

## Tips & Tricks

✍ APC mixture contains Aspirin, phenacetin and caffeine.

✍ India launched its first satellite Arya bhatta in March-1978.

✍ Microalloys are materials obtained by adding small amounts of alloying material to steel to improve its mechanical properties. The common microalloying elements are vanadium, titanium, tellurium, boron etc.

## Ordinary Thinking

### Objective Questions

#### Dyes and Pigment

- An azo dye is fixed on fabrics by the process applicable in  
(a) Vat dyes (b) Mordant dyes  
(c) Developed dyes (d) Substantive dyes
- Red ink is prepared from  
(a) Phenol (b) Aniline  
(c) Congo red (d) Eosin
- The blue print process involves the use of  
(a) Indigo dyes (b) Vat dyes  
(c) Iron compounds (d) Zinc compounds
- An azo dye is formed by interaction of an aromatic diazonium chloride with  
(a) A phenol (b) An aliphatic primary amine  
(c) Benzene (d) Nitrous acid
- Alizarin belongs to the class of  
(a) Vat dyes (b) Mordant dyes  
(c) Substantive dyes (d) Reactive dyes
- An insoluble coloured compound formed by action of metallic salts on dyes is known as  
(a) Lake (b) Mordant  
(c) Dye intermediate (d) None of these
- Alizarin dye obtained from the root of madder plant is anthraquinone derivative. Its structure corresponds to  
(a) 1, 2-dihydroxy anthraquinone  
(b) 2, 3-dihydroxy anthraquinone  
(c) 1, 4-dihydroxy anthraquinone  
(d) 1-hydroxy anthraquinone
- To which class of dyes does phenolphthalein belong  
(a) Azo dyes  
(b) Nitro dyes  
(c) Triphenyl methane dyes  
(d) Phthalein dyes
- Alizarin a mordant dye is not used in [CPMT 1990]  
(a) Cotton dyeing  
(b) Printing  
(c) Painting  
(d) Chromium lakes for wood dyeing
- The rose odour from an ester is formed by the action of  $HCOOH$  on  
(a) Pine oil (b) Olive oil  
(c) Geraniol (d) Turpentine oil
- Which of the following is dye  
(a) Methyl orange (b) Orange I  
(c) Aniline yellow (d) All of these
- Which of the following is an example of basic dye  
(a) Alizarin (b) Malachite green  
(c) Indigo (d) Orange I
- Which of the following is a direct dye  
(a) Phenolphthalein (b) Congo red  
(c) Alizarin (d) Indigo
- Which of the following is a vat dye and often used in dyeing jeans  
(a) Indigo (b) Alizarin  
(c) Picric acid (d) Crystal violet
- Which of the following is not a chromophore  
(a)  $-N=N-$  (b)  $-NO$   
(c)  $-NO_2$  (d)  $-NH_2$
- The compounds used to fix a dye to the fabric is known as  
(a) Mordant (b) Azeotrope  
(c) Bleaching agents (d) Lake
- Which one is disperse dye  
(a) Congo red (b) Alizarin  
(c) Celliton (d) None of these
- Malachite green is a direct dye for silk and wool. It is prepared by condensing

## 1484 Chemistry in Action

- (a) Benzaldehyde and dimethyl aniline  
(b) Carbonyl chloride and dimethyl aniline  
(c) Benzene diazonium chloride with dimethyl aniline  
(d) None of the above
19. Fluorescein, a well known dye is obtained by the reactions of  
(a) Phthalic anhydride and phenol  
(b) Phthalic anhydride and resorcinol  
(c) Succinic acid and resorcinol  
(d) Phthalic anhydride and catechol
20. Indigo shows *cis-trans* isomerism. Which is the stable form of Indigo  
(a) Cis (b) Trans  
(c) Either cis or trans (d) Both of the above
21. Which is the wrong statement with regards to Indigo  
(a) Indigo was extracted in India from plants of the 'Indigo ferra' group  
(b) The chemical structure of Indigo was determined by Baeyer, a German chemist who also synthesized it  
(c) Indigo is a dark blue solid soluble in water giving a blue solution  
(d) Indigo is fixed to fabrics by the vat process
22. Which of the following structures represents a colourless substance  
(a)  $C_6H_5 - N = \overset{\underset{O}{|}}{N} - C_6H_5$   
(b)  $C_6H_5 - N = N - C_6H_5$   
(c)  $C_6H_5 - NH - NH - C_6H_5$   
(d) None of these
23. Identify the wrong statement regarding alizarin  
(a) Alizarin was extracted from the roots of the madder plant  
(b) It's chemical name is 1, 2-dihydroxy anthraquinone  
(c) It is fixed to fabrics by using mordants like aluminium sulphate giving fast red colour  
(d) It has red crystal soluble in alkalies and the solution imparts red colour to fabrics
24. 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 acid medium
25. A dye imparts red colour on fabric. What colour of light was absorbed by the dye  
(a) Blue (b) Red  
(c) Green (d) Orange
26. Which of the following is an azo dye [Delhi CEE 1996]  
(a) Orange-I (b) Phenolphthalein  
(c) Malachite green (d) Methylene blue
27. An example of anthraquinone dye is [Haryana CEET 1999]  
(a) Alizarin (b) Basic acid  
(c) Methylene blue (d) Phenolphthalein
28. Which of the following is a basic dyes [Pb. PMT 1998; AFMC 2004]  
(a) Congo Red (b) Aniline Yellow  
(c) Alizarin (d) Indigo
29. The dyes which are applied to the fabric in the colourless reduced state and then oxidised to coloured state are called [DPMT 2004]  
(a) Vat dyes (b) Disperse dyes  
(c) Triphenyl methane dye (d) Azo dyes

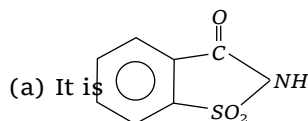
## Drugs and Medicines

1. An antibiotic with a broad spectrum [AFMC 2001]  
(a) Kills the antibodies  
(b) Acts on a specific antigen  
(c) Acts on different antigens  
(d) Acts on both the antigens and antibodies
2. Penicillin was first discovered by  
(a) A. Fleming (b) Tence and Salke  
(c) S.A. Waksna (d) Lewis Pasteur
3. A medicine which promotes the secretion of urine is called  
(a) Uretic (b) Monouretric  
(c) Diuretic (d) Triuretic
4. An example of a psychedelic agent is [BHU 1986]  
(a) DNA (b) LSD  
(c) DDT (d) TNT
5. Veronal, a barbiturate drug is used as  
(a) Anaesthetic (b) Sedative  
(c) Antiseptic (d) None of these
6. Acetoxy benzoic acid is [Kurukshetra CET 1998]  
(a) Antiseptic (b) Aspirin  
(c) Antibiotic (d) Mordant dye
7. Antiseptic chloroxylenol is [KCET 2005]  
(a) 4-chloro-3, 5-dimethylphenol  
(b) 3-chloro-4, 5-dimethylphenol  
(c) 4-chloro-2, 5-dimethylphenol  
(d) 5-chloro-3, 4-dimethylphenol

8. Which of the following is an insecticide  
(a) Bakelite (b) TNT  
(c) BHC (d) Aspirin
9. Which of the following drugs is an analgesic  
(a) Sulphaguanidine (b) Paludrin  
(c) Analgin (d) Iodex
10. Aspirin is [AMU (Aligarh) 1985, BHU 1998, 2005]  
(a) Antibiotic (b) Antipyretic  
(c) Sedative (d) Psychedelic
11. Which of the following drugs is a tranquilizer and sedative  
(a) Sulphadiazine (b) Papaverine  
(c) Equanil (d) Mescaline
12. Which of the following is a hypnotic drug  
(a) Luminal (b) Salol  
(c) Catechol (d) Chemisol
13. An antipyretic is [BHU 1986; CET 1998]  
(a) Quinine (b) Paracetamol  
(c) Luminal (d) Piperazine
14. The drug used as an antidepressant is [BHU 1986, 87]  
(a) Luminol (b) Tofranil  
(c) Mescaline (d) Sulphadiazine
15. Chloramine-T is a  
(a) Disinfectant (b) Antiseptic  
(c) Analgesic (d) Antipyretic
16. Streptomycin is effective in the treatment of  
(a) Tuberculosis (b) Malaria  
(c) Typhoid (d) Cholera
17. Which of the following is not an antiseptic drug  
(a) Iodoform (b) Dettol  
(c) Gammexane (d) Genatian violet
18. Which is used for sterilization of water in water supply system of cities  
(a) Chlorine (b) Sulphurdioxide  
(c) Potassium permanganate (d) DDT
19. A drug effective in the treatment of pneumonia, bronchitis, etc, is  
(a) Streptomycin (b) Chloramphenicol  
(c) Penicillin (d) Sulphaguanidine
20. Aspirin is obtained by the reaction of  $CH_3COCl$  with  
(a) Phenol (b) Benzoic acid  
(c) Salicylic acid (d) Benzaldehyde
21. Salol can be used as  
(a) Antiseptic (b) Antipyretic  
(c) Analgesic (d) None of these
22. The drug which is effective in curing malaria is  
(a) Quinine (b) Aspirin  
(c) Analgin (d) Equanil
23. Morphine is  
(a) Anaesthetic (b) Analgesic  
(c) Antiseptic (d) Antibiotics
24. Which of the following is a hallucinogenic drug  
(a) Methedrine (b) Calmpose  
(c) LSD (d) Seconal
25. Heroin is a derivative of  
(a) Cocaine (b) Morphine  
(c) Caffeine (d) Nicotine
26. The first viral disease detected in human being was  
(a) Cold (b) Influenza  
(c) Small pox (d) Yellow fever
27. The formulation of dettol contains  
(a) Chloroxylenol (b) Terpeneol  
(c) Alcohol (d) All of these
28. Interferon is – Connected with  
(a) Tonic (b) Virus  
(c) Carbohydrate (d) Ore of iron
29. Measles is a disease which belongs to the category of  
(a) Bacterial disease (b) Viral disease  
(c) Venereal disease (d) Protozoan disease
30. Which are insecticides  
(a) Baygon (b) Savine  
(c) Methoxy chlor (d) All of these
31. Which one is a bacterial disease  
(a) Amoebic dysentery (b) Gonorrhoea  
(c) Cholera (d) Mumps
32. Which of the following is an alkaloid  
(a) Nicotine (b) Piperine  
(c) Coniine (d) All of these
33. Which of the following is not antibiotic  
(a) Tetracyclin (b) Neomycin  
(c) Carbomycin (d) Cyclohexane
34. Phenacetin is used as  
(a) Antipyretic (b) Antiseptic  
(c) Antimalarial (d) Analgesic
35. Morphine is  
(a) An alkaloid (b) An enzyme  
(c) A carbohydrate (d) A protein
36. Substance used for bringing down temperature in high fever are called [DCE 2002; AIEEE 2005]  
(a) Pyretics (b) Antipyretics

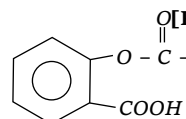
- (c) Antibiotics (d) Antiseptics
37. A large number of antibiotics have been isolated from
- (a) Bacteria actinomycetes  
(b) Acids  
(c) Alkanals  
(d) Bacteria rhizobium
38. Hydrazine as a drug is also used in the treatment of
- (a) Typhoid (b) Cholera  
(c) Malaria (d) Tuberculosis
39. Arsenic drugs are mainly used in the treatment of  
[AIIMS 1992]
- (a) Jaundice (b) Typhoid  
(c) Syphilis (d) Cholera
40. The substances which effect the central nervous system and induce sleep are called
- (a) Tranquillizers (b) Antipyretics  
(c) Analgesics (d) None of these
41. Which one is communicable disease
- (a) Scurvy (b) Diabetes  
(c) Beri-Beri (d) Chollera
42. An antibiotic contains nitro group attached to aromatic nucleus. It is
- (a) Penicillin (b) Streptomycin  
(c) Tetracycline (d) Chloramphenicol
43. 2, 4-dichloro phenoxyacetic acid is used as a
- (a) Fungicide (b) Insecticide  
(c) Herbicide (d) Moth repellent
44. Sulpha drugs are used for
- (a) Precipitating bacteria  
(b) Removing bacteria  
(c) Decreasing the size of bacteria  
(d) Stopping the growth of bacteria
45. 'Placedo' is often given to patients. It is
- (a) An antidepressant  
(b) A broad spectrum antibiotic  
(c) A sugar pill  
(d) A tonic
46. Bithional is an example of
- (a) Disinfectant (b) Antiseptic  
(c) Antibiotic (d) Analgesic
47. Various phenol derivatives, tincture of iodine (2-3%  $I_2$  in water / alcohol) and some dyes like methylene blue are
- (a) Antiseptics (b) Disinfectants  
(c) Analgesics (d) Antipyretics
48. Which of the following is not an antipyretic
- (a) Aspirin (b) Paracetamol  
(c) Barbituric acid (d) Phenacetin

49. The insecticide containing 99%  $\gamma$ -isomer of benzene hexachloride is known as
- (a) Lindane (b) TNT  
(c) Malathion (d) Methoxychlor
50. Which of the following is not a chlorinated insecticide
- (a) DDT (b) Methoxychlor  
(c) Parathion (d) BHC
51. Sulphaguadine is used for
- (a) Dysentery  
(b) Urinary infections  
(c) Antiseptic  
(d) Antipyretic
52. Which is correct about vanillin
- (a) A flavouring agent having vanilla flavour  
(b) *o*-hydroxy-*m*-methoxy benzaldehyde  
(c) A food additive  
(d) All of these
53. Which is correct about saccharin



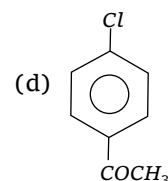
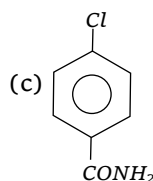
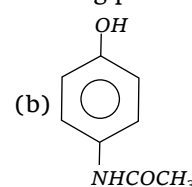
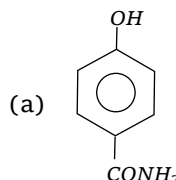
- (b) It is 600 times sweeter than sugar  
(c) It is used as sweetening agent  
(d) All of these

54. The following compound is used as  
[Kurukshetra CET 1996; AIEEE 2002]



- (a) An anti-inflammatory compound  
(b) Analgesic  
(c) Hypnotic  
(d) Antiseptic

55. The correct structure of the drug paracetamol is [DCE 2001]



56. An ester used as medicine is [KCET 2002]
- (a) Ethyl acetate (b) Methyl acetate  
(c) Methyl salicylate (d) Ethyl benzoate

57. The use of chemicals for treatment of diseases is called as

[Kerala PMT 2002]

- (a) Homoeotherapy (b) Isothermotherapy  
(c) Angiotherapy (d) Physiotherapy  
(e) Chemotherapy

58. Substance used for the preservation of coloured fruit juices is

- (a) Benzene (b) Benzoic acid  
(c) Phenol (d) Sodium meta bisulphite

59. Which of the following acts as an antioxidant in edible oils

- (a) Vitamin B (b) Vitamin C  
(c) Vitamin D (d) Vitamin E

60. Amoxillin is semi-synthetic modification of [Pb. PMT 1998]

- (a) Penicillin (b) Streptomycin  
(c) Tetracycline (d) Chloroamphenicol

61. Which of the following is an antidiabetic drug [KCET 1998]

- (a) Insulin (b) Penicillin  
(c) Chloroquine (d) Aspirin

62. Which of these is a hypnotic [AFMC 2001, 05]

- (a) Metaldehyde (b) Acetaldehyde  
(c) Paraldehyde (d) None of these

63. Which one is an antibiotic

- (a) Aspirin (b) Chloromycetin  
(c) Chloroquin (d) Madribon

64. Which of the following term means pain killing

- (a) Antibiotic (b) Analgesic  
(c) Antipyretic (d) Penicillin

65. 2-Acetoxy benzoic acid is used as an [KCET 2004]

- (a) Antimalarial (b) Antidepressant  
(c) Antiseptic (d) Antipyretic

66. Which of the following is used as an antibiotic

[Pb. CET 2002]

- (a) Ciprofloxacin (b) Paracetamol  
(c) Ibuprofen (d) Tocopherol

67. When salicylic acid is treated with acetic anhydride we get

[DCE 2002]

- (a) Aspirin (b) Paracetamol  
(c) Salol (d) None of these

68. Which of the following is not an antibiotic [BVP 2004]

- (a) Penicillin (b) Sulphaguanidine  
(c) Chloramphenicol (d) None of these

69. Which of the following is not a broad spectrum antibiotic

[DPMT 2005]

- (a) Tetracycline (b) Chloromycetin  
(c) Penicillin (d) None of these

### Rocket - Propellant and Other

1. 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

2. A hybrid rocket propellant uses

- (a) A liquid oxidizer and a solid fuel  
(b) A composite solid propellant  
(c) A biliquid propellant  
(d) A solid, liquid and gas as a propellant

3. Which of these is not used as a fuel in the rocket propellants

- (a) Liquid He (b) Liquid hydrogen  
(c) Kerosene (d) Liquid hydrazine

4. A space rocket is propelled by

- (a) An automobile engine (b) Rocket

propellant

- (c) Nuclear submarine (d) Steam engine

5. The propellant in the proposed PSLV rocket of the Indian space programme shall consist of

- (a) A composite solid propellant  
(b) Biliquid propellants such as  $N_2O_4$  + unsymmetrical dimethyl hydrazine (UDMH) and  $N_2O_4$  monomethyl hydrazine (MMH)  
(c) Both (a) and (b) in different stages of rocket propulsion  
(d) Kerosene and liquid oxygen

6. Which of the following is not used in rocket propellants

- (a)  $H_2(l)$  (b)  $O_2(l)$   
(c)  $N_2H_4(l)$  (d) All of these

7. Thrust imparted to the rocket is governed by the

- (a) Third law of thermodynamics  
(b) Gravitational law  
(c) Newton's third law  
(d) None of these

8. A space rocket is propelled by

- (a) An automobilic engine  
(b) Nuclear engine  
(c) Steam engine  
(d) Mixture of fuel and oxidiser called propellant

9. A composite solid propellant consists of

- (a) Polyurethane or polybutadiene and ammonium perchlorate  
(b) Nitroglycerine and nitrocellulose  
(c) Hydrazine and  $N_2O_4$   
(d) Kerosene and liquid oxygen

10. Which of the following represents a biliquid propellant

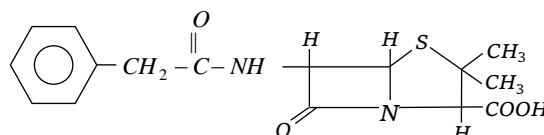
- (a) Nitroglycerine + nitrocellulose  
(b)  $N_2O_4$  + acrylic rubber

- (c)  $N_2O_4$  + unsymmetrical dimethyl hydrazene  
(d) None of these
11. What type of a propellant is used in rocket SLV-3 which was fired by India  
(a) Solid propellant  
(b) Monomethyl hydrazine + liquid  $N_2O_4$   
(c) Unsymmetrical dimethyl hydrazine liquid  $N_2O_4$   
(d) Liquid oxygen
12. Which of the following is used as an oxidiser in rocket propellants  
(a) Kerosene (b) Nitric acid  
(c) Liquid oxygen (d) Liquid hydrogen
13. A combination of nitrocellulose and nitroglycerine is a propellant of the type  
(a) Hybrid propellant  
(b) Mono propellant  
(c) Double base propellant  
(d) Biliquid propellant
14. 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)  $I_s \geq 1/T_c$
15. The chemical compounds released by one species of animals in order to influence the behaviour of the other members of the same species are called  
(a) Pheromones (b) Hormones  
(c) Nucleic acid (d) Steroids
16. Structurally biodegradable detergent should contain  
[AIIMS 1994]  
(a) Normal alkyl chain (b) Branched alkyl chain  
(c) Phenyl side chain (d) Cyclohexyl side chain
17. Which of the following is not used in rocket propellants  
(a)  $H_2(l)$  (b)  $O_2(l)$   
(c) Methane (d)  $N_2H_4(l)$
18. Which of the following is not used in nail polish  
(a) Acetone (b) Cellulose nitrate  
(c) Red dye (d) Benzene
19. One of the oxidants used with liquid propellants is  
[Kerala PMT 2001]  
(a) Ammonium perchlorate  
(b) Nitrocellulose  
(c) Sulphuric acid  
(d) Dinitrogen tetroxide ( $N_2O_4$ )  
(e) Phosphorus pentoxide
20. Detergents are prepared by the action of  $H_2SO_4$  followed by neutralization by starting with [MP PMT 1990]  
(a) Cholesterol (b) Lauryl alcohol  
(c) Cyclohexanol (d) *p*-Nitrophenol
21. Pheromones are chemicals  
(a) Formed by fermentation process of fungi  
(b) Secreted by endocrine glands of man  
(c) Secreted outside the body of insects  
(d) Plant growth hormones
22. Which of the following could act as a propellant for rocket  
[CBSE PMT 2003]  
(a) Liquid hydrogen + Liquid nitrogen  
(b) Liquid oxygen + Liquid argon  
(c) Liquid hydrogen + Liquid oxygen  
(d) Liquid nitrogen + Liquid oxygen
23. Sodium alkyl benzene sulphonate is used as  
[MP PMT 2004]  
(a) Soap (b) Fertilizers  
(c) Pesticides (d) Detergents

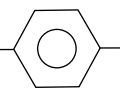
## Critical Thinking

### Objective Questions

1. The structure given below is known as [Kerala (Med.) 2003]



- (a) Penicilline F (b) Penicillin G  
(c) Penicillin K (d) Ampicillin  
(e) Sulphadiazine
2. Aspirin is chemically  
[CPMT 1989; AMU (Aligarh) 1992; DCE 2004]  
(a) Methyl salicylate (b) Ethyl salicylate  
(c) Acetyl salicylic acid (d) *o*-hydroxy benzoic acid
3. Which of the following can possibly be used as analgesic without causing addiction and any modification  
[CBSE 1997]  
(a) Morphine  
(b) *N*-acetylparaaminophenol  
(c) Diazepam  
(d) Tetra hydrocatenol
4. Further growth of cancerous cells in the body is arrested by  
(a) Physiotherapy (b) Chemotherapy  
(c) Electrotherapy (d) Psychotherapy

5. Which one of the following is known as broad spectrum antibiotics [BHU 1987; AMU (Aligarh) 1992; Haryana CET 1999; Pb. CET 2001]
- (a) Streptomycine (b) Ampicillin  
(c) Chloramphenicol (d) Penicillin G
6. Which of the following is a local anaesthetic [Pb. CET 2003]
- (a) Diazepam (b) Procaine  
(c) Mescaline (d) None of the above
7. Which of the following is molecular disease
- (a) Allergy  
(b) Cancer  
(c) German measles  
(d) Sickel-cell-anaemia
8. Which statement is false [CBSE PMT 1994]
- (a) Some disinfectants can be used antiseptics at low concentration  
(b) Sulphadiazine is a synthetic antibacterial  
(c) Ampicillin is a natural antibiotic  
(d) Aspirin is analgesic and antipyretic both
9. Tranquilisers are substances used for the treatment of [Kerala PMT 2002]
- (a) Cancer (b) AIDS  
(c) Mental diseases (d) Physical disorders  
(e) Blood infection
10. Which one is acidic dye [DCE 1996]
- (a) Methyl orange (b) Methyl red  
(c) Phenolphthalein (d) All of these
11. Alizarin gives a red colour by mordanting it with the sulphate of a metal. The metal ion involved is
- (a)  $Cr^{3+}$  (b)  $Fe^{3+}$   
(c)  $Al^{3+}$  (d)  $Sn^{2+}$
12. SLV-3 rockets use
- (a) Solid propellants  
(b) Liquid propellants  
(c) Hybrid propellants  
(d) Composite solid propellants
13. Which of the following represents a synthetic detergent
- (a)  $C_{15}H_{31}COOK$   
(b)  $CH_3[CH_2]_{16}COONa$   
(c)  $C_{12}H_{25}$    $SO_3Na$   
(d) None of these
14. Which of the following groups is not an auxochrome
- (a)  $-N(CH_3)_2$  (b)  $-OH$   
(c)  $-OCH_3$  (d)  $>C=N$
15. Specific impulse of a rocket and the critical temperature of the fuel reacted in the motor of the rocket has the relationship
- (a)  $I_s \propto T_c$  (b)  $I_s \propto 1/T_c$   
(c)  $I_s \propto \sqrt{T_c}$  (d)  $I_s \propto \sqrt{1/T_c}$
16. Parathion is [JIPMER 2001]
- (a) An organic phosphorus compound  
(b) Chlorinated aromatic compound  
(c) Chlorinated aliphatic compound  
(d) Benzene derivative
17. The principal buffer present in human blood [Kerala PMT 2004]
- (a)  $NaH_2PO_4 + Na_2HPO_4$   
(b)  $H_3PO_4 + NaH_2PO_4$   
(c)  $CH_3COOH + CH_3COONa$   
(d)  $Na_2HPO_4 + Na_3PO_4$   
(e)  $H_2CO_3 + HCO_3^-$
18. Which of the following represents soap [DCE 2004]
- (a)  $C_{17}H_{35}COOK$  (b)  $C_{17}H_{35}COOH$   
(c)  $C_{15}H_{31}COOH$  (d)  $(C_{17}H_{35}COO)_2Ca$
19. Asthma patient use a mixture of ..... for respiration [DCE 2003]
- (a)  $O_2$  and  $N_2O$  (b)  $O_2$  and  $He$   
(c)  $O_2$  and  $NH_3$  (d)  $O_2$  and  $CO$



## Assertion & Reason

For AIIMS Aspirants

Read the assertion and reason carefully to mark the correct option out of the options given below :

- (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.  
(b) If both assertion and reason are true but reason is not the correct explanation of the assertion.  
(c) If assertion is true but reason is false.  
(d) If the assertion and reason both are false.  
(e) If assertion is false but reason is true.

1. Assertion : Fluorescein is an adsorption indicator.  
Reason : Fluorescein indicator is a dye. [AIIMS 1994]
2. Assertion : The drugs which act on the central nervous system and help in reducing anxiety are called antibiotics.

## 1490 Chemistry in Action

- Reason : Pencillin is an antibiotic.
3. Assertion : Equanil is a tranquilizer.
- Reason : Equanil is used to cure depression and hypertension.
4. Assertion : Tetracyclin is a broad spectrum antibiotic.
- Reason : Tetracyclin is effective against a number of types of bacteria, large viruses and typhus fever.
5. Assertion : Antiseptics are applied to living tissues.
- Reason : Iodine is a powerful antiseptic.
6. Assertion : Sedatives are given to patients who are mentally agitated and violent.
- Reason : Sedatives are used to suppress the activities central nervous system.

1	b	2	a	3	a	4	b	5	c
6	d	7	c	8	d	9	a	10	c
11	a	12	b	13	c	14	c	15	a
16	b	17	c	18	d	19	d	20	b
21	c	22	c	23	d				

### Critical Thinking Questions

1	b	2	c	3	c	4	b	5	c
6	b	7	b	8	c	9	c	10	a
11	c	12	a	13	c	14	d	15	c
16	a	17	e	18	a	19	b		

### Assertion & Reason

1	b	2	e	3	a	4	a	5	b
6	a								

# Answers

## Dyes and Pigment

1	c	2	d	3	c	4	a	5	b
6	a	7	a	8	d	9	c	10	c
11	d	12	b	13	b	14	a	15	d
16	a	17	c	18	a	19	b	20	b
21	c	22	c	23	d	24	d	25	c
26	a	27	a	28	b	29	a		

## Drugs and Medicines

1	c	2	a	3	c	4	b	5	b
6	b	7	a	8	c	9	c	10	b
11	c	12	a	13	b	14	b	15	b
16	a	17	c	18	a	19	c	20	c
21	a	22	a	23	b	24	c	25	b
26	d	27	d	28	b	29	b	30	d
31	c	32	d	33	d	34	a	35	a
36	b	37	a	38	d	39	c	40	a
41	d	42	d	43	c	44	d	45	c
46	a	47	a	48	c	49	a	50	c
51	a	52	d	53	d	54	b	55	b
56	c	57	e	58	b	59	d	60	a
61	a	62	c	63	b	64	b	65	d
66	a	67	a	68	b	69	c		

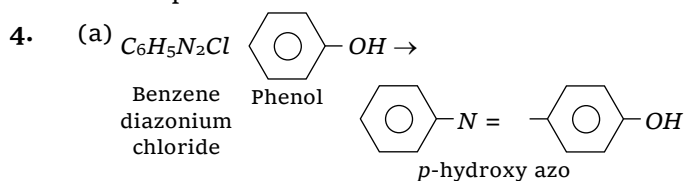
## Rocket - Propellant and Other



# AS Answers and Solutions

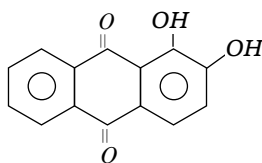
## Dyes and Pigment

- (c) In grain or developed dyes are those which are synthesised directly on the fabric *e.g.* azo dyes. Ingrain dyeing is particularly suitable for cotton fabric.
- (d) Eosin is Red dyes.
- (c) The blue print process involve the use of iron compound.



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

- (b) A mordant is any substance which can be fixed to the fibre and which can be dyed later on 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 is mordant with Ferric salt.
- (a) The process is called lake.
- (a) Alizarin is 1,2 dihydroxy anthraquinone *i.e.*,

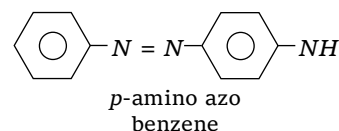


- (d) It belong to phthalein dyes.
- (c) It is the mordant dye so not use in painting.
- (c)  $C_{10}H_{17}OH$  (Geraniol) a liquid terpene alcohol forms ester of rose odour with  $HCOOH$ .
- (b) Basic dyes contain  $NH_2$  or  $-NR_2$  groups as colour bearing group or colour enhancing groups they are generally used for Wool, cotton, leather, paper, polyester, nylon etc.

*e.g.* aniline yellow, crysodine G, butter yellow, malachite green etc.

- (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, Congored etc.
- (a) Vat dyes are insoluble compounds which up on reduction give soluble (lenciform) product. The product may be either coloured or colourless and have affinity for specific fabrics *e.g.* Indigo.
- (d) A dye molecule is made up of two different part (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 Auxochrome are usually acidic / basic functional group 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 azo benzene is red coloured but not a dye. Where as para amino azobenzene (aniline yellow) is a dye.

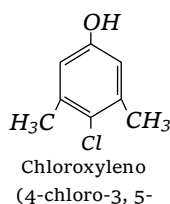


- (c) Disperse dye are usually applied in the form of dispersion of finely divided dye in a soap solution in the presence of Phenol, Cresol, Benzoic acid etc. They are mainly used to dye decron, nylon, synthetic fibre. Example Celliton (blue).
- (a) Malachite green prepared by the condensation of Benzaldehyde and dimethyl aniline.
- (b) Fluorescein is obtained by the reaction of Phthalic anhydride and resorcinol.
- (b) Trans form of Indigo is more stable.
- (c) Indigo is dark blue solid insoluble in water.
- (d) Methyl orange is yellow in alkaline medium and red in acedic medium.
- (c) Green is the complimentary colour of red.
- (a) Orange-I is an acid azodye.
- (a) Alizarin is an example of anthraquinon dye.
- (b) Aniline yellow is a basic dyes.

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

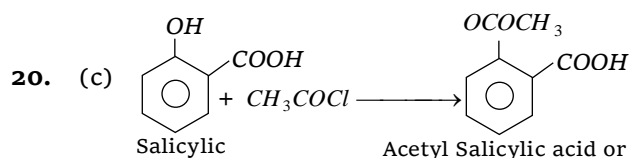
### Drugs and Medicines

1. (c) Broad spectrum antibiotics act on different antigens.
2. (a) A. Fleming discovered penicillin in 1929.
4. (b) A psychedelic drug produce visual and auditory hallucinations *e.g.* Lysergic and diethyl amide (LSD)
6. (b) Acetyl salicylic acid is also called acetoxy benzoic acid

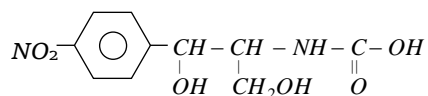


8. (c) BHC *i.e.*, benzene hexachloride is an insecticide.
9. (c) An analgesic drugs is one which relieves or decrease the pain *e.g.*, analgin, aspirin (belongs to non-narcotics and morphine, codein, heroin (belongs to narcotics class)
10. (b) Aspirin is antipyretic *i.e.*, a drug which is responsible for lowering the temperature of Feverish organism to normal, other antipyretic drugs are paracetamol, Phenacetin.
11. (c) Tranquilizers reduce anxiety and tension they are also called psychotropic drugs. These are of two type.
- (a) Sedative the drugs used for violent and mentaly agitated patient *e.g.*, Equanil and diazepam.
- (b) Antidepressant - The drug are used to patients who are highly depressed and lose self confidence *e.g.* tofranil vitalin, amphetamine etc.
12. (a) These drugs produce sleep and are habit forming common example of hypnotic drugs are Luminal and Saconal.
13. (b) Paracetamol is an antipyretic.

15. (b) Antiseptic drugs causes destruction of micro-organism that produce septic disease *e.g.* Dettol, Savlon acriflavin, Boric acid, Phenol Iodoform,  $KMnO_4$  and some dyes such as Chloramine T, methylene blue.
16. (a) It is the very effective antibiotics for tuberculosis.
17. (c) It is an insecticide.
19. (c) Penicillin is an effective medicine for Pneumonia disease.

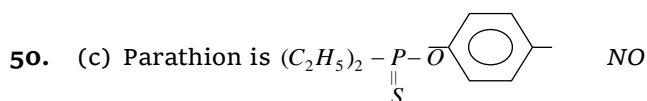


21. (a) Salol is Phenyl Salicylate used as antiseptic.
22. (a) Substance used for the treatment of malaria are antimalarial *e.g.* Quinine, chloroquine.
23. (b) Morphine is analgesic.
25. (b) Heroin is acyl derivative of morphine.
26. (d) Yellow fever was the first viral disease detected in human being.
27. (d) Dettol (antiseptic) is a mixture of 4.8% chloroxylenol + 9.9% tepineol and absolute alcohol.
30. (d) All are insecticides.
32. (d) All these are alkaloids.
33. (d) Rest all are antibiotic.
35. (a) It is an alkaloid a class of organic compound basic nature of plant origin containing atleast one nitrogen atom in a ring structure of molecule.
36. (b) It is antipyretic *i.e.*, a drug which is responsible for lowering the temperature of feverish organism to normal.
39. (c) Arsenic drugs are poisonous for syphilis.
41. (d) T.B., Cholera etc. are Communicable diseases.
42. (d) Chloramphenicol is

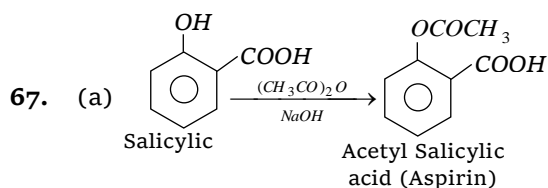


43. (c) It is herbicide (kill herbs)

44. (d) Sulpha drugs (antibacterial and nonantibiotic) are group of drugs which are derivative of sulphanilamide.
46. (a) Bithional has disinfectant nature (kill bacteria)
47. (a) Antiseptic drugs cause destruction of micro-organism that produce septic disease *e.g.* Dettol, Savlon, Boric acid, Phenol, Iodoform  $KMnO_4$  and some dye such as Chloramine T methylene blue, genation violet.
48. (c) Rest all are antipyretic, Barbituric acid is tranquilizer.
49. (a) Lindane or gammexane is  $\gamma$  isomer of BHC.



52. (d) All are characteristics of Vanillin.
53. (d) All are characteristics of Saccharin.
54. (b) It is acetyl salicylic acid *i.e.*, aspirin analgesic and antipyretic.
55. (b) Paracetamol act as analgesic and antipyretic.
56. (c) Oil of winter green or methyl Salicylate is used as medicine.
58. (b) Benzoic acid used as preservative as a Sodium Benzoate.
59. (d) Vitamin E is an antioxidant present in edible oils.
60. (a) Amoxillin is semisynthetic modification of Penicillin
61. (a) Insulin is an antidiabetic drug.
62. (c) Paraldehyde is a hypnotic.
63. (b) Chloromycetin is an antibiotic.
64. (b) Analgesic means Painkiller.
66. (a) Ciprofloxacin is used as antibiotic while Paracetamol, Ibuprofen and tocopherol are respectively antipyretic, pain killer and Vit. E.



68. (b) Antibiotics are those drugs, which act against bacterial and viral infections *e.g.*, Chloramphenicol Streptomycin, Penicillin,

Tetracycline etc. Sulphaguanidine is a Sulphadrug.

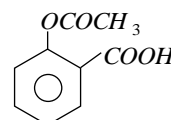
69. (c) Penicillin is not a broad spectrum antibiotic since it is active against infections caused by gram positive bacteria only.

### Rocket – Propellant and Other

- (b) Biliquid Propellant – A double base propellant is a high strength, high modulus gel of cellulose nitrate (gun cotton) in glyceryl trinitrate or a similar solvent.
- (a) Hybrid Propellant – A hybrid propellant consists of a solid fuel and liquid oxidizer to provide propulsion energy and working substance *e.g.* Solid acrylic rubber and liquid  $N_2O_4$
- (b) Rocket propellant are used as fuel for space rock.
- (d) All are fuel.
- (c) It is based on Newton's third law.
- (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.
- (b) Structurally biodegradable detergent contain normal (or Linear) alkyl chain.
- (c) Methane is not used as a rocket propellant.
- (d) Benzene (a Carcinogenic) is not used as a solvent in nail polish.
- (d) Dinitrogen tetroxide is used as an oxidant with liquid propellant.
- (b) Detergents can be obtained by the sulphonation of Lauryl alcohol followed by neutralisation.
- (c) Pheromones are chemical secreted outside the body of the insects.
- (c) Liquid hydrogen + Liquid oxygen Could act as a propellant or rocket.
- (d) It is used as detergents.

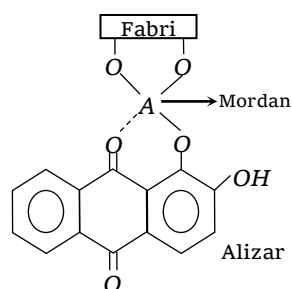
### Critical Thinking Questions

- (b) It is the known structure of penicillin G
- (c) Aspirin an antibiotic chemically Acetyl Salicylic acid



3. (c) "Diazepam" can be used as analgesic without addition and modification.
4. (b) Paul Ehrlich, the father of chemotherapy defined it to injure or destroy infection micro-organism by the use of drugs without causing any injury to the host.
5. (c) Chloramphenicol is broad spectrum antibiotic used in the treatment of typhoid, dysentery, acute fever.
6. (b) The anaesthetics produce temporary insensibility to the vital function of all type of cells, specially of nervous system and are used during surgical operations.  
These are classified as (a) General anesthetic – producing unconsciousness all over the body e.g.  $N_2O$ , Cyclo propane, chloroform (b) Local anesthetic – effect only the part of body e.g. Xylocaine, Procain etc.
7. (b) "Cancer" is known as molecular disease.
8. (c) Ampicillin is a synthetic antibiotic.
9. (c) "Tranquillisers" are medicines used to treat mental diseases. They are called psychotherapeutic drugs.
10. (a) Acid dyes are characterised by the presence of  $-COOH$ ,  $-SO_3H$  or Phenolic group. They are applied in the presence of acidic solution. They are usually applied to Wool, Silk, Nylon. They have affinity for cotton. Common examples are Orange I, Orange II, Methyl red etc.
11. (c) "Alizarin" is a typical mordant dye gives different colours depending on the metal ion used, for example with  $Al^{+3}$ , alizarin gives a rose red colour.

Co-ordination compound of alizarin with  $Al^{+3}$  as follow



Coordination compound of Alizarin with

polyurethane or polybutadiene as fuel) and ammonium per chlorate as oxidiser.

These are used in SLV-3 and ASLV rockets.

13. (c) The most widely used domestic detergent is the sodium dodecyl benzene sulphonate (SDS).  
 $CH_3-(CH_2)_{11}-\text{C}_6\text{H}_4-SO_3Na$   
(Sodium dodecyl benzene sulphonate)
14. (d)  $>C=N$  is not an auxochrome.
15. (c) The energy of propellant is measured in terms of a specific impulse. Is inside the motor of the rocket. It depend up on the flame temperature and average molecular mass of the gaseous products coming out of the rocket nozzle. The specific impulse is given by the following relationship with the average molecular mass  $M$  and the flame temperature,  
 $T I_s = \sqrt{T_c / M}$ .
16. (a) "Parathion" is an organic phosphorus compounds.
17. (e)  $H_2CO_3 + HCO_3^-$  buffer present in human blood, which maintain  $pH$  of blood.
18. (a) Soaps are the sodium or potassium salt of higher fatty acids. e.g.,  $C_{17}H_{37}COOK$  (Potassium stearate). These are obtained by alkaline hydrolysis of oils and fats. The reaction is called saponification.
19. (b) A mixture of  $O_2$  and  $He$  is used for respiration as helium is inert and light gas and diffuse rapidly.

12. (a) Solid propellants or composite propellants are mixture of polymeric binders (such as

**Assertion & Reason**

1. (b) It is correct that fluorescein is an absorption indicator. It is also true that fluorescein indicator is a dye. Therefore, both assertion and reason are true but reason is not a correct explanation for assertion.
2. (e) The drugs which act on the central nervous system and help in reducing anxiety are called tranquilizers.
3. (a) Tranquilizers are chemicals which are used to cure mental diseases.
4. (a) Broad spectrum antibiotics are those medicines which are effective against several different types of harmful micro organisms.
5. (b) Antiseptics are those chemicals which kill or prevent the growth of micro organism. Antiseptics do not harm the living tissues and can be applied on cuts and wounds. They help to reduce odours resulting from the bacterial decomposition in the mouth on the body.
6. (a) A small dose of sedative produces a feeling of relaxation, calmness and drowsiness.