

Pharmaceutics

- Precise control of flow is obtained by which one of the followings

(a) Needle valve (b) Butterfly valve
(c) Gate valve (d) Globe valve
- Containers used for aerox shoukt withstand a pressure of

(a) 130-150 Psig at 130 °F (b) 140-180 Psig at 130 °F
(c) 140-170 Psig at 120 °F (d) 120-140 Psig at 120 °F
- Heat sensitive material like fruit juice are evaporated in which one of the followings

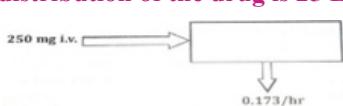
(a) Long tube vertical evaporator
(b) Calandria type evaporator
(c) Falling film type evaporator
(d) Forced circulation type evaporator
- What will be the maintenance dose of a sustained release 12 hour formulation of drug X exhibiting one compartment kinetics with a half-life of 6 hours, plasma concentration (steady state) 6 µg/ml, volume of distribution 30 L, and an oral bioavailability of 80%

(a) 249.48 mg (b) 225.48 mg
(c) 311.85 mg (d) 201.85 mg
- How much quantity (in grams) of sodium chloride is needed to make 30 ml of a 2% isotonic drug (sodium chloride equivalent 0.20) solutions

(a) 0.60 (b) 0.27 (c) 0.15 (d) 0.12
- Read the following statements about lyophilization
[P] Lyophilization cannot be done in final containers like multiple dose containers
[Q] Lyophilized product needs special methods for reconstitution
[R] Lyophilization causes protein denaturation in tissues
[S] Lyophilization is suitable for drying the thermolabile products
Choose the correct combination of statements

(a) [P] is true and [Q], [R] & [S] are false
(b) [Q] is true and [P], [R] & [S] are false
(c) [R] is true and [P], [Q] & [S] are false
(d) [S] is true and [P], [Q] & [R] are false
- In a pharmacokinetic model depicted in the following scheme, what is the half-life of the drug if the apparent volume of distribution of the drug is 25 L

(a) 1.7 hr (b) 2 hr
(c) 4 hr (d) 3 hr


- A sample of paracetamel tablets claims to contain 500 mg of paracetamol. But, on analysis by Govt. Analyst, it was found to contain 200 mg.

As per Drugs and Cosmetics Act 1940 this product would be categorized as what

(a) Misbranded drug (b) Adulterated drug
(c) Spurious drug (d) Unethical drug

9. **Read the following statements**

[P] The surface area measurement using BET approach utilizes argon gas for adsorption

[Q] Full form of BET is Brunauer, Emmett and Teller
Choose the correct answer

(a) [P] & [Q] both are correct
(b) [P] is correct but [Q] is incorrect
(c) [Q] is correct but [P] is incorrect
(d) Both [P] & [Q] are incorrect

10. **Based on the DLVD theory of force of interaction between colloidal particles, which one of the following lead to attractive interaction between two particles**

(a) Solvation forces (b) Electrostatic forces
(c) Van der Waals forces (d) Steric forces

11. **Read the following statements with regard to viscosity of a polymer solution**

[P] Specific viscosity of a polymer solution is obtained as relative viscosity +1

[Q] Relative viscosity is the ratio of the viscosity of the solution to the viscosity of pure solvent

[R] Kinematic viscosity is defined as the viscosity of the liquid at a definite temperature

[S] The unit for kinematic viscosity is poise or dyne sec/cm
Indicate the correct combination of statements

(a) [P] & [S] are correct but [Q] & [R] are wrong
(b) [Q] & [R] are correct but [P] & [S] are wrong
(c) [P] & [Q] are correct but [R] & [S] are wrong
(d) [R] & [S] are correct but [P] & [Q] are wrong

12. **Determine the correctness or otherwise of the following Assertion [A] and the Reason [R]**

Assertion [A]: Salts having no ions in common with the slightly soluble electrolyte increase its solubility

Reason [R]: Such salts lower the activity coefficient of the slightly soluble electrolyte

(a) Both [A] and R are true and [R] is the correct reason for [A]
(b) Both [A] and [R] are false
(c) Although [A] is true but [R] is false
(d) Both [A] and [R] are true but [R] is NOT the correct reason for [A]

13. **What negative adsorption would do**

(a) Decrease the surface free energy as well as the surface tension
(b) Increase the surface free energy as well as the surface tension
(c) Decrease the surface free energy but increase the surface tension

(d) Increase the surface free energy but decrease the surface tension

14. Read the following statements

[P] At temperature below Kraft point micelles will not form

[Q] At Kraft point, solubility of surfactant equals CMC
[R] Kraft point increases with increasing chain length of hydrocarbon

[S] Kraft point is normally exhibited by non-ionic surfactants

Choose the correct combination of answers

- (a) [P] is correct but [Q], [R] & [S] are wrong
- (b) [R] & [S] are correct but [P] & [Q] are wrong
- (c) [P], [Q] & [R] are correct but [S] is wrong
- (d) All are correct

15. Two statements are given regarding the uniformity of dispersion test [IP]

[P] It is evaluated using 6 tablets and 500 mL water

[Q] It involves measuring the dispersion time of each tablet

Choose the correct set of statements

- (a) [P] is correct while [Q] is incorrect
- (b) [P] and [Q] both are correct
- (c) [P] is incorrect while [Q] is correct
- (d) Both [P] and [Q] are incorrect

16. Read the following statements

[P] Caramelization occurs in acidic conditions

[Q] Caramel is optically inactive glucose

[R] Caramel is obtained by burning of glucose

[S] Caramel is obtained by degradation of fructose

Choose the right combination of statements

- (a) [P] & [Q] are true but [R] & [S] are false
- (b) [P] & [S] are true but [Q] & [R] are false
- (c) [Q] & [R] are true but [P] & [S] are false
- (d) [R] & [S] are true but [P] & [Q] are false

17. Read the following regarding value added tax (VAT)

[P] It is an indirect tax

[Q] It is charged at the rate of 8%

[R] It is tax at source

[S] It is effective since April 2010

Choose the correct option

- (a) [P] & [Q] are true [R] & [S] are false
- (b) [R] & [S] are true [P] & [Q] are false
- (c) [P] & [R] are true [Q] & [S] are false
- (d) [Q] & [S] are true [P] & [R] are false

18. The integrity of seals in case of vials and bottles is determined by some tests. Some of them are given below

[P] Leaker's test **[Q]** Water hammer test

[R] Spark tester probe

Choose the correct answer

- (a) [P] & [Q] (b) [Q] & [R]
- (c) [P] & [R] (d) All are correct

19. By which mechanism the microorganisms are killed by autoclaving

(a) Coagulation of the cellular proteins of the microorganisms

(b) Alkylation of essential cellular metabolites of microorganisms

(c) Stopping reproduction of microorganism cells as a result of lethal mutations

(d) Oxidation of RNA of microorganisms

20. Manufacture and sale of some of the following drugs is prohibited in India

[P] Fixed dose combination of Atropine and antidiarrheals

[Q] Penicillin eye ointment

[R] Nimesulide paediatric drops

[S] Gatifloxacin

Choose the drugs which are prohibited

- (a) [P], [Q] & [R] (b) [Q], [S] & [R]
- (c) [R], [S] & [P] (d) [P], [Q], [R] & [S]

21. In relation to sodium chlorite and water mixture, read the following statements

[P] Mixture is eutectic in nature

[Q] It has eutectic point -21.2°C

[R] The composition of eutectic is 25.3% by Mass

[S] The mixture is a true eutectoid and may exist as peritectic also.

Which of the set of statements is correct

- (a) [P] & [Q] (b) [Q], [R] & [S]
- (c) [P], [Q] & [S] (d) [P], [R] & [S]

22. In relation to sterilization, what is the meaning of D300°F - 2 minutes

(a) Death of all microorganisms in 2 minutes

(b) Death of 300 microorganism in 2 minutes

(c) Death of all microorganism in 2 minutes at 300 °F

(d) Death of 90% microorganism in 2 minutes at 300°F

23. Choose the correct combination

1. Rod mill **[P]** Dried plant drug

2. Hammer mill **[Q]** Thermolabile drug

3. Fluid energy mill **[R]** Paint

(a) 1-[Q], 2-[P], 3-[R] (b) 1-[R], 2-[P], 3-[Q]

(c) 1-[Q], 2-[R], 3-[P] (d) 1-[P], 2-[Q], 3-[R]

24. Which following statements is NOT true for stainless steel 316

(a) It is also called inox steel

(b) It contains 10.5-11% chromium

(c) The presence of chromium it exhibits passivation phenomenon

(d) It is not affected by acids

25. Which of the following conditions favor formation of large crystals

(a) High degree of supersaturation

(b) Low nucleation rate

(c) High magma density

(d) Rapid cooling of magma

26. If M, L, T, Q and θ are dimensional representations of mass, length, time, heat and temperature respectively, then what is the dimension of fluid thermal conductivity

(a) Q/Mθ (b) Q/TL²θ

(c) Q/TLθ (d) M/LT

27. Which one of the following properties is characteristic of microemulsions

- These are transparent systems with droplet size less than 1 um
- These are transparent systems with droplet size less than 10 pm
- These are non-transparent systems with droplet size less than 1 um
- These are transparent systems with droplet size less than 1 nm

28. Which one of the followings would be an offence in accordance with the provisions of the Drugs and Cosmetics Act, 1940

- Packing of Paediatric oral drops in 30 ml pack
- Packing of Oxytocin injection in a single unit blister pack
- Packing of Schedule X drugs in 5 ml injection pack
- Packing of Aspirin tablets (75 mg) in 14 tablet strip pack

29. Which one of the following colours is NOT permitted to be used in drugs by the Drugs and Cosmetics Act, 1940

- Chlorophyll
- Riboflavin
- Tartrazine
- Amaranth

30. Determine the correctness or otherwise of the following Assertion [A] and the Reasons [R] and [S] Assertion [A] Butylated hydroxytoluene is added as one of the ingredients in the lipstick formulation.
Reason [R] It is a good solvent for the wax oil mixtures and coloring pigments present in the lipstick
Reason [S] It is an antioxidant and prevents rancidity on storage

- [A] is true, and [R] and [S] are true and correct reasons for [A]
- [A], [R] and [S] are all false
- [A] is true, [S] is false, and [R] is the correct reason for [A]
- [A] is true, [R] is false, and [S] is the correct reason for [A]

31. Choose the correct formula for the calculation of the retail price of a formulation, given by the Govt of India

- $R.P. = (M.C. + E.D. + P.M. + P.C.) \times (1 + MAPE/100) + C.C.$
- $R.P. = (M.C. + C.C. + P.M. + P.C.) \times (1 + MAPE/100) + E.D.$
- $R.P. = (M.C. + C.C. + E.D. + P.C.) \times (1 + MAPE/100) + P.M.$
- $R.P. = (M.C. + C.C. + P.M. + E.D.) \times (1 + MAPE/100) + P.C.$

32. What will be the approximate Tmax of a drug exhibiting Ka of 2 hr^{-1} and Ke of 0.2 hr^{-1}

- 1.2 hr
- 2.4 hr
- 4.8 hr
- 2.0 hr

33. There are some statements related in the protein binding of drugs as given below

[P] Protein binding decreases the free drug concentration in the system

[Q] Protein binding to plasma albumin is an irreversible process

[R] Drugs with a low lipophilicity have a high degree of protein binding

[S] Protein binding of one drug can be affected by the presence of other drug

Choose the correct combination of statements

- [P] & [Q] are true while [R] & [S] are false
- [Q] & [R] are true while [P] & [S] are false
- [R] & [S] are true while [P] & [Q] are false
- [P] & [S] are true while [Q] & [R] are false

34. Based on Henderson-Hasselbalch equation, at what pH value a weak acid would be 99.9% ionized

- At pH equivalent to $pK_a + 3$
- At pH equivalent to $pK_a - 3$
- At pH equivalent to $pK_a - 1$
- At pH equivalent to $pK_a + 1$

35. Some statements about crystals are given below

[P] The crystal lattice is constructed from repeating units called unit cells

[Q] The external appearance of a crystal is described by crystal habits, such as needles, prisms, rusettes etc.

[R] Polymorphism is the ability of a compound to crystallize as more than one distinct crystalline species with different internal lattice

[S] Hydrates are always more stable than anhydrous form of the same drug

Choose the correct combination of statements about crystal

- Statement [P], [Q] and [S] are correct but [R] is wrong
- Statement [P], [Q] and [R] are correct but [S] is wrong
- Statement [Q], [R] and [S] are correct but [P] is wrong
- Statement [R], [S] and [P] are correct but [Q] is wrong

36. Which one of the following is NOT used in preparation of baby powders

- Swaric acid
- Boric acid
- Kaolin
- Calcium carbonate

37. According to Rozeny Carman equation a 10% change in porosity can

- Two fold change in viscosity
- Five fold change in viscosity
- Three fold change in viscosity
- None of these

38. Speed disk atomizer rotates at a speed of

- 3000 - 5000 revolutions per mm
- 3000 - 50000 revolutions per mm
- 300 - 50000 revolutions per mm
- 300 - 5000 revolutions per mm

39. The thickness Gold coating on a USP Dissolution apparatus - I basket should be

- Not more than 2.5 μ in thickness
- Not more than 0.001 mm in thickness
- Not more than 0.025 μ in thickness
- Not more than 0.1 mm in thickness

40. Study the following two statements

[P] If the gas is cooled below its critical temperature, less pressure is required to liquefy it

[Q] At critical temperature and critical pressure, the liquid will have highest vapor pressure

Choose the correct combination of statements

- Both [P] and [Q] are correct
- [P] is incorrect and [Q] is correct

Pharmacology

44. **What is the primary mechanism of action of local anesthetics**

- (a) Activation of ligand-gated potassium channels
- (b) Blockade of voltage-gated sodium channels
- (c) Stimulation of voltage-gated N-type calcium channels
- (d) Blockade of GABA-gated chloride channels

45. **Which one of the following glucose transporters is the new drug target for the management of Type 2 diabetes mellitus**

- (a) Sodium glucose linked transporter-2 (SGLT-2)
- (b) Glucose transporter-1 (GLUT-I)
- (c) Sodium glucose linked transporter-1 (SGLT- I)
- (d) Glucose transporter-2 (GLUT-2)

46. **Which of the followings are the critical neurotransmitters playing major role in depression**

- (a) Acetylcholine, Norepinephrine and Dopamine
- (b) Dopamine, Norepinephrine and Serotonin

55. Following are the phases of clinical trials

[P] Human pharmacology

[Q] Therapeutic confirmatory trials

[R] Post Marketing trials

[S] Therapeutic exploratory trials

Choose the correct order of phases of clinical trial

(a) [P], [Q], [R], [S] (b) [P], [R], [Q], [S]
 (c) [P], [Q], [S], [R] (d) [P], [S], [Q], [R]

56. Which one of the following anti-asthmatic drugs can cause convulsions and arrhythmia

(a) Prednisolone (b) Salmeterol
 (c) Zafirlukast (d) Theophylline

57. Which one of the following anti-arrhythmic drugs acts by inhibiting potassium sodium and calcium channels

(a) Quinidine (b) Lignocaine
 (c) Amiodarone (d) Flecainide

58. A 48 years old woman is having the symptoms of weight gain, cold intolerance, constipation, bradycardia, puffy face, lethargy and dry skin. These symptoms are suggestive of which of the following

(a) Over use of corticosteroid
 (b) Hypothyroidism
 (c) Estrogen deficiency
 (d) Over use of thyroxin sodium

59. Increased risk of hypoglycemia and weight gain is the common side effect of drugs used in the management of Type 2 diabetes mellitus. Following are some commonly used drugs, alone or in combination, for the management of Type 2 diabetes mellitus

[P] Metformin [Q] Pioglitazone
 [R] Glipizide [S] Sitagliptin

Choose the correct combination which is weight neutral and without risk of hypoglycemia

(a) [P] and [Q] (b) [Q] and [R]
 (c) [R] and [S] (d) [P] and [S]

60. Which one of the following receptors is NOT a ligand-gated ion channel receptor

(a) Nicotinic Receptor (b) SHT3 Receptor
 (c) GABA-A Receptor (d) H₂ Receptor

61. Determine the correctness or otherwise of the following Assertion [A] and the Reason [R]

Assertion (A): In Arsenic poisoning, Dimercaprol injected intramuscularly, acts as antidote by metal complexation**Reason (R):** EDTA acts as an antidote in lead poisoning, by solubilizing the toxic metal ions from the tissues

(a) Although [A] is true but [R] is false
 (b) Both [A] and [R] are false
 (c) Both [A] and [R] are true and [R] is the correct reason for [A]
 (d) Both [A] and [R] are true but [R] is NOT the correct reason for [A]

62. Which of the following cytokines are the most important regulators in inflammation and are the targets for anti-inflammatory agents used in rheumatoid arthritis

(a) Tumor necrosis factor and Interleukin-1
 (b) Acetylcholine esterase and Eicosanoids
 (c) Leukotrienes and hoprostanes
 (d) Adhesion factor and Monoamine oxidase A

63. Which one of the following is a FALSE statement for competitive antagonists

(a) They have an affinity for the agonist binding site on receptor
 (b) They have no intrinsic activity
 (c) They cause parallel rightward shift of the control dose response curve
 (d) Maximum response of the agonist cannot be achieved in their presence by increasing the concentration of the agonist

64. Atypical antipsychotics differ from the typical antipsychotics in various ways that define them as atypical. Which one of the following is NOT a defining property of the atypical antipsychotics

(a) Sustained hyperprolactinemia
 (b) Improved efficacy in treating the negative symptoms
 (c) Lower risk for extrapyramidal side effects (EPS)
 (d) Greater serotonin receptor blockade than dopamine blockade

65. Which one of the following drugs produces significant relaxation of both venae and arterioles

(a) Hydralazine (b) Minoxidil
 (c) Diazoxide (d) Sodium nitroprusside

66. Antiviral action of purine analogues is primarily related in the following

[P] Inhibition of RNA synthesis
 [Q] Inhibition of DNA polymerase
 [R] Immuno modulation
 [S] Inhibition of viral penetration

Choose the correct option

(a) [R] is correct and [Q] is incorrect
 (b) [Q] is correct and [S] is incorrect
 (c) [P] is correct and [R] is incorrect
 (d) [S] is correct and [P] is incorrect

67. All of the given four drugs are sympathomimetics

Choose the correct statement related to their effects on blood pressure

(a) [P] and [Q] increase systolic and diastolic blood pressure
 (b) [Q] and [R] increase systolic and diastolic blood pressure
 (c) [R] and [S] increase systolic blood pressure
 (d) [P] and [S] increase systolic and diastolic blood pressure

68. All of the given four drugs are neuromuscular blocking agents

[P] Gallamine [Q] Succinylcholine
 [R] Vecuronium [S] 4-Tubocurarine
 (a) [P] and [Q] are competitive neuromuscular blocking agents
 (b) [Q] and [R] are competitive neuromuscular blocking agents
 (c) [R] and [S] are non-competitive neuromuscular blocking agents
 (d) [P] and [S] are competitive neuromuscular blocking agents

69. Metformin causes the following actions EXCEPT for the one Identify that

- (a) Reduces hepatic gluconeogenesis
- (b) Increases glucose uptake in skeletal muscles
- (c) Enhances sensitivity to insulin
- (d) Increases AIC by 1% to 2%

70. Which one of the following is a tyrosine kinase inhibitor indicated for a variety of malignancies

- (a) Imatinib
- (b) Pazitaxel
- (c) Exemestane
- (d) Mitomycin

71. Which one of the following statement is FALSE about Interferons

- (a) Interferons are cellular glycoproteins produced by virus infected cell
- (b) Interferons have no effects on extracellular virus
- (c) Interferons are virus specific agents that can interfere either with DNA or RNA virus
- (d) They are produced as potent broad spectrum antiviral agents

72. Which one of the following is the most likely positive sign of pregnancy when detected in urine

- (a) Estrogens
- (b) Progesterone
- (c) Human Chorionic Gonadotropin (HCG)
- (d) Corticotropin Hormone

73. Following are some opioid analgesics

- [P] Morphine
- [Q] Pethidine
- [R] Pentazocine
- [S] Fentanyl

Choose the correct order of respiratory depressant propensity of these agents

- (a) [P]>[Q]>[R]>[S]
- (b) [Q]>[P]>[R]>[S]
- (c) [R]>[P]>[Q]>[S]
- (d) [S]>[P]>[Q]>[R]

74. Corticosteroids are administered to treat some of the given disease states

- [P] Peptic ulcer
- [Q] Bronchial asthma
- [R] Nephrotic syndrome
- [S] Myasthenia gravis

Choose the correct statement about the use of corticosteroids for the treatment of these diseases

- (a) [P], [Q] and [S] are treated while [R] is NOT
- (b) [P], [R] and [S] are treated while [Q] is NOT
- (c) [Q], [R] and [S] are treated while [P] is NOT
- (d) [P], [Q] and [R] are treated while [S] is NOT

75. Which one of the following statements is FALSE for Fluoroquinolones

- (a) These are highly effective by oral and parenteral routes
- (b) These are relatively more susceptible to development of resistance
- (c) These are effective against those bacteria that are resistant to β -lactam and aminoglycoside antibiotics
- (d) These are bactericidal with broad spectrum of activity

76. Increased serum levels of which one of the following may be associated with decreased risk of atherosclerosis

- (a) VLDL
- (b) LDL
- (c) HDL
- (d) Total Cholesterol

77. Misoprostol has a cytoprotective action on gastrointestinal mucosa because of one of the following actions. Identify that

- (a) It enhances secretion of mucus and bicarbonate ion
- (b) It neutralizes hydrochloric acid in stomach
- (c) It antagonizes nonsteroidal anti-inflammatory drugs
- (d) It is bactericidal to H. pylori

78. Which of the following drugs can precipitate bronchial asthma

- [P] Indomethacin
- [Q] Codeine phosphate
- [R] Rabeprozole
- [S] Theophylline

Choose the correct option

- (a) [P] and [R]
- (b) [P] and [Q]
- (c) [R] and [S]
- (d) [S] and [Q]

79. Low dose aspirin acts as anti-platelet aggregating agent by which one of the following mechanisms Find the correct answer

- (a) It acts as a suicide substrate for COX-1 enzyme present in platelets
- (b) It acts as a transition state analog for COX-2 enzyme present in the platelets
- (c) It acts as a reversible inhibitor of lipoxygenase present in the platelets
- (d) It acts as an affinity label of oxidoreductases present in the platelets

80. Study the following statements on alkylating agents as antineoplastics

- [P] They get converted to aziridinium ions and bind to 7th position -N atom of guanine of DNA base pairs

- [Q] Nitrogen mustards and Sulfur mustards belong to this class of drugs

- [R] They inhibit dihydrofolate reductase enzyme thereby inhibiting DNA synthesis

- [S] They chelate electropositive atoms present in the DNA thereby inhibiting DNA uncoiling

Choose the correct combination of statements

- (a) [P] and [Q] are correct
- (b) [R] and [S] are correct
- (c) [P] and [S] are correct
- (d) [Q] and [R] are correct

Pharmacognosy

81. Study the following statements about the stereochemistry of steroid aglycones is cardiac glycosides

- [P] Rings A-B and C-D are cis fused while B-C is trans fused

- [Q] Rings A-B and C-D are trans fused while B-C is cis fused

- [R] Rings A-B are trans fused while B-C and C-D are cis fused

- [S] Rings A-B are cis fused while B-C and C-D are trans fused

Choose the correct statement.

- (a) [P] is true while [Q], [R] and [S] are false
- (b) [Q] is true while [P], [R] and [S] are false
- (c) [R] is true while [P], [Q] and [S] are false
- (d) [S] is true while [P], [R] and [Q] are false

82. Which one of the following alkaloids is derived from **Lysine**
 (a) Emetine (b) Chelidone
 (c) Lobeline (d) Stachydrine

83. **Biologically the barks of Cinnamomum cassia and Cinnamomum zeylanicum differ in one of the following features. Identify that**
 (a) Sclerids (b) Phloem Fibers
 (c) Pericyclic Fibres (d) Cortex

84. Which of the following is use of artificial sweeteners is permitted in various dosage forms of Ayurveda, Siddha and Unani proprietary medicines
 (a) Sucralose (b) Aspartame
 (c) Saccharin (d) All of these

85. At equal concentrations, which one of the following mucilages will possess maximum
 (a) Maize starch (b) Rice starch
 (c) Wheat starch (d) Potato starch

86. The following characteristic properties are given in contest of saponins
[P] Saponins give precipitate by shaking with water
[Q] Saponins are diterpenes and give foam on shaking with water
[R] Saponins are triterpenoidal compounds and cause haemolysis of erythrocytes
[S] They are steroid or triterpenoidal compounds with tendency to reduce surface tension of water
Choose the correct option.
 (a) [P] is true, [Q] is true, [R] is true, [S] is true
 (b) [P] is false, [Q] is true, [R] is false, [S] is true
 (c) [P] is false, [Q] is true, [R] is true, [S] is true
 (d) [P] is false, [Q] is false, [R] is true, [S] is true

87. Read the given statements about the constituents of **Sheethe**
[P] Shellolic acid a major component of alicyclic fraction is responsible for colour
[Q] Shellolic acid a major component of aromatic fraction is responsible for colour
[R] Shellolic acid is a major component of aliphatic fraction and laccaic acid is a component of aromatic fraction
[S] Aliphatic components are shellolic acid which is salicylic and aleuric acid which is acyclic, while laccaic acid is an aromatic colouring principle
What is the correct combination of options
 (a) [P] is true, [Q] is true, [R] is true, [S] is true
 (b) [P] is false, [Q] is false, [R] is false, [S] is true
 (c) [P] is false, [Q] is false, [R] is true, [S] is true
 (d) [P] is true, [Q] is false, [R] is false, [S] is true

88. Major component of *Cymbopogon citratus* is citral which is utilized commercially for the following
[P] Synthesis of vitamin A directly from citral
[Q] Synthesis of vitamin A by first converting to Ψ -ionone
[R] Synthesis of vitamin A by first converting to Ψ -ionone followed by conversion to α -ionone which is very important intermediate for carotenoid synthesis

[S] Synthesis of vitamin A by first conversion of citral to Ψ -ionone followed by conversion to β -ionone which is an important intermediate for carotenoid synthesis
 (a) [P] is true, [Q] is true, [R] is true, [S] is true
 (b) [P] is false, [Q] is true, [R] is false, [S] is true
 (c) [P] is false, [Q] is false, [R] is true, [S] is true
 (d) [P] is false, [Q] is false, [R] is false, [S] is false

89. Which one of the following constituents is reported to have anti-hepatotoxic activity
 (a) Podophyllotoxin (b) Andrographoloid
 (c) Linalool (d) Safranal

90. Geranal and Neral are the monoterpenoid aldehyde constituents of volatile oil. Read the following statements about them
[P] Geranal and Neral are both optical Isomers
[Q] Geranal and Neral are both geometric isomers
[R] Geranal has Z configuration and Neral has E configuration
[S] Geranal has E configuration and Neral has Z configuration
Choose the correct combination of answers for them
 (a) [P] is false, [Q] is true, [R] is false, [S] is true
 (b) [P] is false, [Q] is true, [R] is true, [S] is false
 (c) [P] is true, [Q] is false, [R] is true, [S] is true
 (d) [P] is false, [Q] is true, [R] is false, [S] is false

91. Identify the incorrect statement applicable to lignans
 (a) Lignans are formed by the dimerization of the phenyl propane moiety
 (b) Podophyllotoxin can be termed phytochemically as a lignan
 (c) Lignans can be formed by cyclization of phenylpropane nucleus
 (d) Lignans are the secondary metabolites formed from the Shikimic acid pathway

92. Naringin, obtained from orange peel can be named as one of the followings. Identify the correct name
 (a) 4,5,7-Trihydroxy-7-rhamnoglucoside of farvanone
 (b) 5,4-Dihydroxy 7-glucoside of flavanone
 (c) 5,34-Trihydroxy-7-rhamnoglucoside of flavone
 (d) 5,34'-Trihydroxy-7-glucoside of flavones

93. Rhizomes of *Zingiber officinale* contain some sesquiterpene hydrocarbons. Some hydrocarbons are given below
[P] B-Bisabolene **[Q]** Gingerone A
[R] Gingerol **[S]** Zingiberene
Identify the correct pair of constituents present in the rhizomes
 (a) [P] and [S] (b) [P] and [Q]
 (c) [Q] and [S] (d) [Q] and [R]

94. Listed below are the chemical tests used to identify some groups of phyconstituents. Identify the test for the detection of the purine alkaloids
 (a) Keller-Killani Test
 (b) Murexide Test
 (c) Shinoda Test
 (d) Vitali-Morin

95. Given below are four statements in context of Hecogenin
 [P] It is a saponin
 [Q] It is useful for the semi-synthesis of steroid drugs
 [R] It is not a glycoalkaloid
 [S] It is obtained from *Dioscorea* tubers
Choose the correct combination of statements
 (a) [P], [Q] and [R] are correct while [S] is incorrect
 (b) [P], [Q] and S are correct while [R] is incorrect
 (c) [Q], [R] are correct while [P], [S] are incorrect
 (d) All are correct statements

96. Atropine biosynthesis involves a pair of precursors.

Identify the correct pair

(a) Ornithine and Phenylalanine
 (b) Tyrosine and Tryptophan
 (c) Tryptophan and Dopamine
 (d) Tyrosine and Dopamine

97. Study the following statements

[P] Lutein and Zeaxanthin are flavonoids
 [Q] Lutein and Zeaxanthin are xanthophyll
 [R] Lutein and Zeaxanthin are required to control age-related macular degeneration
 [S] Lutein is a flavonoid while Zeaxanthin is its glycoside
Choose the correct answer
 (a) [P] is correct while [Q], [R] and [S] are incorrect
 (b) [Q] and [R] are correct while [P] and [S] are incorrect
 (c) Statement [P] is the only correct statement
 (d) Statement [S] is the only correct statement

98. Listed below are some phytoconstituents

[P] Galactamannan [Q] Glucomannan
 [R] Barbakin [S] Phyllanthin

Identify the constituents present in *Aloe vera*

(a) Only [P] (b) [Q] and [R]
 (c) Only [S] (d) [P] and [S]

99. Choose the correct answer for the binomial nomenclature of fruits of star anise

(a) *Pimpinello anisum* (b) *licium verum*
 (c) *Illicium antoutum* (d) *Illicium religiosum*

100. Given here with are two statements

[P] Digitoxin is a secondary glycoside from *Digitalis purpurea*

[Q] Digitoxin is a partially hydrolysed glycoside of Purpurea glycoside A

Determine the correctness of the above statements

(a) Both (P) and [Q] are true
 (b) [P] is true but [Q] is false
 (c) Both [P] and [Q] are false
 (d) (P) is false but [Q] is true

101. Peruvoside is naturally obtained from one of the following plants. Identify the correct name

(a) *Dioscorea* (b) *Ginseng*
 (c) *Liquorice* (d) *Thevetia*

102. One of the followings is NOT required for the initiation and maintenance of plant tissue culture. Identify that

(a) Sucrose (b) Kinetin
 (c) Auxin (d) Abscisic acid

103. Study the relationship between the given two statements

[P] Capsanthin is a red coloured principle from *Capsicum annum*

[Q] Capsanthin is a vanillyl amide of isodecenoic acid

Choose the correct answer

(a) Both (P) and [Q] are correct
 (b) Both (P) and (Q) are incorrect
 (c) [P] is correct but [Q] is incorrect
 (d) [P] is incorrect but [Q] is correct

Pharmaceutical Chemistry

104. Parschor and Moler refraction can be categorized under one of the following properties. Identify that

(a) Additive properties
 (b) Constitutive properties
 (c) Colligative properties
 (d) Aditive and constitutive property

105. Rast's camphur method is used for determination of molecular weight of solutes which are soluble in molten camphur. The basic principle of the method is dependent one of the following properties. Identify that

(a) Elevation of freezing point of camphor by the solute
 (b) Lowering of vapour pressure of camphor by the solute
 (c) Lowering of freezing point of camphor by the solute
 (d) Elevation of boiling point of camphor by the solute

106. Following are some statements about Captopril

[P] It is a protype molecule in the design of ACE inhibitors

[Q] It contains a sulphonyl group in its structure

[R] It has a proline moiety in its structure

[S] It has an ester linkage

Choose the correct combination of statements

(a) [P] & [Q] are true while [R] & [S] are false
 (b) [Q] & [R] are true while [P] & [S] are false
 (c) [P] & [R] are true while [Q] & [S] are false
 (d) [R] & [S] are true while [P] & [Q] are false

107. Find the process by which the conversion of Sulfasalazine to Sulfapyridine and 5-amino salicylic acid takes place in the colon

(a) Hydrolysis (b) Deamination
 (c) Acetylation (d) Azoreduction

108. Cetirizine as an antihistaminic agent has a low sedative potential due to one of the following reasons

Identify that

(a) It has a chiral center
 (b) It has high log P value
 (c) It has high polarity
 (d) It has low molecular weight

109. Some statements are given for Clavulanic acid Sulbactam

[P] All three tick the 6-acylamino side chain

[Q] All are potent inhibitors of the enzyme B-Lactamase

[R] All are prodrugs of Penicillin

[S] All have weak antibacterial activity

Choose the correct combination of statements

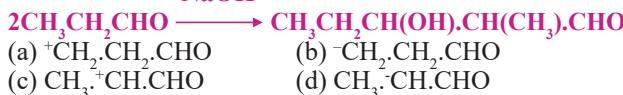
(a) [P] [Q] and [R] are true while [S] is false
 (b) [Q] [R] and [S] are true while [P] is false
 (c) [P] [R] and [S] are true while [Q] is false
 (d) [P] [Q] and [S] are true while [R] is false

110. Electrophilic aromatic substitution reactions in indole give one of the following product preferably Identify that

(a) 3-Substituted indole (b) 2-Substitute indole
 (c) 5-Substituted indole (d) 6-Substituted indole

111. Which one of the following species is an intermediate in the reaction shown below

NaOH



112. For the equation $PV = nRT$ to hold true for a gas, all of the following conditions are necessary EXCEPT for ONE Identify that

(a) The molecules of gas must be of negligible volume
 (b) Collisions between molecules must be perfectly elastic
 (c) The velocities of all molecules must be equal
 (d) The gas must not be decomposing

113. Atracurium besylate, a neuromuscular blocking agent, is metabolized through one of the following reactions Identify that

(a) Hoffman elimination (b) Hoffman rearrangement
 (c) Michael addition (d) Chisen condensation

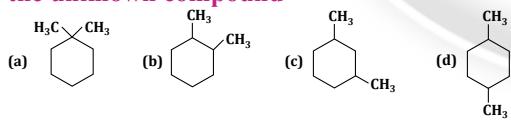
114. Identify the metabolite of Prontosil responsible for its antibacterial activity

(a) Sulphacetamide (b) Sulphanilamide
 (c) p Amino benzoic acid (d) Probenecid

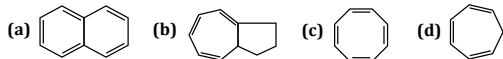
115. The central bicyclic ring in Penicillin is named as one of the followings. Find the correct name

(a) 1-Thia-4-azabicyclo [3.2.1] heptanes
 (b) 4-Thia-1-azabicyclo [3.2.0] heptane
 (c) 4-Thia-1-azabicyclo [3.2] heptanes
 (d) 1-Thia-4-azabicyclo [1.2.3] heptanes

116. Both of the CMI and PMR spectra of an unknown compound show four absorption peaks each. Identify the unknown compound



117. Out of the four given compounds choose the one which is aromatic



118. Which one of the following fragmentation pathways involves a double bond a γ hydrogen in mass spectrometry

(a) α -Fission
 (b) β -Fission
 (c) Mc-Lafferty rearrangement
 (d) Retro-Diels Alder rearrangement

119. Determine the correctness or otherwise of the following Assertion [A] Halogens are unusual in their effect on

electrophilic aromatic substitution they are deactivating yet ortho-, para directing

Reason (R) to electrophilic aromatic substitution reactions, reactivity is controlled by stronger inductive effect while orientation is controlled by the stronger hyperconjugation effect

Choose the correct statement

(a) [A] is true but [R] is false
 (b) Both [A] and [R] are true and [R] is the correct reason for [A]
 (c) Both [A] and [R] are false
 (d) Both [A] and [R] are true but [R] is not the correct reason for [A]

120. Given are the four statements about dehydration of alcohols to give alkenes

[P] Ease of dehydration of alcohols takes place in the order $3^\circ > 2^\circ > 1^\circ$

[Q] Dehydration is acid catalyzed

[R] Orientation of the alkene formed is strongly Saytzeff

[S] Dehydration is irreversible

Choose the correct combination of statements

(a) [P] and [Q] are correct while [R] and [S] are not
 (b) [P] [Q] and [R] all three are correct but [S] is not
 (c) [P] [O] [R] and [S] all are correct
 (d) [P] [Q] and [S] all three are correct but [R] is not

121. Choose the correct statement regarding the synthesis of phenyl n-propyl ether.

(a) Phenyl n-propyl ether is prepared from n propyl bromide and sodium phenoxide
 (b) Phenyl n propyl ether is prepared from bromobenzene and sodium n propoxide
 (c) Phenyl n-propyl ether can be prepared by either of the two methods
 (d) Both (a) and (b) are not the correct methods for the synthesis of phenyl n-propyl ether

122. Read the following statements about SN 1 reactions

[P] They proceed with complete inversion (Wakden inversion).

[Q] They proceed with racemization plus some net inversion.

[R] They are characterized by rearrangements.

[S] They are characterized by the reactivity sequence, $\text{CH}_3 > 1^\circ > 2^\circ > 3^\circ$

Choose the correct combination

(a) [P] and [Q] are true while [R] and [S] are false
 (b) [P] and [R] are true while [S] and [Q] are false
 (c) [Q] and [R] are true while [P] and [S] are false
 (d) [R] and [S] are true while [P] and [Q] are false

123. Read the following statements carefully

[P] Pyrrole and Thiophene undergo electrophilic aromatic substitution reactions much faster than benzene

[Q] Pyrrole and Thiophene undergo Dieks Aker alkilation reaction very fast

[R] Pyrrole and Thiophene undergo nucleophilic aromatic substitution reaction faster than benzene

[S] Pyrrole is a pie excess system while Thiophene is a pie deficient system

Choose the correct combination of statements

(a) [Q] only is true while [P] [R] and [S] are false
 (b) [R] and [S] are true while [P] and [Q] are false
 (c) [P] and [R] are true while [Q] and [S] are false
 (d) [P] only is true while [Q], [R] and [S] are false

124. Among the followings which one is not only a non reducing sugar but also does not exhibit mutarotation

(a) Glucose (b) Maltose (c) Lactose (d) Sucrose

125. Choose the most basic heterocyclic compound among the followings b) Imidazole

(a) Pyridine (b) Imidazole (c) Pyrrole (d) Pyrrolidine

126. Followings are some drug derivatives used to increase/ decrease the water solubility of the parent drugs

[P] Rolitetracycline

[Q] Erythromycin lactobionate

[R] Chiramphenicol succinate

[S] Erythromycin stearate

Choose the correct combination of statements

(a) [Q] and [R] are used to increase water solubility while [P] and [S] are used to decrease it
 (b) [P] [Q] and [R] are used to increase water solubility while [S] is used to decrease it
 (c) [Q], [S] and [R] are used to increase water solubility while [P] is used to decrease it
 (d) [Q] and [S] are used to increase water solubility while [P] and [R] are used to decrease it

127. Study the following statements on prevention of Crystalluria. By the given approaches Crystalluria can be prevented

[P] By co-administration of Sulfadiazine, Sulfamerazine and Sulfamethazine

[Q] By increasing the pH of urine

[R] By co-administration of Sulphanilamide, Sulphamethoxazole and Folic acid

[S] By administration of Cotrimoxazole

Choose the correct combination of statements

(a) [P] and [Q] are correct (b) [R] and [S] are correct
 (c) [P] and [R] are correct (d) [Q] and [R] are correct

128. Progesterone is obtulic from Diogenin through the following sequence of chemical reactions

[P] Acetylation, Ero, foxydation). Acetalysts H₂/Pd Hydrolysis and Oppenauer oxidation

[Q] Oppenauer oxidation Acetylation, Cro₃ (oxidation). Acetalysis, H₂/PD and Hydrolysis

[R] Cro₃ (oxidation). Acemlysis Acetylation Oppenauer oxidation, Hydrolysis and H₂/PD

[S] Acetylation, H₂/Pd, Hydrolysis Cro₃ toxidation).

Oppenauer oxidation and Acetolysis

Choose the correct sequence of reactions

(a) Only [P] (b) [Q] & [R]
 (c) [R] & [S] (d) Only [S]

129. Following statements are given for local anaesthetic drug Lidocaine

[P] It contains a silylamine moiety

[Q] It can be used as antiarrhythmic agent on oral administration

[R] When administered along with adrenaline its toxicity is reduced and its effect prolonged

[S] Chemically it is 2-diethylamino-26 dimethylphenyl acetamide

Choose the correct combination of statements

(a) (P) [Q] and [S] (b) (P) [Q] and [R]
 (c) (P) [R] and [S] (d) [Q] [R] and [S]

130. One of the following ring systems can be used as the bioisosteric replacement to benzene ring in drug design

[P] Thiophene

[Q] Cyclohexa-13-diene

[R] Pyrrolidine

[S] Imidazoline

Identify the correct answer

(a) [P] (b) [Q] (c) [R] (d) [S]

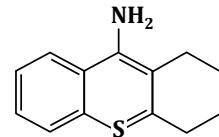
131. For the management of which disease the given drug Tacrine is used? Identify

(a) Glaucoma

(b) Antidote for anticholinesterase poisonin

(c) As an insecticide

(d) Alzheimer's disease



132. Some statements are given about disodium edetate

[P] Disodium edetate is a bidentate ligand

[Q] Disodium edetate is a complexing agent but not a chelating agent

[R] Disodium edetate can be used for the assay of lithium carbonate

[S] Disodium edetate can be used for the assay of zinc sulphate

Choose the correct answer

(a) [Q] [R] & [S] are true

(b) [Q] & [S] are true

(c) [S] only is true

(d) [P] [Q] [R] & [S] all are true

133. Given are some statements about cycloalkanes

[P] Baeyer's theory does not apply to four membered rings

[Q] Cyclohexane and cyclodecane rings are not flat but are puckered

[R] Chair form of cyclohexane experiences Van der Waals strain due to Flagpole interactions

[S] Boat form of cyclohexane experiences both torsional and Van der Waals strain

Choose the correct combination of statements

(a) [P], [Q] & [R] are true and [S] is false

(b) [Q] & [S] are true and [P] & [R] are false

(c) [P], [Q] & [S] are true and [R] is false

(d) [Q], [R] & [S] are true [P] is false

134. Phenols are more acidic than alcohol. This is due to one the following reasons. Identify that

(a) Alkoxide ions are better stabilized by the electron releasing alkyl groups

(b) Resonance stabilizes both phenols and phenoxide ions to the same extent

(c) Phenols are better stabilized than the phenoxide ions while reverse is true for alcohols and Alkoxide

(d) Phenoxide ions are much better stabilized than the Alkoxide ions

Pharmaceutical Analysis

135. Precessional frequency of a nucleus depends on the followings

[P] Quantum of externally applied magnetic field
 [Q] Quantum of electron density present around the nucleus
 [R] Frequency of applied electromagnetic radiations
 [S] Electronegativity of the element

Choose the correct combination of statements.

(a) [P] & [Q] are true (b) [P] & [R] are true
 (c) [Q] & [R] are true (d) [P] & [S] are true

136. In polarography, when the limiting current is achieved, one of the following processes takes place. Choose that

(a) The rate of electron transfer just matches the rate of mass transfer
 (b) The rate of electron transfer is slower than the rate of mass transfer
 (c) The rate of electron transfer becomes independent of the rate of mass transfer
 (d) The rate of electron transfer far exceeds the rate of mass transfer

137. Starch-iodide paste/paper is used as an external indicator in one of the following titrations Identify that

(a) Iodometric titration of copper sulphate using sodium thiosulphate as titrant
 (b) Iodometric titration of ascorbic acid using iodine solution as titrant
 (c) Diazotisation titration of sulphadiazine using Sodium nitrite as titrant
 (d) Potassium dichromate titration using sodium thiosulphate as titrant

138. Which detector is used in gas chromatography for halogen containing compounds specifically

(a) Katharometer
 (b) Electron capture detector
 (c) Flame ionization detector
 (d) Thermal conductivity detector

139. Quantification of minute quantity of a drug from a complex matrix, without prior separation can be done using one of the following techniques Identify that

(a) Coulometry (b) Potentiometry
 (c) Fluorescence spectroscopy (d) Radioimmunoassay

140. Some of the following statements describe the properties of Dropping Mercury Electrode (DME) correctly
 [P] Constant renewal of electrode surface eliminates poisoning effects

[Q] Mercury makes many metal ions easily reducible
 [R] Mercury has large hydrogen over voltage
 [S] The electrode can get oxidised with ease

Identify the correct combination

(a) All statements [P], [Q], [R] and [S] are correct
 (b) Statements [P], [Q] and [R] only are correct
 (c) Statements [P], [R] and [S] only are correct
 (d) Statements [F], [Q] and [S] only are correct

141. Read the following statements carefully about non-aqueous titrations

[P] Acetate ion is the strongest base capable of existence in acetic acid
 [Q] Mixtures of bases of different strengths can be analyzed by selecting differentiating solvent for the bases
 [R] Acetic acid acts as a leveling solvent for various acids like perchloric and hydrochloric acids
 [S] Mixtures of bases of different strengths can be analyzed by selecting a leveling solvent for the bases

Choose the correct answer

(a) [P] and [Q] are true and [R] and [S] are false
 (b) [P] and [S] are true and [R] and [Q] are false
 (c) [R] and [Q] are true and [P] and [S] are false
 (d) [R] and [S] are true and [P] and [Q] are false

142. Read the following statements carefully about Volhard's method

[P] In Volhard's titration, silver ions are titrated with Thiocyanates in acid solution
 [Q] Ferric ions act as indicator in Volhard's method, yielding reddish brown ferric thiocyanate
 [R] Volhard's method is used to determine halides
 [S] Volhard's method is a direct titration

Choose the correct set of answers

(a) [P], [Q] and [R] are true and [S] is false
 (b) [Q], [R] and [S] are true and [P] is false
 (c) [R], [S] and [P] true and [Q] is false
 (d) [P], [Q], [R] and [S] all are true

143. For a dye to be used as metal indicator in Complexometric, some of the dye properties are listed below

[P] The dye should have distinct colour than the dye-metal complex
 [Q] The dye-metal complex should have a higher stability than the metal-chelate (titrant) complex
 [R] The dye should be capable of complexing with the metal ions

Choose the correct combination of statements for the dye to be used as an indicator in Complexometric Titrations

(a) [P] & [Q] are correct while [R] is not
 (b) [Q] & [R] are correct while [P] is not
 (c) [P] & [R] are correct while [Q] is not
 (d) [P], [Q] & [R] all are correct

144. In Amperometry, rotating platinum electrode (RPE) is used as indicating electrode. It has certain advantages as well as disadvantages.

Read the following statements about these of rotating platinum electrode in Amperometry

[P] It causes large diffusion current due to rotation resulting in greater mass transfer

[Q] It causes greatly reduced residual current due to lack of condenser effect

[R] It has a low hydrogen over potential

Choose the correct combination of statements

(a) [P], [Q] & [R] all advantages of using RPE is Amperometry
 (b) [P] & [R] are advantages of RPE while [Q] is a disadvantage
 (c) [Q] & [R] are advantage of RPE while [P] is a disadvantage
 (d) [P] & [Q] are advantages of RPE while [R] is a disadvantage

Other Subjects

145. Identify the group of enzymes that utilizes NADP or NAD as coenzymes and catalyses biochemical reactions by the transfer of electrons from one molecule to another

(a) Isomerase (b) Oxidoreductases
(c) Transferases (d) Ligases

146. Glucose is the only source of energy for one of the following. Identify that

(a) Cardiac cells (b) Nephrons
(c) RBCs (d) Thrombocytes

147. Penicillin ring system is derived from two of the following amino acids

[P] Alanine and methionine [Q] Cysteine and valine
[R] Glycine and cysteine [S] Methionine and uridine

Choose the correct pair

(a) [P] (b) [Q] (c) [R] (d) [S]

148. Study the following four statements

[P] Gram negative bacteria produce potent pyrogenic substances called endotoxins

[Q] Ethylene oxide mixed with carbon dioxide or fluorinated hydrocarbons is used in gas sterilization [R] D value is the time (for heat or chemical exposure) or the dose (for radiation exposure) required for the microbial population to decline by one logarithmic unit

[S] Spores of Geobacillus stearothermophilus

(*Bacillus stearothermophilus*) are used for sterility testing of moist heat sterilization process

Choose the correct answer

(a) [P], [Q] & [R] are correct but [S] is incorrect
(b) [Q], [R] & [S] are correct but [P] is incorrect
(c) [R], [S] & [P] are correct but [Q] is incorrect
(d) [P], [Q], [R] & [S] all are correct

149. Which one of the following amino acids is the most effective contributor of protein buffer

(a) Alanine (b) Glycine
(c) Histidine (d) Arginine

150. Study the wing statements about Gram staining

[P] Gram positive bacteria are stained deep violet and Gram negative bacteria are stained red

[Q] Gram positive bacteria are stained red and Gram negative bacteria are stained deep violet

[R] The sequence of addition of staining reagents is crystal violet, iodine solution alcohol and safranin

[S] In Gram positive bacteria the purple color developed during staining is lost during alcohol treatment. The cells later take up the safranin and stain red

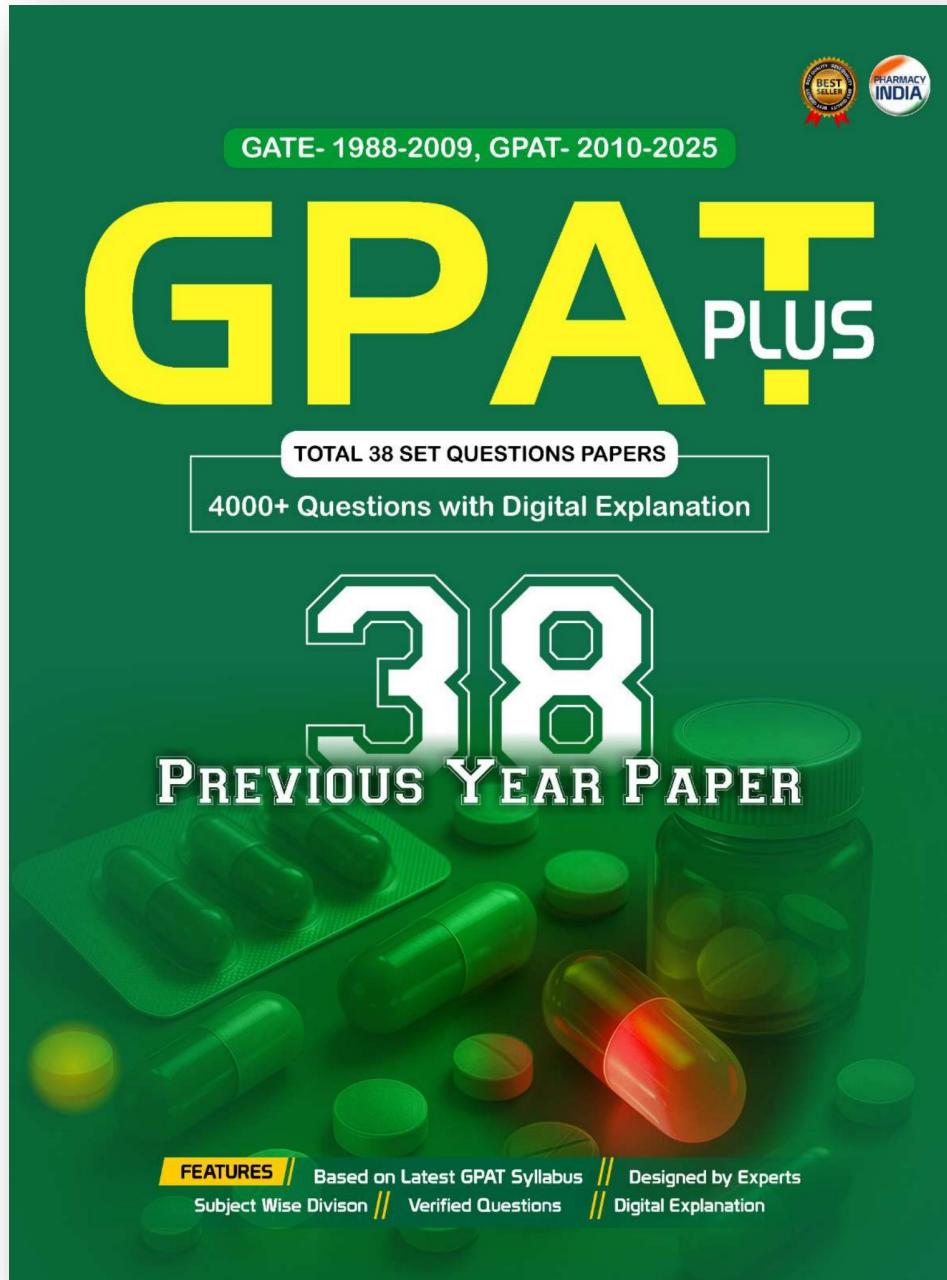
Choose the correct combination of statements

(a) [P], [Q], [R] & [S] all are false
(b) [P] & [Q] are false and [R] & [S] are true
(c) [P] & [S] are false and [Q] & [R] are true
(d) [P] & [R] are false and [Q] & [S] are true

Answer Key

1 - a	2 - b	3 - c	4 - c	5 - c	6 - d	7 - c	8 - a	9 - c	10 - c
11 - b	12 - a	13 - b	14 - c	15 - c	16 - d	17 - c	18 - d	19 - a	20 - d
21 - a	22 - d	23 - b	24 - b	25 - b	26 - c	27 - a	28 - a	29 - d	30 - d
31 - b	32 - a	33 - d	34 - a	35 - b	36 - b	37 - c	38 - b	39 - a	40 - a
41 - c	42 - b	43 - d	44 - b	45 - a	46 - b	47 - b	48 - c	49 - a	50 - c
51 - b	52 - c	53 - a	54 - c	55 - d	56 - d	57 - c	58 - b	59 - d	60 - d
61 - d	62 - a	63 - d	64 - a	65 - d	66 - b	67 - c	68 - d	69 - d	70 - a
71 - c	72 - c	73 - d	74 - c	75 - b	76 - c	77 - a	78 - b	79 - a	80 - a
81 - a	82 - c	83 - d	84 - d	85 - d	86 - d	87 - c	88 - b	89 - b	90 - a
91 - c	92 - a	93 - a	94 - b	95 - a	96 - a	97 - b	98 - b	99 - b	100 - a
101 - d	102 - d	103 - c	104 - d	105 - c	106 - c	107 - d	108 - c	109 - d	110 - a
111 - d	112 - c	113 - a	114 - b	115 - b	116 - b	117 - b	118 - c	119 - a	120 - b
121 - a	122 - c	123 - d	124 - d	125 - b	126 - b	127 - a	128 - a	129 - c	130 - a
131 - d	132 - c	133 - b	134 - d	135 - a	136 - d	137 - c	138 - b	139 - d	140 - a
141 - a	142 - a	143 - c	144 - d	145 - b	146 - c	147 - b	148 - d	149 - c	150 - c

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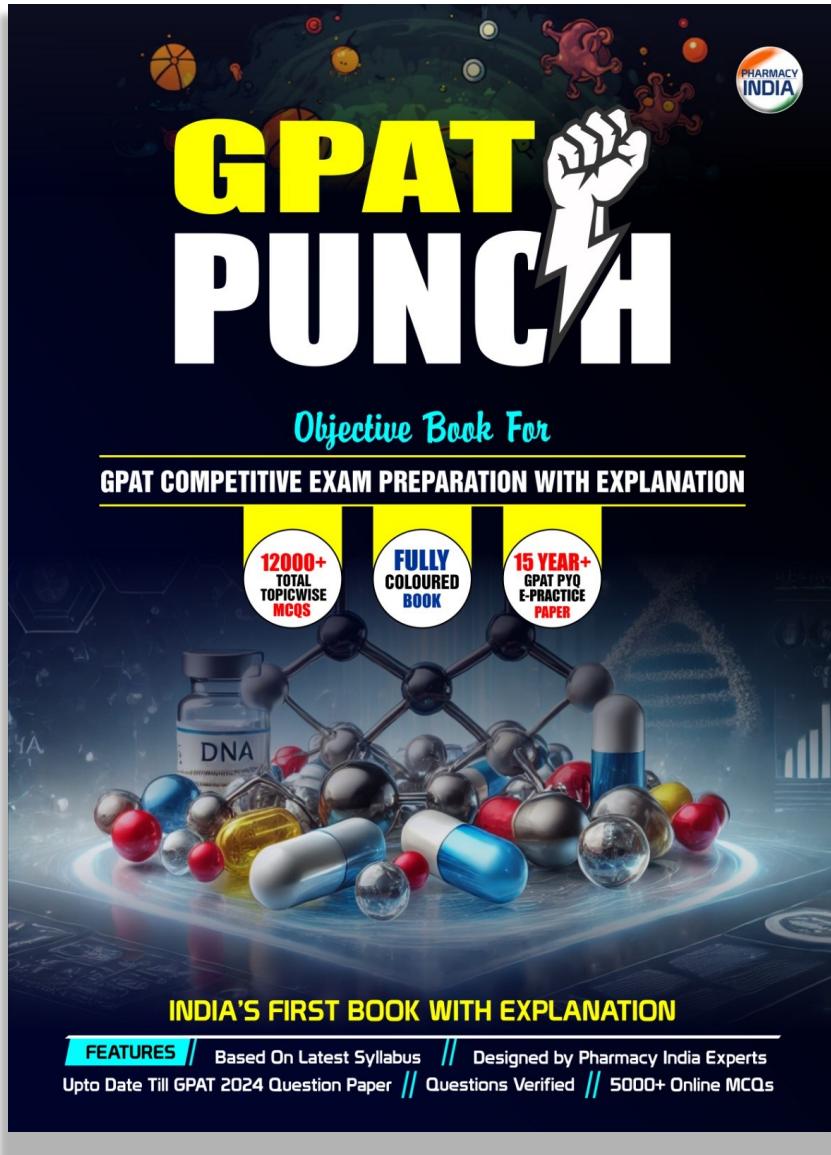
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