

**QUESTIONS : 75**  
**DURATION : 90 MINS.**

**DIRECTIONS : QUESTION NO. 1 TO 75 CARRY 2 MARKS EACH**

1.  $3\beta, 14\beta, 16\beta$ -trihydroxycardenolide is  
 (A) Gitoxigenin (B) Digitoxigenin  
 (C) Digoxigenin (D) Ouabagenin
2. The drug used as nerve tonic  
 (A) Brahmi (B) Mordica  
 (C) Ginseng (D) Senega
3. The hybridization of each carbon atom in  

$$\text{H}_3\text{C} - \text{C} \equiv \text{CH}$$
 (A)  $sp^3 - sp^2 - sp$  (B)  $sp^2 - sp^2 - sp$   
 (C)  $sp^3 - sp - sp^2$  (D)  $sp^3 - sp - sp$
4. The relationship between specific conductance & resistance is as  
 (A)  $k = 1/R$  (B)  $k = (1/R)(l/A)$   
 (C)  $k = R(1/\rho)$  (D)  $k = 1/R$
5. Which of the following methods of particle size distribution is used for quality control in formulation to study particle growth and dissolution ?  
 (A) Sedimentation method (B) Coulter-counter method  
 (C) Microscopy (D) Sieve analysis
6. Creep testing is not done for which of the following formulations ?  
 (A) Suppositories (B) Suspension  
 (C) Liquid paraffin (D) Blood
7. The key intermediate for the synthesis of Timolol is  
 (A) 3, 4-dichloro-1, 2, 5-thiadiazohdin and morpholine  
 (B) 3, 4-dibromo-1, 2, 5-thiadiazole and piperazine  
 (C) 3, 4-dichloro-1, 2, 5-thiadiazole and piperazine  
 (D) 3,4-dichloro-1,2,5-thiadiazole and morpholine
8. Efficiency of '2-4' heat exchanger is higher than that of '1-2' heat exchanger because the former gives  
 (A) Lower velocity and lower heat transfer coefficient  
 (B) Higher velocity and lower heat transfer coefficient  
 (C) Lower velocity and higher heat transfer coefficient  
 (D) Higher velocity and higher heat transfer coefficient
9. Nylon is rarely used in the manufacture of syringes because it  
 (A) Is too easily broken (B) Cannot be autoclaved  
 (C) May react with acidic drugs (D) Is destroyed by dilute mineral acids
10. Keeping in view the reflex adrenergic surge Nitrates are considered to be better  
 (A) Arterial dilators (B) Venous dilators  
 (C) Aortic dilator (D) Bronchial dilators
11. Bischler – Napieralsky synthesis is used for the following ring formation  
 (A) Indole (B) Quinolone  
 (C) Isoquinoline (D) Quinazoline
12. Thioglycolic acid-like compounds have applications in following type of Cosmetic formulations  
 (A) Depilatory preparations (B) Epilatory preparations  
 (C) Vanishing creams (D) Skin tan preparations

13. Benzodiazepines act preferentially on — and on limbic system.  
 (A) Hindbrain (B) Midbrain  
 (C) Forebrain (D) Medulla oblongata
14. Regarding parasympathetic nerves  
 (A) They play an important role in controlling total peripheral resistance (TPR)  
 (B) Their transmitter has a negative chronotropic effect in the heart  
 (C) Their Transmitter has a negative inotropic effect in the heart  
 (D) Their Transmitter has a positive inotropic effect in the heart
15. During the cardiac cycle  
 (A) The V wave corresponds with isovolumic ventricular contraction  
 (B) The first sound is caused by closure of the semilunar valves  
 (C) The ejection fraction is increased by sympathetic stimulation  
 (D) Arterial systole is responsible for more than half ventricular filling at a heart rate of 70 beats per minute
16. In the proximal convoluted tubule  
 (A) The epithelium is flat and contains few mitochondria  
 (B) Reabsorption of water increases the osmolality of the tubular fluid which enters the loops of henle  
 (C) Bicarbonate reabsorption is coupled to H<sup>+</sup> secretion  
 (D) The  $T_m$  for phosphate reabsorption is increased by the parathormone (PTH)
17. All are true, except,  
 (A) Soft soap give emulsion with a pH in the basic range  
 (B) Hard soap form water-in-oil emulsion  
 (C) Water soluble polymers favor the formation of w/o type emulsion  
 (D) On the HLB system, lower numbers are assigned to lipophilic compounds while higher numbers are assigned to hydrophilic compounds
18. Choose the correct statement  
 (P) In Klunge's sobarbaloin Test Carocao Aloes gives a wine red colour lasting for few hours.  
 (Q) In Klunge's sobarbaloin Test Caoe Aloes gives a faint colouration changing to yellow quickly.  
 (R) In Klunge's sobarbaloin Test Socotrine Aloes gives No colouration  
 (A) P & Q (B) Q & R  
 (C) P & R (D) P, Q & R
19. The order of aromaticity of the following rings are  
 (A) Pyridine > Thiophene > Pyrrole > Furan  
 (B) Furan > Pyrrole > Thiophene > Pyridine  
 (C) Thiophene > Pyrrole > Furan > Pyridine  
 (D) None of these
20. Which of the following pairs is correct ?  
 P - Poiseuille's law 1 - Helium densitometer  
 Q - Deflocculating agent 2 - Fisher subsiever  
 R - BET equation 3 - Andreason pipette  
 S - Pressure detector 4 - Quantasorb  
 (A) P - 2, Q - 3, R - 4, S - 1 (B) P - 3, Q - 1, R - 2, S - 4  
 (C) P - 1, Q - 2, R - 3 S - 4 (D) P - 4, Q - 2, R - 1, S - 3
21. Thalleoquin test contain reagents  
 (A) Bromine water + Few drops of ammonia  
 (B) Potassium permanganate + Few drops of ammonia  
 (C) Bromine water + Nitric acid  
 (D) Bromine water + Sodium hydroxide

22. Which of the following statement is TRUE about 'G-proteins' ?  
 (A) Diffuse into the cell cytoplasm when activated  
 (B) Bind to GDP when activated by agonist-receptor complexes  
 (C) Consist of five main subunits  
 (D) May activate membrane-bound enzymes, leading to second messenger production
23. Which of the following statement is FALSE about Membrane-Bound Receptors ?  
 (A) Bind to agonists according to the law of mass action  
 (B) May be structurally integrated into ligand-gated ion channels  
 (C) For acetylcholine may be classified as muscarinic or nicotinic  
 (D) Consist largely of carbohydrate
24. Which of the following statement is FALSE with regard to the left cerebral hemisphere ?  
 (A) Receives most modalities of sensory information from the left side of the body  
 (B) Contains the main areas for the understanding and production of speech in most individuals  
 (C) Is the dominant cerebral hemisphere in most individuals  
 (D) Is connected to the right by the corpus callosum
25. Which of the following statement is FALSE with regard to Thyroid Hormones ?  
 (A) Are lipophilic  
 (B) Are manufactured from iodinated tyramine molecules  
 (C) Are present in the blood mainly in the T4 form  
 (D) Are converted from T4 to active T3 by microsomal deiodinases in peripheral tissues
26. If 30 mg of an ingredient was dissolved in 1.5 ml of solvent, what would be the strength of the resulting solution expressed as mg/ml?  
 (A) 3 mg/ml  
 (B) 15 mg/ml  
 (C) 20 mg/ml  
 (D) 30 mg/ml
27. A tablet placed between the gums and the inner lining of the cheek is dissolved by the  
 (A) Conjunctival mucosa  
 (B) Sublingual mucosa  
 (C) Vaginal mucosa  
 (D) Buccal mucosa
28. Which property is responsible for higher friability value of a conventional compress tablet?  
 (A) Whiskering  
 (B) Mottling  
 (C) Hazing  
 (D) None of these
29. Generally effervescent tablet contains  
 (A) Citric acid or tartaric acid and sodium bicarbonate  
 (B) Carbonic acid and sodium hydroxide  
 (C) Acetic acid and potassium tartarate  
 (D) None of these
30. Stereo configuration of Quinine is  
 (A) 8R, 9S  
 (B) 8S, 9R  
 (C) 8R, 9R  
 (D) 8S, 9S
31. Intradermal test for sensitivity should be performed by injecting the following quantity of sodium benzyl penicillin  
 (A) 10U  
 (B) 100U  
 (C) 1000U  
 (D) 5000U
32. No surgical operation should be performed during the following stage of anaesthesia  
 (A) Stage I  
 (B) Stage II  
 (C) Stage III  
 (D) Stage IV
33. Excited singlet electron state means  
 (A) Paired electron with same spin  
 (B) Paired electron with opposite spin

- (C) Unpaired electrons with same spin  
(D) Unpaired electrons with opposite spin
34. Tyndal effect is nothing but the phenomena of  
(A) Absorption of radiation (B) Reflection of light  
(C) Scattering of light (D) None of these
35. The intensity of absorption increases is refers to  
(A) Hyperchromic shift (B) Hypsochromic shift  
(C) Bathochromic shift (D) Hypochromic shift
36. Pseudoephedrine is a  
(A) Erythro isomer (B) Threo isomer  
(C) Meso isomer (D) Racemic mixture
37. Caffeine on oxidation with  $\text{KClO}_3 / \text{HCl}$  gives  
(A) Trimethylalloxan and urea (B) Methyl alloxan and dimethyl urea  
(C) Diemthylalloxan and methyl urea (D) None of these
38. BROWNE's tubes are most commonly used chemical indicator for  
(A) Ethylene oxide sterilization (B) Radiation sterilization  
(C) Heat process sterilization (D) Filtration sterilization
39. Which one of these not applied for microencapsulation process?  
(A) Air suspension (B) Coacervation-phase separation  
(C) Polymerisation (D) Compression coating
40. Trimethoprim is combined with sulfamethoxazole in a ratio of 1:5 to yield a steady state plasma concentration ratio of  
(A) 1:20 (B) 1:5  
(C) 1:10 (D) 5:1
41. The antimicrobial activity of penicillin is due to  
(A) Thiazolidine ring (B)  $\beta$ -lactum ring  
(C) 6-APA (D) None of these
42. Which of the following drug inhibit viral reverse transcriptase?  
(A) Zidovudine (B) Vidarabine  
(C) Rimantadine (D) Gancyclovir
43. Reserpine on hydrolysis gives  
(A) Reserpic acid + Methyl alcohol + Trimethoxy cinnamic acid  
(B) Reserpic acid + Acetic acid + Trimethoxy benzaldehyde  
(C) Reserpic acid + Methyl alcohol + Trimethoxy benzoic acid  
(D) Reserpic acid + Methyl alcohol + Trimethoxy cinnamaldehyde
44. Silybusmarianum, belonging to the family Asteraceae is used in the treatment of  
(A) Liver disorder (B) Capillary bleeding  
(C) Capillary fragility (D) Vascular disorder
45. Sulfasalazine is a prodrug that is activated in the intestine by bacterial enzyme is  
(A) Azoreductase (B) Choline esterase  
(C) Amylase (D) Glucoronyl transferase
46. Choose the correct statement  
P. VENLAFAXINE is a serotonin and noradrenaline reuptake inhibitor.  
Q. Buspirone is Inverse agonist of 5HT<sub>1A</sub> Receptor.  
R. AMANTADINE treat parkinsonism via its anticholinergic action.  
S. Clorgyline is reversible inhibitor of MAO-A

- (A) P and S are correct  
 (C) P, Q and R are correct
- (B) Q and S are correct  
 (D) P, Q, R and S are correct

47. Choose the correct drug- drug interaction

- P. Beta blocker + NSAID = decrease in antihypertensive action of beta blocker.  
 Q. NSAID + Alcohol = increase the risk of GIT bleeding.  
 R. NSAID + Sulphonyl urea drug (anti diabetic drug) = Decrease the risk of hypoglycaemia.  
 S. NSAID + Corticosteroid = Decrease the risk of GIT bleeding.
- (A) P and R correct  
 (C) R and S are correct
- (B) P and Q are correct  
 (D) Q and S are correct

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

Assertion : Dew point Temperature is a temperature at which a given unsaturated air-vapor mixture becomes saturated

Reason: Dry bulb temperature is a Temperature measured by a (dry) thermometer immersed in vapor-gas mixture

- (A) Both [A] and [R] are true  
 (C) [A] is false and [R] is true
- (B) Both [A] and [R] are false  
 (D) [A] is true and [R] is false

49. Choose the correct statement about Lobeline.

- P. Lobeline is a natural alkaloid found in "Indian tobacco" (*Lobelia inflata*).  
 Q. Lobeline has been used as a smoking cessation aid.  
 R. Lobeline is an antagonist at Mue-opioid receptors.  
 S. Lobeline contain imidazole ring in its structure.

- (A) P and S are correct  
 (C) P, Q and R are correct
- (B) Q and S are correct  
 (D) Only S is correct

50. If mean AUC's (ng.hr/mL) of drug dose 1mg; for tablet; oral solution and IV are 0.90; 0.87 and 101.0 respectively. Calculate the absolute bioavailability of tablet form

- (A) 0.89%  
 (C) 0.82%
- (B) 0.88%  
 (D) 0.85%

51. Adverse effect of clofazimine is/are

- (A) Reddish discoloration of skin  
 (C) Acne eruptions
- (B) Dryness of skin  
 (D) All of these

52. The absolute stereochemistry of Penicillin is

- (A) 3S:5R:6R  
 (C) 3R:5R:6R
- (B) 3S:5R:66  
 (D) 3S:5S:6R

53. Diphenhydramine is

- (A) Ethylene diamine  
 (C) Aminoalkyl ether
- (B) Dibenzocycloheptane  
 (D) None of these

54. Keller Killiani test is performed for the identification of

- (A) Anthraquinone glycoside  
 (C) Saponine glycoside
- (B) Cardiac glycoside  
 (D) Polyphenol

55. Amrinone is a new clinically approved drug that is used to treat

- (A) Essential hypertension  
 (C) Angina pectoris
- (B) Congestive heart failure  
 (D) Cardiac arrhythmias

56. Cardiotonic action of digitalis is due to

- (A) Na<sup>+</sup>K<sup>+</sup> pump blockade  
 (C) Na<sup>+</sup>Ca<sup>+</sup> pump blockade
- (B) H<sup>+</sup>K<sup>+</sup> pump blockade  
 (D) Ca<sup>+</sup>K<sup>+</sup> pump blockade

57. Following statement about carbidopa are true, except,  
 (A) Agonist at dopaminergic receptor (B) Reduce adverse effect of L Dopa  
 (C) Reduce dose of L Dopa (D) Reduce peripheral decarboxylation
58. Coarse powders are those which  
 (A) Pass through no 20 sieve and not more than 40% through no 60 sieve  
 (B) Pass through no 15 sieve and not more than 50% through no 60 sieve  
 (C) Pass through no 20 sieve and not more than 60% through no 60 sieve  
 (D) Pass through no 18 sieve and not more than 40% through no 60 sieve
59. Which of the following statements are true ?  
 (A) HEPA filters can effectively remove particles of 0.3 micromts or more  
 (B) Class 100 room has not more than 100 particles per cubic ft of 0.5 micromts or larger in size  
 (C) In laminar air flow the air velocity employed is  $100 \pm 20$ ft/min  
 (D) All of these
60. Read the following statements about lyophilization  
 P — it cannot be done in final containers      Q — it needs special method of reconstitution  
 R — it causes protein denaturation of tissues      S — it is suitable for drying thermolabile drugs  
 Choose the correct combination of statements  
 (A) P is true, others are false (B) Q is true, others are false  
 (C) R is true, others are false (D) S is true, others are false
61. When the results of a drug degradation study are plotted on a graph, a plot of the logarithm of the amount of API remaining against time gives a straight line. Which one of the following is true?  
 (A) The units of the rate constant (k) are concentration<sup>-1</sup> time<sup>-1</sup>  
 (B) The reaction is zero-order  
 (C) The half - life may be represented by  $t_{0.5} = 0.693/k$   
 (D) The half-life is directly related to the initial concentration of the reactant
62. Which one of the following represents the relationship between rate constant, k, and absolute temperature, T, as predicted by the Arrhenius equation ?  
 (A) A plot of log k against 1/T will be linear  
 (B) A plot of log k against T will be linear  
 (C) A plot of k against T is linear with a negative slope  
 (D) A plot of k against T is linear with a positive slope
63. What is the chemical structure of calcium (+) - D - gluconate ?  
 (A) A polyhydroxy complex of D-glucose and calcium salts  
 (B) The product of neutralization of levorotatory gluconic acid with calcium carbonate  
 (C) The calcium salt of dextrorotatory D - gluconic acid  
 (D) The calcium salt of glucuronic acid
64. Which statements apply to potentiometric titrations ?  
 (A) The electromotive force of the cell is measured against the volume of titrant  
 (B) The potential of the indicator electrode is measured directly  
 (C) The use of a supporting electrolyte is beneficial to increase the conductance in the case of non-aqueous and very dilute aqueous solutions  
 (D) The concentration of the substance being determined is computed with the use of a calibration curve
65. Which of the following compounds are enantiomers ?  
 (A) E - cinnamic acid - Z - cinnamic acid  
 (B) R - proline - S - proline  
 (C) L - tartaric acid - meso - tartaric acid  
 (D) cis - cyclohexane - 1, 2-diol – trans - cyclohexane - 1, 2 - diol

66. Which statement is false for morphine ?  
 (A) It contains a secondary nitrogen  
 (B) It contains an acidic phenol functional group  
 (C) It is an amphoteric molecule  
 (D) It contains several asymmetric carbon atoms

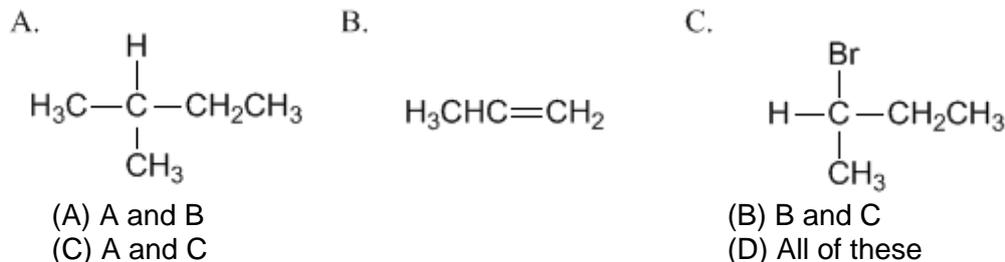
67. Pair the vitamins and the international names

<u>Vitamin</u>	<u>International name</u>
I. Vitamin B2	O. Retinol
II. Vitamin A1	P. Cholecalciferol
III. Vitamin B1	Q. Menadion
IV. Vitamin K3	R. Thiamine
V. Vitamin D3	S. Pyridoxine
	T. Riboflavine
	U. Ergocalciferol

(A) I – P, II – R, III – T, IV – O, V – Q  
 (B) I – T, II – O, III – R, IV – Q, V – P  
 (C) I – P, II – O, III – R, IV – U, V – Q  
 (D) I – U, II – O, III – R, IV – Q, V – P

68. Why do covalent compounds usually have lower melting and boiling points than ionic compounds ?  
 (A) No bonds need to be broken to melt a covalent compound  
 (B) The intermolecular forces in ionic compounds are weaker than those in covalent compounds  
 (C) Covalent molecules have higher electron affinities than ionic molecules  
 (D) None of the above is correct

69. Which compounds give four signals in their <sup>1</sup>H NMR spectra ?



70. Synonym
- |                                 |                                     |
|---------------------------------|-------------------------------------|
| (a) Deadly night shade leaf     | i) <i>Atropabelladona</i>           |
| (b) Thorn apple leaf            | ii) <i>Chondrodendrontomentosum</i> |
| (c) Meadow saffron              | iii) <i>Cinchona calisaya</i>       |
| (d) South American arrow poison | iv) <i>Daturastramonium</i>         |
| (e) Jesuit's bark               | v) <i>Campototheca acuminata</i>    |
| (f) Cancer tree                 | vi) <i>Colchicum autumnale</i>      |
- (A) a-ii, b-v, c-iii, d-i, e-iv, f-vi  
 (B) a-iv, b-i, c-v, d-vi, e-ii, f-v  
 (C) a-i, b-iv, c-vi, d-ii, e-iii, f-v  
 (D) a-iv, b-v, c-ii, d-iii, e-i, f-vi

71. Class
- |  |               |
|--|---------------|
| (a) Diacetyl morphine  | i) Codeine    |
| (b) Monoacidic laevorotatory phenolic alkaloid contains an alcoholic hydroxyl gr at C-6 position | ii) Narcotine |
| (c) Benzyl isoquinoline alkaloid is laevorotatory having cough depressant action                 | iii) Morphine |
| (d) Methyl Morphine  | iv) Heroin    |
- (A) a-iv, b-iii, c-ii, d-i  
 (B) a-i, b-iv, c-iii, d-ii  
 (C) a-iv, b-iii, c-i, d-i  
 (D) a-ii, b-iii, c-iv, d-i

72. Among the all species ——— has scored more important as it does not contain ———, but % of Thebaine is also high

- (A) Papaversomniferum & codeine  
 (B) Papaversomniferum & narcotine  
 (C) Papaverbacteatum & morphine  
 (D) Papaverintermedia & meconic acid

73. Adulterants for clove

- (a) Mother clove  
 (b) Blown cloves  
 (c) Clove stalks  
 (d) Exhausted clove

Characteristics

- i) Expanded flowers of clove trees.  
 ii) Contain only 5% of oil.  
 iii) Oil is removed from clove.  
 iv) Dark brown, ovate and ripened fruits of clove

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

- (B) a-iv, b- i, c- ii, d-iii  
 (D) a-I, b- ii, c- iv, d-iii

74. Match the cell type with the receptor found on that cell

Cell type	Receptor
p. Antigen presenting cell	i. CD8 <sup>+</sup>
q. B cell	ii. MHC
r. Helper T cell	iii. BCR
s. Cytotoxic T cell	iv. CD4 <sup>+</sup>

- (A) p-i, q-iii, r-ii, s-iv  
 (C) p-iii, q-ii, r-iv, s-I

- (B) p-ii, q-iii, r-iv, s-i  
 (D) p-iv, q-ii, r-iii, s-i

75. A clinical lab technician orders a kit designed to detect Hantavirus antibodies in patient sera using indirect ELISA, but when it arrives there are no instructions, just bottles labelled “reagent A”, “reagent B” and so forth. Several patients have been potentially exposed to Hantavirus, and he needs to use this kit to determine if the patients have actually been exposed. Which of the following would be included in the kit required to run this assay?

- (i) Positive control soluble antigen  
 (ii) Primary antibody to Hanta virus  
 (iii) Substrate  
 (iv) Enzyme-labelled secondary antibody to primary  
 (v) Enzyme-labelled secondary antibody to virus  
 (vi) Antigen-coated plates

- (A) i, iii, iv, vi  
 (C) ii, iv, v, vi

- (B) i, iii, iv, v  
 (D) iii, iv, v, vii