chemical or biological characters of our land and water that may be
(1) Desirable and harmful to human
(2) Desirable and useful to human
(3) Undesirable and harmful to human
(4) undesirable and useful to human

EM0050

7. An increase in CO_2 concentration in the atmosphere will result in
(1) Adverse effects of natural vegetation
(2) Global warming
(3) Temperature decrease in global atmosphere
(4) Genetic disoders in plants and animals

EM0051

8. Match the Column-I with Column-II and choose the correct option from the codes given below.

Metal	Maximum prescribed concentration (PPM)
(A) Fe	1. 0.005
(B) Cd	2. 0.2
(C) Mn	3. 5.0
(D) Zn	4. 0.05

Codes:

	A	B	C	D
(1)	1	3	2	4
(2)	2	1	4	3
(3)	2	1	3	4
(4)	1	2	4	3

PO0083

9. Carius method is useful for detection of ..... in organic compound
(1) Halogens (2) Oxygen
(3) Sulphur (4) 1 & 3 both

PO0084

10. Which appratus is use to detect carbon, hydrogen and nitrogen in a compound.
(1) COS elemental analysis
(2) CHN elemental analysis
(3) ITS elemental analysis
(4) CTP elemental analysis

PO0085

11. Select correct match :-

	Column I (elements)	Column II (Reagent used for quantitative estimation)	
(i)	Carbon	(A)	CuO
(ii)	Oxygen	(B)	I_2O_5
(iii)	Sulphur	(C)	$BaCl_2$
(iv)	Nitrogen	(D)	H_2SO_4

(1) i-A, ii-B, iii-C, iv-D (2) i-A, ii-D, iii-C, iv-B
(3) i-D, ii-A, iii-B, iv-C (4) i-C, ii-A, iii-B, iv-D

PO0086

12. Which of following statement is correct

(1) When organic compound heated with fuming nitric acid, Phosphorus present in the compound is oxidised to phosphoric acid

(2) Phosphoric acid may precipitate as $(NH_4)_3PO_4$ by adding ammonia and ammonium molybdate

(3) Phosphoric acid may be precipitate as MgO by adding magnesia mixture

(4) All

PO0087

EXERCISE-III (Analytical Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	**4**	**2**	**3**	**3**	**1**	**3**	**2**	**2**	**4**	**2**	**1**	**1**