# DPP - Daily Practice Problems

Name : _____ Date : _____

Start Time : _____ End Time : _____

# CHEMISTRY 59

**SYLLABUS : Chemistry in Action :** Dyes and Pigments, Drugs and Medicines, Rocket-Propellant and Others

**Max. Marks : 120** **Time : 60 min.**

**GENERAL INSTRUCTIONS**

- The Daily Practice Problem Sheet contains 30 MCQ's. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.
- You have to evaluate your Response Grids yourself with the help of solution booklet.
- Each correct answer will get you 4 marks and 1 mark shall be deduced for each incorrect answer. No mark will be given/ deducted if no bubble is filled. Keep a timer in front of you and stop immediately at the end of 60 min.
- The sheet follows a particular syllabus. Do not attempt the sheet before you have completed your preparation for that syllabus. Refer syllabus sheet in the starting of the book for the syllabus of all the DPP sheets.
- After completing the sheet check your answers with the solution booklet and complete the Result Grid. Finally spend time to analyse your performance and revise the areas which emerge out as weak in your evaluation.

**DIRECTIONS (Q.1-Q.24) : There are 24 multiple choice questions. Each question has 4 choices (a), (b), (c) and (d), out of which ONLY ONE choice is correct.**

**Q.1** An azo dye is formed by the interaction of an aromatic diazonium chloride with

(a) A phenol
(b) An aliphatic primary amine
(c) Benzene
(d) Nitrous acid

**Q.2** Alizarin belongs to the class of

(a) Vat dyes (b) Mordant dyes
(c) Substantive dyes (d) Reactive dyes

**Q.3** Which of the following is an examples of basic dye ?

(a) Alizarin
(b) Malachite green
(c) Indigo
(d) Orange-I

**Q.4** Which of the following is a direct dye?

(a) Phenolphthalein (b) Congo red
(c) Alizarin (d) Indigo

**Q.5** Which of the following is not a chromophore ?

(a) $-N=N-$ (b) $-NO$
(c) $-NO_2$ (d) $-NH_2$

| RESPONSE GRID | 1. ⓐⓑⓒⓓ | 2. ⓐⓑⓒⓓ | 3. ⓐⓑⓒⓓ | 4. ⓐⓑⓒⓓ | 5. ⓐⓑⓒⓓ |
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**Q.6** Which one is disperse dye ?

(a) Congo red (b) Alizarin

(c) Celliton (d) None of these

**Q.7** The dyes which are applied to the fabric in the colourless reduced state and then oxidised to coloured state is called

(a) Vat dyes

(b) Disperse dyes

(c) Triphenylmethane dyes

(d) Azo dyes

**Q.8** An example of a psychedelic agent is

(a) DNA (b) LSD

(c) DDT (d) TNT

**Q.9** Antiseptic chloroxylenol is

(a) 4-chloro-3,5-dimethylphenol

(b) 3-chloro-4,5-dimethylphenol

(c) 4-chloro-2,5-dimethylphenol

(d) 5-chloro-3,4-dimethylphenol

**Q.10** Aspirin is

(a) Antibiotic (b) Antipyretic

(c) Sedative (d) Psychedelic

**Q.11** Which of the following is a hypnotic drug?

(a) Luminal (b) Salol

(c) Catechol (d) Chemisol

**Q.12** Chloramine T is a

(a) Disinfectant (b) Antiseptic

(c) Analgesic (d) Antipyretic

**Q.13** Aspirin is obtained by the reaction of $CH_3COCl$ with

(a) Phenol (b) Benzoicacid

(c) Salicylic acid (d) Benzaldehyde

**Q.14** The drug which is effective in curing malaria is

(a) Quinine (b) Aspirin

(c) Analgin (d) Equanil

**Q.15** The first viral disease detected in human being was

(a) Cold (b) Influenza

(c) Small pox (d) Yellow fever

**Q.16** Morphine is

(a) An alkaloid (b) An enzyme

(c) A carbohydrate (d) A protein

**Q.17** Which of the following acts as an antioxidant in edible oils?

(a) Vitamin B (b) Vitamin C

(c) Vitamin D (d) Vitamin E

**Q.18** A biliquid propellant contains

(a) Liquid hydrazine

(b) A mixture of liquid fuel and a liquid oxidizer

(c) A solid rocket fuel

(d) A liquid fuel which can also act as an oxidizer

**Q.19** Which is the relation between the specific $I_s$ impulse and the critical temperature $T_c$ attained in a rocket blast?

(a) $I_s \geq T_c$ (b) $I_s$ and $T_c^2$

(c) $I_s \geq T_c^{1/2}$ (d) $I_s \geq 1/T_c$

**Q.20** Detergents are prepared by the action of $H_2SO_4$ followed by neutralization by starting with

(a) Cholesterol (b) Lauryl alcohol

(c) Cyclohexanol (d) *p*-Nitrophenol

| RESPONSE GRID | | | | | |
|---|---|---|---|---|---|
| | 6. ⓐⓑⓒⓓ | 7. ⓐⓑⓒⓓ | 8. ⓐⓑⓒⓓ | 9. ⓐⓑⓒⓓ | 10. ⓐⓑⓒⓓ |
| | 11. ⓐⓑⓒⓓ | 12. ⓐⓑⓒⓓ | 13. ⓐⓑⓒⓓ | 14. ⓐⓑⓒⓓ | 15. ⓐⓑⓒⓓ |
| | 16. ⓐⓑⓒⓓ | 17. ⓐⓑⓒⓓ | 18. ⓐⓑⓒⓓ | 19. ⓐⓑⓒⓓ | 20. ⓐⓑⓒⓓ |

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**Q.21** Which of the following could act as a propellant for rocket

(a) Liquid hydrogen + Liquid nitrogen

(b) Liquid oxygen + Liquid argon

(c) Liquid hydrogen + Liquid oxygen

(d) Liquid nitrogen + Liquid oxygen

**Q.22** Alizarin dye obtained from the root of madder plant is anthraquinone derivative. Its structure corresponds to

(a) 1, 2-dihydroxyanthraquinone

(b) 2, 3-dihydroxyanthraquinone

(c) 1, 4-dihydroxyanthraquinone

(d) 1, 1'-dihydroxyanthraquinone

**Q.23** Methyl orange is an indicator in acid-alkali titration. It gives

(a) Yellow colour in alkaline medium

(b) Red colour in acid medium

(c) Yellow colour in acid medium

(d) Yellow colour in alkaline medium and red colour in acidic medium

**Q.24** A medicine which promotes the secretion of urine is called

(a) Uretic

(b) Monouretic

(c) Diuretic

(d) Triuretic

**DIRECTIONS (Q.25-Q.27) : In the following questions, more than one of the answers given are correct. Select the correct answers and mark it according to the following codes:**

**Codes :**

**(a)** 1, 2 and 3 are correct **(b)** 1 and 2 are correct

**(c)** 2 and 4 are correct **(d)** 1 and 3 are correct

**Q.25** Which is correct about vanillin ?

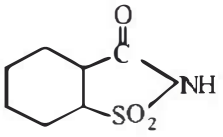
(1) A flavouring agent having vanila flavour

(2) It is 4-hydroxy-3-methoxybenzaldehyde

(3) A food additive

**(4)** It is used as sedative.

**Q.26** Which is correct about saccharin?

(1) It is 

(2) It is 550 times sweeter than sugar

(3) It is used as sweetening agent

(4) Its deficiency can cause anemia.

**Q.27** Which of the following is not used as an antibiotic?

(1) Tocopherol (2) Paracetamol

(3) Ibuprofen **(4)** Ciprofloxacin

| RESPONSE GRID | | | | | |
|---|---|---|---|---|---|
| | 21. ⓐⓑⓒⓓ | 22. ⓐⓑⓒⓓ | 23. ⓐⓑⓒⓓ | 24. ⓐⓑⓒⓓ | 25. ⓐⓑⓒⓓ |
| | 26. ⓐⓑⓒⓓ | 27. ⓐⓑⓒⓓ | | | |

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**DIRECTIONS (Q. 28-Q.30) : Each of these questions contains two statements: Statement-1 (Assertion) and Statement-2 (Reason). Each of these questions has four alternative choices, only one of which is the correct answer. You have to select the correct choice.**

(a) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(b) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.

(c) Statement -1 is False, Statement-2 is True.

(d) Statement -1 is True, Statement-2 is False.

**Q.28 Statement-1 :** Fluorescein is an absorption indicator.

**Statement-2 :** Fluorescein indicator is a dye.

**Q.29 Statement-1 :** Equanil is a tranquilizer.

**Statement-2 :** Equanil is used to cure depression and hypertension.

**Q.30 Statement-1 :** Sedatives are given to patients who are mentally agitated and violent.

**Statement-2 :** Sedatives are used to suppress the activities of the central nervous system

| RESPONSE GRID | 28.ⓐⓑⓒⓓ | 29.ⓐⓑⓒⓓ | 30.ⓐⓑⓒⓓ |
|---|---|---|---|

| DAILY PRACTICE PROBLEM SHEET 59 - CHEMISTRY | | | |
|---|---|---|---|
| Total Questions | 30 | Total Marks | 120 |
| Attempted | | Correct | |
| Incorrect | | Net Score | |
| Cut-off Score | 44 | Qualifying Score | 68 |
| Success Gap = Net Score – Qualifying Score | | | |
| Net Score = (Correct × 4) – (Incorrect × 1) | | | |

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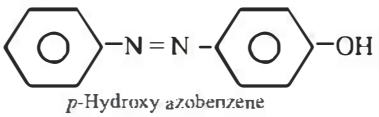
**DAILY PRACTICE PROBLEMS**

# CHEMISTRY SOLUTIONS

**59**

**1. (a)** $C_6H_5N_2Cl + C_6H_5OH \rightarrow$

Benzene diazonium chloride + Phenol



*p*-Hydroxy azobenzene

This is coupling reaction in which benzene diazonium chloride reacts with phenol or an aromatic amine to give dyes.

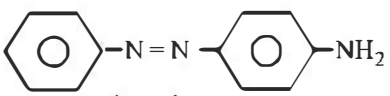
**2. (b)** A mordant is any substance which can be fixed to the fibre. Mostly hydroxide or basic salts of chromium, aluminium and iron are used as mordant. A dye which imparts different colours in the presence of different mordant is referred to as a mordant dye. For ex. alizarin is a mordant dye, when mordanted with aluminium salt solution, it imparts rose red colour to fabric but the same fabric is dyed blue when it is mordanted with barium salt and it dyes violet when mordant ferric salt.

**3. (b)** Basic dyes contain $-NH_2$ or $-NR_2$ group as colour bearing group or colour enhancing group. They are generally used for wool, cotton, leather, paper, polyester, nylon etc. e.g. aniline yellow, crysodine G, butter yellow, malachite green etc.

**4. (b)** Direct dyes stick to the fibre through hydrogen bonding. They belong to the class of azo dyes. They are used to dye the fabric directly by placing it in not aqueous solution of dye e.g. martius yellow, congo red etc.

**5. (d)** A dye molecule is made up of two different parts (i) chromophore, (ii) auxochrome. The groups which produce colour in a compound i.e., chromophores are usual unsaturated groups like nitro, nitroso, azo, azoxy, carbonyl and olefinic bonds. Auxochromes are usually acidic / basic functional groups, like –OH, –COOH, $-SO_3H$, $-NH_2$, –NHR, $-NR_2$.

A compound containing only a chromophore may be coloured material but not a dye. For example, azobenzene is red coloured but not a dye, whereas para-amino azobenzene (aniline yellow) is a dye.



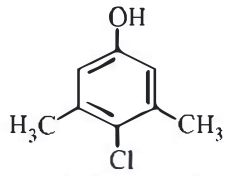
*p*-Amino azobenzene (dye)

**6. (c)** Disperse dyes are usually applied in the form of finely divided dye dispersed in a soap solution in the presence of phenol, cresol, benzoic acid etc. They are mainly used to dye dacron, nylon, synthetic fibre. Example, celliton (blue)

**7. (a)** Vat dyes are in soluble compounds which on reduction give soluble (leucoform) product. The product may be either coloured or colourless a have affinity for specific fabrics e.g. Indigo

**8. (b)** A psychedelic drug produces visual and auditory hallucinations e.g Lysergic and diethyl amide (LSD)

**9. (a)**



Chloroxylenol (4-chloro-3,5-dimethylphenol)

**10. (b)** Aspirin is antipyretic i.e., a drug which is responsible for lowering the temperature of fever, other antipyretic drugs are paracetamol, Phenacetin.

**11. (a)** These drugs produce sleep and are habit forming common example of hypnotic drugs are luminal and saconal.

**12. (b)** Antiseptic drugs cause destruction of micro-organisms that produce septic disease e.g. dettol, Savlon acriflavin, boric acid, phenol, iodoform, $kMnO_4$ and some dyes such as Chloramine T, methylene blue, etc.

**13. (c)**

Salicylic acid + $CH_3COCl$ → Acetyl salicylic acid or Aspirin

**14. (a)** Substances used for the treatment of malaria are called antimalarials e.g. quinine, chloroquine.

**15. (d)** Yellow fever was the first viral disease detected in human being.

**16. (a)** Morphine is an alkaloid, a class of organic compounds: basic nature, of plant origin containing atleast one nitrogen atom in a ring structure of the molecule.

**17. (d)** Vitamin E is an antioxidant present in edible oils.

**18. (b)** Biliquid propellant – A double base propellant in a high strength, high modulus gel of cellulose nitrate (gun cotton) in glyceryl trinitrate or a similar solvent.

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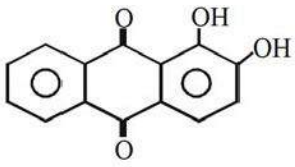
19. **(c)** When specific impulse is greater than critical temperature, then rocket blast takes place. So the condition $I_s \geq T_c^{1/2}$ is right.

20. **(b)** Detergents can be obtained by the sulphonation of lauryl alcohol followed by neutralisation.

21. **(c)** Liquid hydrogen + Liquid oxygen can act as a propellant for rocket.

22. **(a)** Alizarin is 1,2 dihydroxyanthraquinone i.e.,




23. **(d)** Methyl orange is yellow in alkaline medium and red in acidic medium.

24. **(a)** Medicine which causes urination is called diuretic.

25. **(a)** Statements (1), (2) and (3) are characteristics of vanillin.

26. **(a)** Statements (1), (2) and (3) are characteristics of Saccharin.

27. **(a)** Ciprofloxacin is used as antibiotic while Paracetamol, Ibuprofen and tocopherol are respectively antipyretic, pain killer and vit. E.

28. **(b)** It is correct that fluorescein is an absorption indicator. It is also true that fluorescein indicator is a dye. Therefore, both statement 1 and statement 2 are true, but statement 2 is not a correct explanation for statement 1.

29. **(a)** Tranquilizers are chemicals which are used to cure mental diseases.

30. **(a)** A small dose of a sedative produces a feeling of relaxation, calmness and drowsiness.

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