"Your Success is Our Motto"

MYBO – A Voluntary Organization

Run ***by the Pharmacists*** for the welfare of students and poor/orphans/disabled/tribes in the society, with various activities.

www.mybogroup.com

Successfully completed projects of MYBO include:

1) MYBO Support to Orphans, Old age people and Lepers.
2) MYBO Kids project in slum area, Visakhapatnam.
3) MYBO Eye Donation Campaign with Mohsin Eye Bank.
4) MYBO Regional Level Pharma Quiz 2011 covering 5 districts & 40 colleges.
5) Published pharmacy books useful to students. Received ISBN too.
6) MYBO SMS Course serving more than 300 students.
7) M.Pharm Admission Guidance to B.Pharm Graduates.
8) MYBO Scholarships to 13 poor students covering 3 districts.
9) MYBO Documentary on a poor and merit student covering his struggles for education: to help him and to motivate the remaining students.
10) MYBO TV (online): Interviewed big shots in Pharmacy.

Running Projects of MYBO:

11) MYBO Creations shooting of Ad on Jeevanadhara Generic drugs - A State Govt. Project.
12) Web designing of two websites Jeevanadhara and AIDCOC.
13) MYBO State Level Mock Test for GPAT 2012.

Future Projects of MYBO:

14) MYBO Tribal Education Camp in Dumbriguda, Araku Valley.
15) MYBO Medical Camps in Slum areas.
16) MYBO Charitable Trust.
17) MYBO Scholarships to POOR PHARMACY STUDENTS covering two more districts (Earlier covered three districts).
18) MYBO SHORT FILM AWARDS and many more activities…

MYBO GROUP Activities:

MYBO Publishers, MYBO Scholarships, MYBO Health Camps, MYBO Services, MYBO Innovations, MYBO @ Any Topic, MYBO Creations, MYBO TV (online), MYBO Web Designing, MYBO Workshops, MYBO Knowledge Centre and MYBO Avenues.

Want to join your hands, Drop a mail to: mybogroup@gmail.com

1. If $t_{10\%}$ is the time required for 10% of the drug to degrade, then which of the below relations are **CORRECT**

[P] $t_{10\%} = 0.104/ k$ [Q] $t_{10\%} = 0.152\ t_{1/2}$

[R] $t_{10\%} = (2.303/k) \log 90/100$ [S] $t_{10\%} = 0.104\ t_{1/2}$

(A) P & Q (B) P & R (C) Q & R (D) R & S

Answer: A

Explanation:

As the order of reaction was not mentioned it will be considered default as following First order kinetics. The general equation that suits first order kinetics is $\log C = \log C_o - kt/2.303$.

Where, C = amount of drug remained at time, t.

C_o =initial drug concentration,

k = first order rate constant.

Given, $t_{10\%}$ is the time required for 10% of the drug to degrade, that means 90% drug is remained which can be equalized to C. We can consider C_o (initial drug concentration) as 100%.

Therefore, $\log C = \log C_o - kt/ 2.303$

→ $\log 90 = \log 100 - kt/ 2.303$

→ $kt/2.303 = \log 100 - \log 90$

→ $kt/2.303 = \log 100/90$ [since, $\log A - \log B = \log A/B$]

→ $t_{10\%} = (2.303/ k) \log 100/90 =$ **0.104/ k** [we know, $t_{1/2} = 0.693/k$]

→ $t_{10\%} = 0.104/ (0.693/t_{1/2}) = (0.104/ 0.693) \times t_{1/2} =$ **$0.152\ t_{1/2}$**

[Hints: Even though we don't know the value of log 100/90, it gives us a clue that, option 'R' is not correct as it is given as log 90/100. So, in the given options, A,B,C,D it is clear that 'R' is not present in 'A', hence we can select option 'A' as CORRECT answer.

In other way, if we want to know which one is false out of P, Q and S, use simple logic that $t_{10\%}$ is inversely proportional to 'k' hence option 'P' is true. Out of Q and S, it is clear that 'P' is similar to 'Q' as we know $t_{1/2} = 0.693/k$ **]**

Hence, option A is the CORRECT answer.

2. Organism that is present in large intestine of humans and participates in the synthesis of vitamin-K & folic acid

(A) Clostridium tetani (B) Clostridium perfringens

(C) Staphylococcus aureus (D) Proteus vulgaris

Answer: B

Explanation:

The large intestine is heavily colonized by certain types of bacteria, which synthesize vitamin K and folic acid. They include Escherichia coli, Enterobacter aerogenes, Streptococcus faecalis and Clostridium perfringens. These microbes are commensals, i.e. normally harmless, in humans. However they may become pathogenic if transferred to another part of the body.

Hence, option B is the CORRECT answer.

C. tetani is gram positive anaerobic bacteria found as spores in soil or in the gastrointestinal tract of animals. C. tetani produces a potent biological toxin, tetanospasmin. Its toxin is the

causative agent of disease called tetanus, characterized by painful muscular spasms that can lead to respiratory failure and even upto death. Hence, option A is WRONG.

Staphylococcus aureus is a facultative anaerobic Gram-positive coccal bacterium. It is mostly found in normal skin flora as well as in nasal passages. The carotenoid pigment staphyloxanthin is responsible for the characteristic golden colour of S. aureus colonies. Hence, option C is WRONG.

Proteus vulgaris is a rod-shaped, Gram negative bacterium. It is found in the intestinal tracts of humans and animals. It can also be found in soil, water and fecal matter. It is grouped with the enterobacteriaceae and is an opportunistic pathogen of humans. It is known to cause urinary tract infections and wound infections. Hence, option D is WRONG.

3. Which of the following statements are **TRUE** for dantrolene

[P] Curare alkaloid [Q] Directly acting skeletal muscle relaxant

[R] Life saving drug in malignant hyperthermia [S] Peripherally acting skeletal muscle relaxant

(A) P & Q (B) P & R (C) Q & R (D) R & S

Answer: C

Explanation:

Dantrolene is a directly acting skeletal muscle relaxant. Dantrolene acts by dissociating excitation-contraction coupling in muscle cells, probably by action on the ryanodine receptor. Dantrolene is the only specific drug preferred in the treatment for malignant hyperthermia, a rare, life-threatening disorder triggered by general anesthesia. It is also used in the management of neuroleptic malignant syndrome and muscle spasticity. Hence, option C is CORRECT answer.

4. Agent that acts as expectorant in small doses and as emetic in higher doses

(A) Lobelia (B) Ipecacuanha (C) Areca (D) Pyridoxine HCl

Answer: B

Explanation:

Ipecacuanha or Ipecac consists of dried roots or rhizomes of Cephaelis ipecucuanha or Cephaelis acuminate coming under the family Rubiaceae. Ipecac acts as expectorant in small doses and as emetic in higher doses in poisoning conditions. It is available as syrup. Ipecacuanha along with opium is long back available as Dover's powder used for cold and fever. Hence, option B is CORRECT answer.

5. Hausner Ratio =

(A) Tapped density / Fluff density (B) Fluff density / Tapped density

(C) Tapped volume x Fluff volume (D) Bulk density / True density

Answer: A

Explanation:

Like Carr's index and angle of repose, Hausner Ratio is one of the derived properties of powder and talks about the flow characteristic of powders or granules. Hausner ratio is calculated using the formula tapped density/ fluff density. In other way it can be calculated by using the formula: Fluff volume/ Tapped volume.

Hausner ratio <1.25 indicates good flow and value >1.25 indicates poor flow.
Hence, option A is CORRECT answer.

6. Spraying reagent used for TLC examination of Vitamin A is

(A) Bromocresol green (B) Acetic anhydride
(C) Dithizone (D) Antimony (III) chloride

Answer: D

Explanation:

Antimony (III) chloride is used in Thin Layer Chromatography (TLC) for detection of flavonoids, vitamins A & D, carotenoids, steroids, sapogenins, steroid glycosides and terpenes. Hence, option D is CORRECT answer.

Bromocresol green is used for detection of organic acids in TLC.

Acetic anhydride is not preferred in TLC examination where glacial acetic acid and trichloroacetic are used in various examinations of TLC.

Dithizone is used for detection of heavy metal ions in TLC.

7. An example of chromophore

(A) $-NH_2$ (B) – OH (C) $-NO_2$ (D) $-CH_3$

Answer: C

Explanation:

A chromophore is a covalently unsaturated part of a molecule responsible for electronic absorption and responsible for its color. The chromophore is a region in the molecule where the energy difference between two different molecular orbitals falls within the range of the visible spectrum. Examples are – C=C –, – C=O –, $-NO_2$. A compound containing chromophore is called as chromogen. Hence, option C is CORRECT answer.

Auxochromes are generally saturated moieties with non-bonded electrons when attached with a chromophore deepens the color of chromophore but cannot impart color by themselves. Auxochromes alters the wavelength as well as the intensity of the absorption. They are either acidic or basic moieties. Examples are $-NH_2$, – OH, $-CH_3$, – COOH etc. So, remaining three options in the question are auxochromes.

8. The vitamin which reverse the therapeutic effect of Levodopa, by increasing decarboxylase activity

(A) Niacin (B) Ascorbic acid (C) Pyridoxine (D) Thiamine

Answer: C

Explanation:

L-DOPA (Levo-3,4-dihydroxyphenylalanine) is a drug used in the treatment of parkinson's disease and dopamine responsive dystonia. Levo DOPA crosses the protective BBB (blood brain barrier), whereas dopamine itself cannot. Once L-DOPA has entered the central nervous system, it is converted into dopamine by the enzyme aromatic L- amino acid decarboxylase, also known as DOPA decarboxylase (DDC). Vitamin B_6 (pyridoxine) is a required cofactor in this reaction, and hence generally be administered along with L-DOPA. All this is supposed to happen in central nervous system but, L-DOPA is also converted into dopamine within the peripheral

nervous system which is undesired. To bypass the peripheral conversion of L-DOPA into dopamine, it is standard clinical practice to co-administer a peripheral DOPA decarboxylase inhibitor (DDCI) such as carbidopa or with a benserazide, to prevent the peripheral synthesis of dopamine from L-DOPA. Co-administration of pyridoxine without a DDCI accelerates the peripheral decarboxylation of L-DOPA to such an extent that it negates the effects of L-DOPA administration. Hence, option C is CORRECT answer.

9. Dipeptidyl peptidase-4 inhibitor is

(A) Exenatide (B) Repaglinide (C) Sitagliptin (D) Rosiglitazone

Answer: C

Explanation:

Sitagliptin is an oral anti-hyperglycemic agent that belongs to the class of dipeptidyl peptidase-4 (DPP-4) inhibitors.

Anti-diabetic or anti-hyperglycemic agent's classification:

Insulin

Biguanides: Metformin, Phenformin

Thiazolidinediones: Rosiglitazone, Pioglitazone

Sulfonylureas: First-generation agents: Tolbutamide, Acetohexamide, Chlorpropamide

Sulfonylureas: Second generation: Glipizide, Glibenclamide, Gliclazide, Glimepiride

Meglitinides: Repaglinide, Nateglinide

Alpha glucosidase inhibitors: Miglitol, Acarbose

Glucagon-like peptide analogs and agonists: Exenatide, Liraglutide

Dipeptidyl Peptidase-4 Inhibitors: Sitagliptin, Vildagliptin, Saxagliptin, Linagliptin

Amylin analogue: Pramlintide

Hence, option C is CORRECT answer.

10. Camptothecin, chemically

(A) Achiral, conjugated, amine containing pentacyclic lactones

(B) Chiral, conjugated, amine containing pentacyclic lactones

(C) Achiral, conjugated, amine containing hexacyclic lactones

(D) Chiral, conjugated, amine containing hexacyclic lactones

Answer: B

Explanation:

Camptothecin is a cytotoxic quinoline alkaloid which inhibits the DNA enzyme topoisomerase-I (topo I). Two camptothecin analogues namely topotecan and irinotecan are used as anti-neoplastic agents. Chemically camptothecin is chiral, conjugated and amine containing pentacyclic lactone. Hence, option B is CORRECT answer.

11. USP Type VII Dissolution Rate Test Apparatus is

(A) Flow through cell type (B) Reciprocating disk type

(C) Rotating cylinder type (D) Paddle over disk type

Answer: B

Explanation:

Dissolution rate testing is one of the important evaluation tests for solid dosage forms as well as some other dosage forms. Dissolution is the process of conversion of solid state of the drug into solution state. The rate at which this process takes place, influence the absorption and thereby bioavailability of a drug.

USP (United States Pharmacopoeia) has discussed 7 types of such Dissolution rate test apparatus with various specifications.

USP Type-I: Basket type

USP Type-II: Paddles type

USP Type-III: Reciprocating cylinder type

USP Type-IV: Flow through cell type

USP Type-V: Paddle over disc type

USP Type-VI: Rotating cylinder type

USP Type-VII: Reciprocating disc type

Unofficial dissolution rate test apparatus include:

- Rotating bottle method
- Diffusion cell method
- Peristalisis method
- Intrinsic dissolution method

12. Which of the below equipment is used for one of the evaluation tests of aerosols

(A) Monsanto tester (B) Tag open cup apparatus

(C) Texture analyzer (D) Electrophotometer

Answer: B

Explanation:

Aerosols are the pressurized dosage forms consists of product concentrate and propellant system, which release the product upon actuation. Quality control tests that are performed for aerosols include propellant type & proportion identification, valve checking, leakage test, spray pattern, foam stability, moisture content, vapor pressure, density, flash point, flame projection, particle size determination, biologic characteristics etc.

Among these Flash point is determined by the use of the standard Tag Open Cup Apparatus. In this test, the aerosol product is chilled to a temperature of about -25^{o} F and transferred to the test apparatus. The temperature is slowly increased and the temperature at which the vapors ignite is considered as flash point. Hence, option B is the CORRECT answer.

Monsanto tester is the apparatus used for determination of hardness of tablets.

Texture analyzer is used for determination of bloom strength of gelatin.

Electrophotometer is the colorimeter used for the light based analysis of substances.

13. Anomocytic stomata, lignified parenchyma, absence of trichomes and presence of rosette crystals of calcium oxalate are of the microscopic features of

(A) Fennel (B) Senna (C) Liquorice (D) Digitalis

Answer: A

Explanation:

All the given microscopic characteristics: Anomocytic stomata, lignified parenchyma, absence of trichomes and presence of rosette crystals of calcium oxalate are related to Fennel. Hence, option A is the CORRECT answer.

Senna consists of rubiaceous/ paracytic stomata, rectangular cells containing cluster crystals of calcium oxalate, unicellular conical thick walled warty trichomes as microscopic characteristics.

Liquorice consists of thick lignified/ partially lignified fibres, presence of starch and calcium oxalate crystals in parenchyma as microscopic characteristics.

Digitalis consists of anomocytic stomata, uniseriate/ glandular trichomes, presence of starch grains and absence of calcium oxalate as microscopic characteristics.

14. List of drugs to be marketed under generic names only:

(A) Schedule J (B) Schedule X (C) Schedule W (D) Schedule V

Answer: C

Explanation:

Schedule W says about list of drugs to be marketed under generic names only. Hence, option C is CORRECT answer.

Schedule J: Names of diseases and ailments (by whatever name described) which a drug may not purpose to prevent or cure by means of claims made on the label of the container of the drug.

Schedule X: Names of psychotropic drugs for which special control measures have been laid down.

Schedule V: Standards for patient and proprietary medicines; the maximum and minimum quantities of vitamins that are permitted to be added in such preparations for oral use.

15. Which seeds are derived from Anatropous ovules

(A) Coriander (B) Dill (C) Cardamom (D) Fennel

Answer: C

Explanation:

Cardamom consists of dried ripe fruits of Elettaria cardamomum, family Zingiberaceae.

Cardamom seeds are derived from Anatropous ovules. Hence, option C is CORRECT answer.

Coriander fruits are the fully dried ripe fruits of the plant Coriandrum sativum, family Umbelliferae.

Dill consists of dried ripe fruits of Anethum graveolens, family Umbelliferae.

Fennel consists of dried ripe fruits of plant Foeniculum vulgare, family Umbelliferae.

16. Oral administration of levonorgesterol alone or in combination with oestrogen, is effective if taken within _____ hours of unprotected intercourse

(A) 24 hours (B) 48 hours (C) 72 hours (D) 96 hours

Answer: C

Explanation:

Oral administration of levonorgesterol alone or in combination with oestrogen, is effective if taken within 72 hours of unprotected intercourse. Hence, option C is CORRECT answer.

17. The following options carry the name of the plant, part used and its family. Find a **WRONG** combination

(A) Urginea indica kunth, bulb, Liliaceae

(B) Cassia angustifolia val, fruit, Leguminosae

(C) Bacopa moniera, root, Apocynaceae

(D) Tribulus terrestris, fruit, Zygophyllaceae

Answer: C

Explanation:

Bacopa monnieri or Brahmi is the herb of Centella asiatica belonging to family Umbelliferae (Apiaceae). Hence, option C is the CORRECT answer as it is a wrong combination.

18. Aprotic solvents have

(A) Acidic properties

(B) Basic properties

(C) No acid or basic properties

(D) Both acidic and basic properties

Answer: C

Explanation:

Aprotic solvents are those which doesn't contain and hence doesn't donate H^+ (proton). Hence, option C is the CORRECT answer.

Polar protic solvents: water, alcohols, carboxylic acids.

Polar aprotic solvents: DMSO, DMF, acetonitrile, acetone.

19. X-ray spectral lines K doublet arises from transition of electrons from

(A) M shell to K shell

(B) L shell to K shell

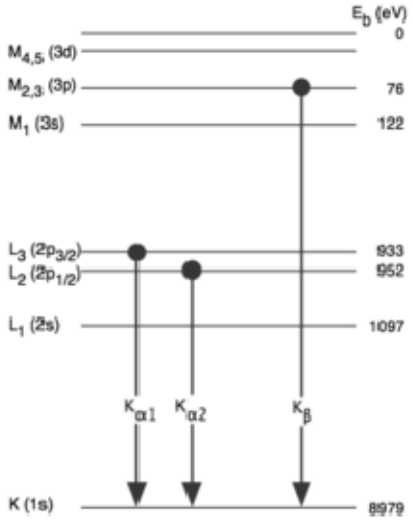
(C) L shell to M shell

(D) M shell to L shell

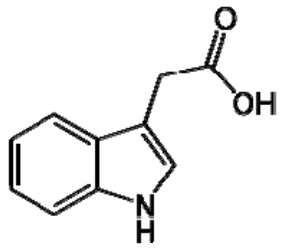
Answer: B

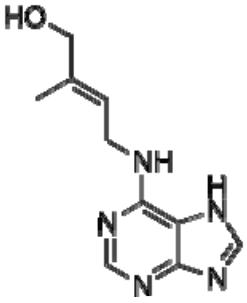
Explanation:

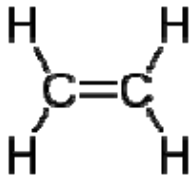
In X-ray spectroscopy, K-alpha emission lines results from transition of electrons from a 2p orbital of the second or "L" shell (with principal quantum number 2) to the innermost "K" shell (principal quantum number 1). Hence, option B is the CORRECT answer.

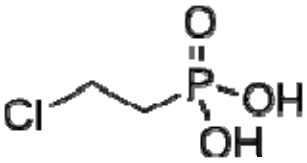


20. Which of the below plant hormone shows effect on cell division and leaf senescence

(A) 

(B) 

(C) 

(D) 

Answer: B

Explanation:

Plant growth regulators are the organic compounds, other than nutrients which affect the morphological structure and/or physiological processes of plants in low concentrations. Phytohormones or Plant hormones are the naturally occurring growth regulators.

Given structures are related to plant hormones namely: Indole acetic acid (IAA), Zeatin, Ethylene and Ethepon.

Zeatin is a natural Cytokinin that shows significant growth regulating activity. Zeatin has effect on cell division and leaf senescence. Hence, option B is the CORRECT answer.

21. Which type of stomata are present in epidermal surface of senna

(A) Anomocytic stomata (B) Diacytic stomata

(C) Paracytic stomata (D) Anisocytic stomata

Answer: C

Explanation:

Senna consists of rubiaceous/ paracytic stomata. Hence, option C is the CORRECT answer.

22. Electrophoresis is a procedure which enables the sorting of molecules based on

(A) size (B) charge (C) Both A & B (D) None of these

Answer: C

Explanation:

Electrophoresis is a procedure which enables the sorting of molecules based on both size and charge of the molecules. Hence, option C is the CORRECT answer.

23. "Base adsorption" phenomenon is used in the formulation of

(A) Suppositories (B) Ointments (C) Capsules (D) Tablets

Answer: C

Explanation:

"Base adsorption" is expressed as the number of grams of liquid base required to produce a capsulatable mixture when mixed with one gram of solid(s). Hence, option C is the CORRECT answer.

24. Carbenoxolone is an oleandane derivative prepared from the constituent of

(A) Liquorice (B) Aloe (C) Strophanthus (D) Thevetia

Answer: A

Explanation:

Carbenoxolone is an oleandane derivative prepared from glycyrrhiza and possesses significant mineralocorticoid activity. Hence, option A is the CORRECT answer.

Aloe consists of Anthraquinone glycosides. Its chief constituents are aloin, barbaloin, isobarbaloin, aloe-emodin and resins.

Strophanthus mainly consists of K-strophanthin.

Thevetia mainly contains cardiac glycosides namely thevetin, peruvoside, neriifolin etc.

25. Which FDA's regulations defined Bioavailability as "the rate and extent to which the active ingredient or active moiety is absorbed from a drug product and becomes available at the site of action"

(A) 21 CFR sect. 505(b)(2) (B) 21 CFR Sect. 320.1(a)

(C) 21 USC sect. 355(b)(2) (D) 21 CFR Sect. 310.6

Answer: B

Explanation:

21 CFR Sect. 320.1(a): Bioavailability means the rate and extent to which the active ingredient or active moiety is absorbed from a drug product and becomes available at the site of action. For drug products that are not intended to be absorbed into the bloodstream, bioavailability may be assessed by measurements intended to reflect the rate and extent to which the active ingredient or active moiety becomes available at the site of action.

Hence, option B is the CORRECT answer.

21 CFR sect. 505(b)(2): The 505(b)(2) application is one of three established types of new drug application (NDA), and it is a pathway to approval that can potentially save pharmaceutical sponsors both time and money.

21 USC sect. 355(b)(2): An application submitted under paragraph (1) for a drug for which the investigations described in clause (A) of such paragraph and relied upon by the applicant for approval of the application were not conducted by or for the applicant and for which the applicant has not obtained a right of reference or use from the person by or for whom the investigations were conducted

21 CFR Sect. 310.6: Applicability of "new drug" or safety or effectiveness findings in drug efficacy study implementation notices and notices of opportunity for hearing to identical, related, and similar drug products.

26. Which of the following statements are **TRUE** for Asafoetida

[P] It belongs to the family of Umbelliferae

[Q] It should be cultivated under Govt. license

[R] It is adulterated with red clay/ wheat flour

[S] Due to its pungent smell, it is not used in cooking

(A) P & R (B) P & Q (C) R & S (D) Q & R

Answer: A

Explanation:

Asafoetida is a oleo-gum resin obtained by incision from the rhizomes and roots of Ferula foetida/rubricaulis, family Umbelliferae. Cultivation of asafetida doesn't need Govt. license. Asafoetida is adulterated with gum Arabica, rosin, gypsum, red clay, chalk and barley or wheat flour. Hence, option A is the CORRECT answer.

27. Order of hygroscopicity of various humectants

(A) Sorbitol 70% > glycerin > PG, PEGs

(B) Sorbitol 70% > PG, PEGs > glycerin

(C) PG, PEGs > glycerin > sorbitol 70%

(D) Glycerin > sorbitol 70% > PG, PEGs

Answer: A

Explanation:

Sorbitol, glycerin, Propylene glycol and Polyethylene glycol are used as humectants in semisolids. Their order of hygroscopicity is as Sorbitol 70% > glycerin > PG, PEGs. Hence, option A is the CORRECT answer.

28. The metabolite of acebutolol is

(A) Atenolol (B) Diacetolol (C) Acetic acid (D) Phenyl acetic acid

Answer: B

Explanation:

Acebutolol is a beta blocker used for the treatment of hypertension and arrhythmias. It is well absorbed from the GI tract, but undergoes substantial first-pass-metabolism resulting in the formation of metabolite of diacetolol. That's why its bioavailability is only 35 – 50%. Hence, option B is the CORRECT answer.

29. A Jablonski diagram is a diagram that illustrates:

(A) The electronic states of a molecule and the transitions between them

(B) The departure of electrolytic solutions from ideality

(C) The mass transfer during extraction process

(D) None

Answer: A

Explanation:

A Jablonski diagram is basically an energy diagram, arranged with energy on a vertical axis. It illustrates the electronic states of a molecule and the transitions between them. The states are arranged vertically by energy and grouped horizontally by spin multiplicity. Nonradiative transitions are indicated by squiggly arrows and radiative transitions by straight arrows. Hence, option A is the CORRECT answer.

30. The following are the manifestations of Endometriosis **EXCEPT**:

(A) Dysmenorrhoea (B) Painful pelvic swelling

(C) Infertility (D) Endometrial carcinoma

Answer: D

Explanation:

The manifestations of Endometriosis include: Painful periods, pelvic or low back pain that may occur at any time during the menstrual cycle, dysmenorrhoea, dysurea (urinary urgency), dyspareunia (pain during or following sexual intercourse), chances of infertility etc. But, endometrial carcinoma is not a manifestation of endometriosis. Hence, option D is the CORRECT answer.

31. Aryl propionic acid derivative of NSAIDs is

(A) Mephenamic acid (B) Ibuprofen

(C) Sulindac (D) Metamizol

Answer: B

Explanation:

Aryl propionic acid derivative of NSAIDs is Ibuprofen. Hence, option B is the CORRECT answer. Other agents under this category include: Naproxen, Ketoprofen, Fenoprofen etc.

Mephenamic acid comes under Fenamic acid derivative of NSAIDs.

Sulindac comes under acetic acid derivative of NSAIDs.

Metamizole sodium or dipyrone is a powerful analgesic and antipyretic. It comes under aryl pyrazole derivative.

32. In microbial death kinetics, the parameter D value denotes

(A) The time or dose required for the microbial population to decline by 10%

(B) The time or dose required for the microbial population to decline by 90%

(C) The time or dose required for the microbial population to decline by 50%

(D) The time or dose required for the microbial population to decline by 30%

Answer: B

Explanation:

In sterilization, D-value is the time or dose required for the microbial population to decline by 90%. That means the time of dose required to kill the microbes and reduce their count by 90% or one decimal. For e.g., if 10,000 microbes are there in a product, the time or dose that is required to reduce that count to a value of 1,000 (90% reduced or one decimal missed) and the same time or dose is required to make this 1,000 microbes reduce to 100 and again the same time or dose to reduce to 10 and from there to 1. In simple way: 10,000 → 1,000 → 100 → 10 → 1. Hence, option B is the CORRECT answer.

33. Clinical trial _____ provide a full description of the identity tests, assay methods, and acceptance specifications, as well as any other appropriate chemical and physical characteristics of the dosage form

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

Answer: C

Explanation:

Clinical Trial Phase-III is aimed at providing full description of identity tests, assay methods and acceptance specifications. In this phase, the experimental study drug or treatment is given to large groups of people (1,000-3,000) to confirm its effectiveness, monitor side effects, compare

it to commonly used treatments, and collect information that will allow the experimental drug or treatment to be used safely. Hence, option C is the CORRECT answer.

In Phase-I trials, researchers test an experimental drug or treatment in a small group of people (20-80) for the first time to evaluate its safety, determine a safe dosage range, and identify side effects.

In Phase II trials, the experimental study drug or treatment is given to a larger group of people (100-300) to see if it is effective and to further evaluate its safety..

In Phase IV trials, post marketing studies delineate additional information including the drug's risks, benefits, and optimal use.

34. Drugs and Cosmetics Rules contains:

[P] 18 parts [Q] 19 parts [R] 23 schedules [S] 24 schedules

Choose the correct combination

(A) P & Q (B) P & R (C) Q & R (D) R & S

Answer: B

Explanation:

Drugs and Cosmetics Rules contain 18 parts and 23 schedules. Hence, option B is the CORRECT answer.

Drugs and Cosmetics Act contain 2 schedules.

35. Cap Locking is a problem associated with

(A) Colorants (B) Flavorants (C) Sweetening agents (D) Drugs

Answer: C

Explanation:

Cap Locking is a problem associated with sweetening agent sucrose used in syrups. Due to regular use of syrup, the sweetener used in the preparation may get crystallized and cause locking of the cap due to evaporation of solvent and subsequent condensation of sucrose at the bottle neck. Small amounts of sorbitol and glycerin are added to prevent cap locking problem. Hence option C is the CORRECT answer.

36. **Assertion [a]:** In Amperometric titrations, Saturated Calomel electrode is used as reference electrode

Reason [r]: Saturated calomel electrode involves the reaction between Ag and AgCl

(A) Both **[a]** and **[r]** are false

(B) Both **[a]** and **[r]** are true, but **[r]** is not correct reason for **[a]**

(C) **[a]** is false and **[r]** is true

(D) Only **[a]** is correct

Answer: D

Explanation:

In Amperometric titrations, Saturated Calomel electrode is used as reference electrode which involves the reaction between elemental mercury and mercury chloride (calomel). Hence, option D is the CORRECT answer. Only assertion is correct, but reason is wrong.

37. Which of the below reagents composition is wrong matching:

(A) Hagers reagent → Picric acid

(B) Wagners reagent → Iodine-potassium iodide solution

(C) Dragendorff's reagent → Potassium bismuth iodide solution

(D) Mayer's reagent → Potassium iodide solution

Answer: D

Explanation:

Mayer's reagent is used for estimation of alkaloids and is a mixture of mercuric chloride (1.36 g) and potassium iodide (5 g) in water (100 ml). Hence, option D is the CORRECT answer.

38. Which of the following cinchona species are commercially valuable?

[P] Cinchona ledgeriana [Q] Cinchona officinalis

[R] Cinchona succirubra [S] Cinchona calisaya

(A) P & Q (B) P & R (C) Q & R (D) P & S

Answer: D

Explanation:

Cinchona is the dried bark of the cultivated trees of Cinchona calisaya/ ledgeriana/ officinalis/ succirubra belonging to family Rubiaceae. Cinchona bark contains about 25 alkaloids, which belong to quinoline group. Important alkaloids are quinine, Quinidine, cinchonine and cinchonidine. Cinchona ledgeriana and Cinchona calisaya are the commercial species of cinchona which produces more percentage of quinine. Hence, option D is the CORRECT answer.

39. Two of the below statements are **TRUE** for Gentamicin, Identify them

[P] Gentamicin chemically belongs to the class of 1,3-Diaminocyclohexane ring

[Q] It is an aminoglycosidic antibiotic used in gram-negative bacterial infections

[R] Route of administration preferred are IM, IV and topical

[S] It is a steroidal antibiotic used in gram positive bacterial infections

(A) P and Q (B) Q and R (C) R and S (D) P and S

Answer: B

Explanation:

Gentamicin is an aminoglycosidic antibiotic used in gram-negative bacterial infections and routes of administration preferred are IM, IV and topical. Hence, option B is the CORRECT answer.

40. Which of the below antifungal agent comes under polyene class of drugs

(A) Amphotericin B (B) Miconazole (C) Fluconazole (D) Terbinafine

Answer: A

Explanation:

Anti-fungal agents are classified as below:

Polyene antifungals: Amphotericin-B, Nystatin, Candicin etc.

Imidazoles: Clotrimazole, Ketoconazole, Miconazole, Econazole etc.

Triazoles: Fluconzaole, Itraconazole etc.

Thiazoles: Abafungin
Allylamines: Terbinafine, Naftifine etc.
Echinocandins: Anidulafungin, Caspofungin, Micafungin.
Hence, option A is the CORRECT answer.

41. The iron toxicity is treated by

(A) Ferrous fumarate (B) Disulfiram (C) Desferroxamine (D) Folic acid

Answer: C

Explanation:

Iron poisoning is an iron overload caused by a large excess of iron intake and usually refers to an acute overload rather than a gradual one.

Desferroxamine is a bacterial siderophore (iron carrier) produced by the actinobacteria Streptomyces pilosus. It is used as a chelating agent to remove excess iron from the body. Hence, option C is the CORRECT answer.

42. 9-fluoro-11, 17–dihydroxy-17-(2-hydroxyacetyl)-10,13,16-trimethyl-6,7,8,11,12,14,15,16-octahydrocyclopenta[a]phenanthrene-3-one, is the IUPAC name of

(A) Nortryptiline (B) Betamethasone (C) Dexamethasone (D) Clonidine

Answer: C

Explanation:

IUPAC Names:

Nortryptiline: 3-(10,11-dihydro-5H-dibenzo[a,d] cyclohepten-5-ylidene)- N-methyl-1-propanamine.

Betamethasone: (8S,9R,10S,11S,13S,14S,16S,17R)-9-fluoro- 11,17-dihydroxy-17-(2-hydroxyacetyl)-10,13,16-trimethyl- 6,7,8,9,10,11,12,13,14,15,16,17-dodecahydro- 3H-cyclopenta[a]phenanthren-3-one.

Dexamethasone: 9-fluoro-11, 17–dihydroxy-17-(2-hydroxyacetyl)- 10,13,16-trimethyl-6,7,8, 11,12,14,15,16- octahydrocyclopenta [a] phenanthrene-3-one.

Clonidine: N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine.

Hence, option C is the CORRECT answer.

43. "Red man syndrome" is caused by which of the following macrolide antibiotic

(A) Vancomycin (B) Clarithromycin
(C) Azithromycin (D) Erythromycin

Answer: A

Explanation:

Red man syndrome also called as Erythroderma is an inflammatory skin disease with erythema caused by the antibiotic Vancomycin. Hence, option A is the CORRECT answer.

Vancomycin, Clarithromycin and Azithromycin show major adverse effects Ototoxicity and Nephrotoxicity. Erythromycin shows Hepatotoxicity and Ototoxicity as adverse effects.

44. All the following drugs primarily reduces After load tensions **EXCEPT**

(A) Nicorandil (B) Minoxidil
(C) Glyceryl trinitrate (D) Hydralazine

Answer: C

Explanation:

Nicorandil, Minoxidil and Hydralazine are primarily used to reduce after load tension.

Glyceryl trinitrate or Nitroglycerin is used to treat preload tension. Hence, option C is the CORRECT answer.

45. Indian gum is adulterated with gum ghatti, obtained from

(A) Cyamopsis tetragonolobus
(B) Acacia arabica
(C) Anogeissus latifolia
(D) Astragallus gummifer

Answer: C

Explanation:

Indian gum is adulterated with gum ghatti, obtained from Anogeissus latifolia. Hence, option C is the CORRECT answer.

46. Two **CORRECT** statements for Hydnocarpous oil

[P] Used as anti-leprotic agent
[Q] Family: Flacourtriaceae
[R] Mainly grown in Spain and Greece
[S] It doesn't solidify at 0^{o} C

(A) P & R
(B) P & Q
(C) R & S
(D) Q & R

Answer: B

Explanation:

Hydnocarpus oil also called as Chaulmoogra oil is the fixed oil obtained by cold expression method from ripe seeds of the plant Hydnocarpus anthelmintic/ heterophylla, Taraktogenos kurzii belonging to family Flacourtriaceae. It is a native of Myanmar, Thailand and East India. Also found in Srilanka, Bangladesh and India. It is used in the treatment of leprosy, TB, Psoriasis and Rheumatism. It is a soft white solid below 25^{o} C. Hence, option B is the CORRECT answer.

47. "Dales vasomotor reversal phenomenon" was first found with which of the following α-blocker

(A) Prazosin
(B) Ergot alkaloids
(C) Yohimbine
(D) Phenoxybenzamine

Answer: B

Explanation:

"Dales vasomotor reversal phenomenon" was first found with ergot alkaloids by the scientist Dale in 1906. Hence, option B is the CORRECT answer.

48. The starting material for the synthesis of ketoconazole is

(A) 2,4-Dichloroacetophenone
(B) 2,5-Dichloroacetophenone
(C) 2,4-Dichlorobenzophenone
(D) 2,5-Dichlorobenzophenone

Answer: A

Explanation:

Ketoconazole can be synthesized by using 2,4-dichloroacetophenone and glycerin as starting materials. Hence, option A is the CORRECT answer.

49. Which of the below statement is **WRONG** in case of Gas Chromatography

(A) Derivatization increase the volatility

(B) Derivatization methods include silylation, acylation

(C) Derivatization always increases the polarity of compounds

(D) Katharometer is used as detector in GC

Answer: C

Explanation:

All the given statements are correct except option 'C', as derivatization is not supposed to increase polarity instead it decreases polarity and increases volatility to use the compound as sample for gas chromatography. Hence, option C will be the answer.

50. Which of the following is **NOT** preferred as enteric coating material

(A) CAP (B) HPMCP (C) HEC (D) Shellac

Answer: C

Explanation:

Enteric coating technique is followed to avoid the release of drug in stomach and to allow the drug release only in intestine at alkaline conditions. Agents suitable for this enteric coating include: Shellac, zein, phthalates like cellulose acetate phthalate, HPMC phthalate, polyvinyl acetate phthalate and various Eudragits. So, among the given options, HEC is not an enteric coating polymer. Hence, option C is the CORRECT answer.

51. Enfuvirtide (Anti viral drug), a synthetic oligo peptide contains

(A) 30 aminoacids in its structure (B) 26 aminoacids in its structure

(C) 35aminoacids in its structure (D) 36 aminoacids in its structure

Answer: D

Explanation:

Enfuvirtide is an antiretroviral drug used in the treatment of HIV-1 infection by HIV fusion inhibitor mechanism. It is a synthetic oligo peptide containing 36 aminoacids. Hence, option D is the CORRECT answer.

52. Which of the below ester **DOESN'T** involve in Kreb's cycle

(A) Citrate (B) Isocitrate

(C) Tartarate (D) Cis-aconitate

Answer: C

Explanation:

Kreb's cycle or Tricarboxylic acid cycle or Citric acid cycle is one of the metabolic cycles that generate energy. It involves participation of various esters like citrates, isocitrates, cis-aconitates, maleates, fumarates, succinates etc. But, tartarates are not involved hence, option C is the CORRECT answer.

53. Which of the following is a macrolide antifungal used as immunosuppressant

(A) Cyclosporin (B) Tacrolimus (C) Colchicine (D) Leflunomide

Answer: B

Explanation:

Tacrolimus is a 23-membered macrolide lactone antifungal agent that is used as immunosuppressant after organ transplantation. Cyclosporin is also used as immunosuppressant but it is a cyclic fungal peptide comprising of 11 aminoacids. Both drugs act by inhibition of calcineurin. Hence, option B is the CORRECT answer.

Colchicine is used as anti-gout drug.

Leflunomide is a disease-modifying anti-rheumatic drug (DMARD) used in the treatment of rheumatoid arthritis.

54. Which of the following is more active

(A) S-(-) naproxen (B) R-(-) naproxen (C) S-(+) naproxen (D) R-(+) naproxen

Answer: C

Explanation:

S-(+) naproxen is the active form of Naproxen, a non-steroidal anti-inflammatory drug.

55. Methotrexate, chemically is

(A) 4-amino-4-deoxy-10-methyl pteroyl-L-glutamicacid

(B) 4-amino-4-deoxy-10-methyl pteroyl-D-glutamicacid

(C) 2-amino-4-deoxy-10-methyl pteroyl-L-glutamicacid

(D) 4-amino-2-deoxy-10-methyl pteroyl-D-glutamicacid

Answer: A

Explanation:

Synonyms of Methotrexate are:

N-[4-[[(2,4-diamino-6-pteridinyl)methyl]methylamino]benzoyl]-L-glutamic acid;

Amethopterin;

4-Amino-4-deoxy-10-methylpteroyl-L-glutamic Acid; 4-Amino-10-methylfolic acid.

Hence, option A is the CORRECT answer.

56. Which one of the below statements is **WRONG**

(A) Primogel and Ac-Di-Sol are used as super disintegrants

(B) In friability test of tablets, the rotation speed is 100 rpm

(C) Wurster process is used in microencapsulation

(D) Ethylene oxide mixed with CO_2 can be used for sterilization

Answer: B

Explanation:

Primogel (Sodium starch glycolate), Ac-Di-Sol (Crosscarmellose) and Proplasdone (crosslinked polyvinyl pyrrolidone) are used as super disintegrants in the formulation of tablets.

Friability test is done for tablets and the test conditions include running the apparatus for 4 minutes at the rate of 25 rpm, that means total 100 revolutions for 4 mins. It is NOT 100 rpm, it is 25 rpm for 4 minutes. Hence, the given statement is wrong and it is the answer.

Wurster process is the fluidized bed coating process used in the preparation of microcapsules.

In sterilization, to reduce the flammability of ethylene oxide, it is used in combination of carbon dioxide.

Hence, option B is the CORRECT answer as it is a wrong statement.

57. In Neonates, Kernicterus is a neuro-degeneration disorder

Assertion [a]: Kernicterus is caused due to the excess availability of free bilirubin when acidic drugs such as sodium salicylate or sulfonamides are administered

Reason [r]: Administered acidic drugs like sodium salicylate or sulfonamides displace bilirubin from its albumin binding site

(A) Both **[a]** and **[r]** are true but **[r]** is NOT the correct reason for **[a]**

(B) **[a]** is true but **[r]** is false

(C) Both **[a]** and **[r]** are true and **[r]** is the correct reason for **[a]**

(D) Both **[a]** and **[r]** are false

Answer: C

Explanation:

Protein binding is one of the important parameter that influences the duration of action of a drug. Sometimes more than one drug or biological moirty compete for the same binding site and results in unexpected changes. For e.g., when acidic drugs like sodium salicylates or sulfonamides are administered to neonates, these drugs compete with bilirubin for a binding site and displaces the bilirubin. Thus released free bilirubin is not metabolized in neonates and hence results in neuro-degenrative disorder called kernicterus. Hence, option C is the CORRECT answer.

58. If 0.2 moles of ammonium hydroxide was added to a buffer system and the pH falls from 9.5 to 8.9, what is the buffer capacity?

(A) 0.25 (B) 0.33 (C) 0.89 (D) 0.46

Answer: B

Explanation:

Formula: Buffer capacity, $\beta = \Delta B / \Delta pH$

Where, ΔB = amount of based added

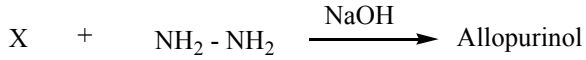
ΔpH = change in the pH observed

Given, $\Delta B = 0.2$ moles; $\Delta pH = 9.5 - 8.9 = 0.6$

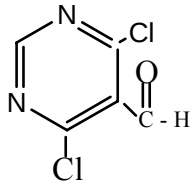
Therefore, Buffer capacity, $\beta = \Delta B / \Delta pH = 0.2 / 0.6 = 0.33$

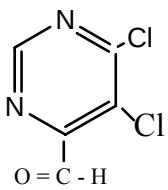
Hence, option B is the correct answer.

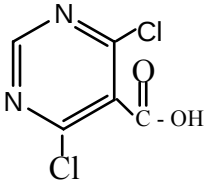
59. Allopurinol can be synthesized by the reaction

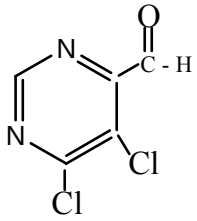


Identify the 'X'.

(A) 

(B) 

(C) 

(D) 

Answer: A

60. Calculate the concentration of sodium chloride that must be added to prepare 100 ml of 1% solution of lidocaine hydrochloride (freezing-point depression of a 1% solution is 0.130°C), to render it isotonic.

(A) 0.879g (B) 0.672g (C) 0.067g (D) 0.088g

Answer: B

Explanation:

Based on the given data, it is clear that we need to follow Freezing point depression method or Cryoscopic method (Class-I method) for tonicity adjustment.

Formula: % NaCl to be added = (0.52 – a)/ b

Where, a = freezing point depression of 1% drug solution (given as 0.130^{o} C)

b = freezing point depression of 1% NaCl solution = 0.576^{o} C (standard value)

Therefore, % NaCl to be added = (0.52 – 0.130)/ 0.576 = 0.390/ 0.576 = 0.67% = 0.67 g/100 ml.

Hence, option B is the correct answer.

61. Sulfasalazine is a prodrug with the combination of

(A) Sulfapyridine and 5-amino salicylic acid

(B) Sulfadimidine and 5-amino salicylic acid

(C) Sulfapyridine and 2-amino salicylic acid

(D) Sulfapyridine and 5-nitro salicylic acid

Answer: A

62. Voltammetry belongs to the group of electrochemical analysis of

(A) Steady-state methods (B) Transient methods

(C) Controlled potential methods (D) Charge transfer by migration

Answer: B

63. In Non-aqueous titrations, which of the below agents are used

(A) Hydrochloric acid, NaOH (B) Perchloric acid, Barium sulfate

(C) Perchloric acid, Sulfuric acid (D) Perchloric acid, Acetic anhydride

Answer: D

64. Which of the following statement is **FALSE**?

(A) The magnitude of Moisture Content (M.C) in dried granules is always higher than Loss on Drying (L.O.D)

(B) In fractional distillation, length of the fractionating column is inversely proportional to degree of separation of components.

(C) The most commonly used organic solvent for cleaning purpose is 70% Isopropyl alcohol

(D) Qualification is done for systems and equipments, where as validation is done for process and procedures.

Answer: B

Explanation:

In fractional distillation, if the length of fractionating column is more, the degree of separation of components will be high. Hence, option B is the CORRECT answer as it is a false statement.

65. Which of the following is a steroidal antibiotic

(A) Vancomycin (B) Lincomycin (C) Bacitracin (D) Fusidic acid

Answer: D

Explanation:

Fusidic acid is the steroidal antibiotic whereas vancomycin is a glycopeptides antibiotic. Bacitacin is a mixture of related cyclic peptides. Lincomycin is a lincosamide antibiotic. Hence, option D is the CORRECT answer.

66. Phototoxicity is particularly associated with

(A) Tetracycline (B) Oxytetracycline (C) Chlortetracycline (D) Demeclocycline

Answer: D

67. Competitive irreversible antagonism is due to the ability of antagonist bind to receptor site by

(A) Dipole-dipole interaction (B) Dipole-induced dipole interaction

(C) Covalent interaction (D) Induced dipole- induced dipole interaction

Answer: C

68. Causative organism for Peptic ulcer is

(A) Helicobacter pylori (B) Shigella dysenteriae

(C) Entamoeba histolytica (D) Trypanosoma palladium

Answer: A

Explanation:

Helicobacter pylori is the causative organism for peptic ulcer.

Shigella dysenteriae is the causative organism for Shigellosis.

Entamoeba histolytica is the causative organism for amoebic dysentery or amoebic liver abcess.

Trypanosoma palladium is the causative organism for Trypanosomiasis.

Hence, option A is the CORRECT answer.

69. Electron Transport Chain takes place at

(A) Cytoplasm (B) Mitochondria

(C) Ribosome (D) Endoplasmic Reticulum

Answer: B

Explanation:

Glycolysis takes place in cytoplasm.

Electron transport chain takes place in mitochondria.

Krebs cycle also takes place in mitochondria (in eukaryotic cells).

Protein synthesis takes place in ribosomes.

Hence, option B is the CORRECT answer.

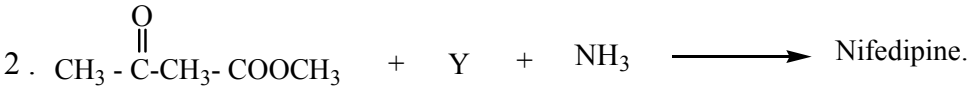
70. Molecular ion peak is produced predominantly in

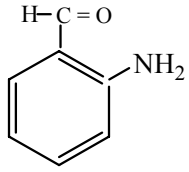
(A) Cyclic compounds (B) Conjugated dienes

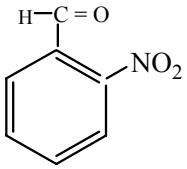
(C) Aromatic compounds (D) Mercaptants

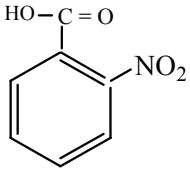
Answer: C

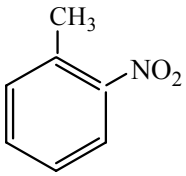
71. Identify the structure of 'Y' in following synthesis,



(A) 

(B) 

(C) 

(D) 

Answer: B

72. One Tesla is equal to

(A) 1 guass (B) 100 guass (C) 1000 guass (D) 10,000 guass

Answer: D

Explanation:

Tesla is the SI unit of magnetic flux density whereas Gauss is the CGS unit of magnetic flux density also called as magnetic field or magnetic induction. On tesla = 10,000 gauss. Hence, option D is the CORRECT answer.

73. A crystalline glycoside "ouabain" (G.Strophanthidin) is present in one of the following:

(A) Acokanthera schimperi (B) Strophanthus courmontii

(C) Croton tiglium (D) Glycine soja

Answer: A

Explanation:

Wood part of Acokanthera schimperi contains acovenoside-A and ouabain, which are cardiotonic glycosides. Ouabain is the used as biological standard to screen the cardiotonic activity of drugs. Strophanthus is a genus of various species of flowering plants in the family Apocynaceae. Strophanthus emmi contain e-strophanthidin, Strophanthus hispudus contains H- strophanthidin, Strophanthus gratus contain G-strophanthidin (ouabiain), Strophanthus courmontti (DOES NOT contain ouabain). Generally these species are used as allied drugs of Strophanthus kombe.

Croton tiglium contain glyceryl crotonate, crotonic acid, crotonic resin, and the tumor-promoting phorbol esters: phorbol formate, phorbol butyrate and phorbol crotonate.

Glycine soja is also called as wild soya contains proteinacious material.

Hence, option A is the CORRECT answer.

74. P: Conductance cell consists of two platinized electrodes

Q: Molar conductivity changes with temperature

R: Conductance cell is calibrated by standard potassium chloride solution

(A) P, Q are true and R is false (B) Q, R are true and P is flase

(C) P, R are true and Q is false (D) P, Q and R are true

Answer: D

75. HLB value can be calculated by all of the below equations **EXCEPT**

(A) HLB = Σ(hydrophilic group number) - Σ(lipophilic group number) + 7

(B) HLB = (E + P) / 5

(C) HLB = 20 (1- S/A)

(D) HLB = 100 (E-G)/GX + 1

Answer: D

Explanation:

HLB (Hydrophilic Lipophilic Balance) Value determination can be determined based on below formulae:

HLB = Σ(hydrophilic group number) - Σ(lipophilic group number) + 7

HLB = (E + P) / 5

where, E = number of polyoxyethylene groups

P = number of polyhydric alcohols

HLB = 20 (1- S/A)

where, S = Saponification number

A = Acid number

Dosage Displacement/ Replacement Factor = [100 (E-G)/GX] + 1

where, E = Weight of suppositories made with only base

G = Weight of suppositories containing X% of drug

Hence, option D is the CORRECT answer as it is a wrong matching.

76. Which of the following is related to isoflavones?

[P] Sinigrin [Q] Genistein [R] Daidzein [S] Myrcene

(A) P & S (B) Q & R (C) P & Q (D) R & S

Answer: B

Explanation:

Sinigrin is a glucoside.

Genistin and Daidzein are isoflavones.

Myrcene is a terpene.

Hence, option B is the CORRECT answer.

77. ICH guideline Q1B deals with

(A) Stability testing of new drug substances and products

(B) Photostability testing of new drug substances and products

(C) Bracketing designs for stability testing of new drug substances and products

(D) Validation of Analytical procedures

Answer: B

Explanation:

ICH (International Conference on Harmonization) Guidelines:

QIA(R2): Stability testing of new drug substances and products

Q1B: Photostability testing of new drug substances and products

Q1D: Bracketing designs for stability testing of new drug substances and products

Q2: Validation of Analytical procedures

Hence, option B is the CORRECT answer.

78. Mantoux test is for assessing

(A) Leprosy (B) TB (C) Filaria (D) Malaria

Answer: B

79. Triple point of a substance is the temperature (T) and pressure (P) at which the three phases (solid, liquid and gas) of the substance exists in equilibrium. Triple point of water is:

(A) T = 0.0098° C; P = 45.8 mm of Hg (B) T = 0.098° C; P = 45.8 mm of Hg

(C) T = 0.0098° C; P = 4.58 mm of Hg (D) T = 4.58° C; P = 760 mm of Hg

Answer: C

80. Rheogram or Consistency curve is a plot obtained by drawing the relationship of shear stress vs shear rate.

Assertion [a]: In Plastic flow, Yield value is observed in rheogram

Reason [r]: Forces of flocculation is the reason for yield value in the rheogram of plastic flow

(A) Both **[a]** and **[r]** are true but **[r]** is NOT the correct reason for **[a]**

(B) **[a]** is true but **[r]** is false

(C) Both **[a]** and **[r]** are true and **[r]** is the correct reason for **[a]**

(D) Both **[a]** and **[r]** are false

Answer: C

81. **Assertion [a]:** Propofol is a short acting intravenously administered hypnotic,

Reason [r]: It is hydrophilic and gets easily excreted,

(A) Both **[a]** and **[r]** are true but **[r]** is NOT the correct reason for **[a]**

(B) Only **[a]** is true

(C) Only **[r]** is true

(D) Both **[a]** and **[r]** are false

Answer: B

82. Which of the below statement is **WRONG**

(A) Tolerated incompatibility can be minimized by changing the order of mixing

(B) Menthol + Camphor + Ammonium chloride results in eutectic mixture

(C) Compound tragacanth powder is used as 2% w/v of finished product

(D) Aromatic spirit of ammonia produce clear solution of strychnous HCl

Answer: D

Explanation:

In the mixture of aromatic spirit of ammonia and strychnine HCl, there will be a formation of precipitate as the alcoholic content of spirit is not sufficient to dissolve much of strychnine. It comes under chemical incompatibility and needs adjustment.

83. Which one of the followings is an endogenous thrombolytic agent?

(A) Heparin (B) Streptokinase (C) Urokinase (D) Plasmin

Answer: D

84. Drug indicated in acromegaly treatment

(A) Topotecan (B) Flutamide (C) Lanreotide (D) Trilostane

Answer: C

Explanation:

Acromegaly is the condition in which the growth hormone is released more and hence the body tissues get larger over time. Lanreotide is the drug used in the treatment of acromegaly and symptoms caused by neuroendocrine tumors, most notably carcinoid syndrome. It is a long-acting analogue of somatostatin, like octreotide. Hence, option C is the CORRECT answer.

Topotecan is the derivative of camptothecin and is used in the treatment of ovarian cancer and lung cancer.

Flutamide is an oral nonsteroidal antiandrogen drug primarily used to treat prostate cancer.

Trilostane is used in the treatment of Cushing's syndrome.

85. Two of the below statements are **TRUE**, Identify them

[P] Geiger–Muller counter detects ionizing radiation covering alpha particles, beta particles or gamma rays

[Q] Class 1000 denotes the particle count in air is not more than 1000 per cubic meter of 0.5µm and larger

[R] As per Rittingers law, energy required for size reduction of unit mass is directly proportional to the new crack length produced in the particles

[S] In Swenson walker crystallizer, crystallization is induced by passing the cold water in a direction opposite to the flow of hot concentrated solution

(A) P & Q (B) R & S (C) Q & R (D) P & S

Answer: D

Explanation:

Class 1000 denotes the particle count in air is not more than 1000 per cubic **feet** of 0.5µm and larger. So the given statement Q is false.

As per Rittingers law, energy required for size reduction of unit mass is directly proportional to the new surface area produced. Whereas the given statement that the energy required for size reduction of unit mass is directly proportional to the new crack length produced in the particles is called as Bonds law. So the given statement R is false.

Hence, option D is the CORRECT answer.

86. Kjeldahl method is used for determination of which of the below in chemical substances

(A) Sulfur (B) Nitrogen (C) Chlorine (D) Bromine

Answer: B

87. As per the WHO guidelines, limitation (number) of salmonellae presence in crude drug for processing?

(A) 10^3 (B) 10^4 (C) 10 (D) Complete absence

Answer: D

Explanation:

For herbal materials that have been pretreated (e.g. with boiling water), the WHO limits are:

- Aerobic bacteria, maximum 10^7 per gram
- Yeasts and moulds, maximum 10^4 per gram
- Escherichia coli, maximum 10^2 per gram

• other enterobacteria, maximum 10^4 per gram
• Clostridia, absence per 1 gram
• Salmonellae, absence per 1 gram
• Shigella, absence per 1 gram.

Hence, option D is the CORRECT answer.

88. Van Deemter equation includes all the below **EXCEPT**

(A) Eddy diffusion (B) Longitudinal diffusion
(C) Linear velocity (D) Passive diffusion

Answer: D

Explanation:

In chromatography, Van Deemter equation gives information about an optimum velocity at which there will be the minimum variance per unit column length and, hence, a maximum efficiency.

$$H = A + \frac{B}{u} + C \cdot u$$

where

A = Eddy diffusion
B = Longitudinal diffusion
C = Mass transfer kinetics of the analyte between mobile and stationary phase
u = Linear velocity

Hence, option D is the CORRECT answer.

89. The atom used in fast atom bombardment (FAB) is

(A) Xenon (B) Neon (C) Nitrogen (D) Methane

Answer: A

90. Find out the **WRONG** statement among below

(A) Vulcanizing agent used in the preparation of rubber is sulphur
(B) Catgut is the absorbable type and silk is the non-absorbable type of sutures
(C) Latin term "ante cibum" means after meals
(D) Pharmacoeconomics compares the value of one pharmaceutical drug or drug therapy to another

Answer: C

Explanation:

Latin term "ante cibum" means before meals, so option C is given false and hence it is the CORRECT answer.

91. An alkaloid that is dried sclerotium of a fungus, Claviceps purpurea developed in ovary of rye plant, Secale cereale is

(A) Vasaka (B) Kurchi (C) Vinca (D) Ergot

Answer: D

Explanation:

Option D is the CORRECT answer.

Vasaka is a dried as well as fresh leaves of the plant Adhatoda vasica belonging to family Acanthaceae.

Kurchi is the dried stem bark of Holarrhena antidysenterica or H. pubescens belonging to family Apocynaceae.

Vinca is the dried whole part of Catharanthus roseus belonging to family Apocynaceae.

92. The prostaglandin analogue that is indicated for inhibition of platelet aggregation is

(A) Clopidogrel (B) Misoprostol (C) Epoprostenol (D) Carboprost

Answer: C

Explanation:

Clopidogrel is a prodrug and is chemically related to ticlopidine and acts as adenosine diphosphate (ADP) receptor antagonist showing antiplatelet action.

Misoprostol is an analogue of prostaglandin-E_1 and is used as mucosal protective agent.

Epoprostenol or Prostacyclin (PGI_2) is a prostaglandin analogue that is indicated for inhibition of platelet aggregation.

Carboprost is a synthetic prostaglandin analogue of $PGF_{2\alpha}$ (specifically, it is 15-methyl-$PGF_{2\alpha}$) with oxytocic properties.

Hence, option C is the CORRECT answer.

93. Marine toxin (Ciguatoxin) that shows gastrointestinal and neurological effects like respiratory depression and bradycardia in humans is

(A) Gymnodinium breve (B) Gambierdiscus toxicus

(C) Gonyaulax catenella (D) Prymnesium parka

Answer: B

Explanation:

Marine toxin and their physiological effects:

Gymnodinium breve: Depolarises membrane, RBC haemolysis and Neurotoxic

Gambierdiscus toxicus: Respiratory depression and Bradycardia

Gonyaulax catenella: Blocks membrane Na^+ conductance

Prymnesium parka: Neurotoxin, Blocks end plate transmission, haemolytic agent.

Hence, option B is the CORRECT answer.

94. Addition of hydrogen halide to unsymmetrical alkenes is governed by

(A) Saytzeff's rule (B) Anti markownikov's rule

(C) Markownikov's rule (D) None

Answer: C

Explanation:

Saytzeff's rule that states that if more than one alkene can be formed during dehalogenation by an elimination reaction, the more stable alkene is the major product. In general, the compound that has a more highly substituted C=C double bond is more stable.

Markownikov's rule states that, with the addition of a protic acid HX to an alkene, the acid hydrogen (H) becomes attached to the carbon with fewer alkyl substituents, and the halide (X) group becomes attached to the carbon with more alkyl substituents.

Anti-markownikov's rule says that halogen is added to the carbon with less substitutions based on regioselective mechanism, exactly the opposite of Markownikov reaction.

Hence, option C is the CORRECT answer.

95. Hell-Volhard-Zelinsky halogenation involves

(A) Chemical reaction of an aldehyde or ketone with a triphenyl phosphonium ylide

(B) α-Halogenation of carboxylic acids

(C) Carboxylation of volatile compounds

(D) The reaction of a primary amide to a primary amine with one fewer carbon atom

Answer: B

96. Which of the following alkaloid is a steroidal alkaloid

(A) Pilocarpine (B) Ephedrine (C) Veratrum (D) Arecoline

Answer: C

Explanation:

Pilocarpine is an imidazole alkaloid obtained from dried leaves of Pilocarpus jaborandi, Rutaceae.

Ephedrine is an amino alkaloid obtained from Ephedra, dried stems of Ephedra gerardiana, Ephedraceae.

Veratrum is a steroidal alkaloid obtained from dried rhizomes of Veratrum album and V. viride, Liliaceae.

Arecoline is a pyridine alkaloid obtained from Areca nut, dried ripe seed of Areca catechu, Campanulaceae.

Hence, option C is the CORRECT answer.

97. Each of the following options lists the name of the drug, its class, pharmacological action and plant source. Choose an option showing a **WRONG** combination

(A) Ispaghula, Natural gum, Anti-amoebic, Plantago ovata

(B) Rhubarb, Anthracene glycoside, Ani-diarrhoeic, Rheum palmatum

(C) Turpentine oil, Volatile oil, Antiseptic, Pinus roxburghii

(D) Balck catechu, Tannin, Anti-microbial, Gelidium amansii

Answer: D

Explanation:

Black catechu is tannin, consists of dried aqueous extract prepared from heart wood of Acacia catechu and Acacia chundra, family Leguminosae. Black catechu is used as an astringent and also used in cough and diarrhoea. It has cooling and digestive properties.

So option D is given wrong matching, hence it is the CORRECT answer.

98. ω^3-fatty acids are used in

(A) Myasthenia gravis (B) Alzheimers disease

(C) Dyslipidemia (D) Goitre

Answer: C

99. Canrenone is an active metabolite of

(A) Aldosterone (B) Spironolactone (C) Eplernone (D) Budesonide

Answer: B

Explanation:

Canrenone is an aldosterone antagonist and an active metabolite of spironolactone which is a potassium sparing diuretic.

100. Bismuth sub chloride and Guanine crystals are mainly used in cosmetics as

(A) Anti-oxidants (B) Pearlescent agents (C) Stabilizers (D) Stain inhibitors

Answer: B

101. Which of the below pairing is **TRUE** for RNA

(A) Adenine, Thymine (B) Adenine, Guanine

(C) Adenine, Cytosine (D) Adenine, Uracil

Answer: D

Explanation:

In DNA, adenine (A) forms a base pair with thymine (T) and guanine (G) forms a base pair with cytosine (C).

In RNA, thymine is replaced by uracil (U) and forms base pairing with adenine (A).

Hence, option D is the CORRECT answer.

102. Onchocerciasis or River blindness can be treated by using

(A) Praziquantel (B) Niclosamide (C) Albendazole (D) Ivermectin

Answer: D

Explanation:

Praziquantel (Biltricide) is an anthelmintic effective against flatworms.

Niclosamide (teniacide) in the anthelmintic effective against cestodes/ tapeworms.

Albendazole is a benzimidazole ring based drug used in the treatment of a variety of worm infestations. Albendazole is a broad spectrum anthelmintic, effective against: roundworms, tapeworms, and flukes of domestic animals and humans.

Ivermectin is a broad-spectrum antiparasitic drug used in the treatment of onchocerciasis which is a parasitic disease caused due to infection by Onchocerca volvulus, anematode (roundworm).

Hence, option D is the CORRECT answer.

103. Below are the names and compositions of polymers used in controlled drug delivery systems. One among the below is **WRONG**, identify

(A) Carbopol 934 polymer is a cross-linked polyacrylate polymer

(B) Pluronics are polyoxyethylene – polyoxypropylene block copolymers

(C) Eudragits are polyacrylate derivatives

(D) Poloxamers are polymethacrylate polymers

Answer: D

Explanation:

Poloxamers and Pluronics both are same. They are polyoxyethylene – polyoxypropylene block copolymers. So option D is a wrong match and hence it is the CORRECT answer.

104. Tetanus vaccine contains below chemical in its composition along with tetanus Toxoid

(A) Acetic acid (B) Formaldehyde (C) Neomycin (D) Glutaraldehyde

Answer: B

Explanation:

Formaldehyde is used for processing of vaccines like Tetanus, Anthrax, Hepatitis etc.

Formaldehyde has a long history of safe use in the manufacture of certain viral and bacterial vaccines. It is used to inactivate viruses so that they don't cause disease (e.g., influenza virus to make influenza vaccine) and to detoxify bacterial toxins, such as the toxin used to make diphtheria vaccine. Formaldehyde is toxic to humans when cross certain limit, 2 ppm.

Hence, option B is the CORRECT answer.

105. The protein part of functional enzyme is called as

(A) Apoenzyme (B) Holoenzyme (C) Coenzyme (D) True enzyme

Answer: A

Explanation:

The protein component of the enzyme to which the coenzyme attaches to form an active enzyme is called as Apoenzyme.

The apoenzyme together with its cofactor is called Holoenzyme (active form of enzyme).

The non-proteinaceous part of the enzyme is called as Coenzyme.

True enzyme is not an existing terminology.

Hence, option A is the CORREXT answer.

106. AUMC/ AUC =

(A) MAT (B) MRT (C) Dose/Solubility (D) None

Answer: B

Explanation:

Mean Residence Time, MRT is defined as the average time the drug spends in body and is equal to the ration, AUMC/ AUC.

AUMC = Area under first moment curve.

AUC = Area under the curve.

Mean Absorption Time, MAT is defined as the average time it takes for drug molecules to enter a kinetic space (such as the systemic circulation).

$MAT = MRT_{oral} - MRT_{iv}$

Hence, option B is the CORRECT answer.

107. All of the following are prodrugs, **EXCEPT**

(A) Nabumetone (B) Enalapril (C) Celecoxib (D) Sulindac

Answer: C

Explanation:

Nabumetone is a prodrug, non acidic NSAID (Non-steroidal anti-inflammatory drug) that is rapidly metabolized in the liver to a major active metabolite, 6-methoxy-2-naphthyl acetic acid.

Enalapril is an angiotensin converting enzyme (ACE) inhibitor used in the treatment of hypertension and some types of chronic heart failure. Enalapril is prodrug metabolized in vivo to the active form enalaprilat by various esterases.

Celecoxib is a selective COX-2 inhibitor NSAID AND IS not A PRODRUG.

Sulindac is a NSAID useful in the treatment of acute or chronic inflammatory conditions. Sulindac is a prodrug, derived from sulfinylindene, which is converted in the body to the active NSAID.

Hence, option C is the CORRECT answer.

108. Which of the following statements is FALSE about Auranofin

(A) It is an anti-rheumatoid drug (disease modifying) (B) Its onset of action is very short

(C) It inhibits the release of IL-1 (D) Auranofin is given orally

Answer: B

Explanation:

Auranofin onset of action is too long which is about 3-4 months when administered orally and about 6-8 weeks when administered parenterally.

Hence, option B is false statement, so it is the CORRECT answer.

109. Draves test is used for testing the efficiency of

(A) Wetting agents (B) Detergents (C) Anti-oxidenats (D) Buffers

Answer: A

Explanation:

Draves test is done to test the efficiency of a wetting agent based on the time required for a standard skein of cotton yarn carrying a standard weight to sink in a water solution of that wetting agent. Hence, option A is the CORRECT answer.

110. The immunoglobulin that a foetus can get from mother during prenatal life

(A) IgG (B) IgM (C) IgA (D) IgD

Answer: A

Explanation:

Foetus themselves doesnot develop immune system however they get immunoglobulin-G (IgG) from mother through placental barrier. Hence, option A is the CORRECT answer.

111. The following cannabinoid receptor inverse agonist is found to be useful in treating obesity but was banned in India

(A) Sumatriptan (B) Orlistat (C) Sibutramine (D) Rimonabant

Answer: D

Explanation:

Sumatriptan is a sulfa drug used in the treatment of migraine headaches.

Orlistat is used in the treatment of obesity but its primary function is preventing the absorption of fats from the human diet, thereby reducing caloric intake.

Sibutramine is used as anorectic (appetite suppressant) but it is a centrally-acting serotonin-norepinephrine reuptake inhibitor.

Rimonabant is an anorectic anti-obesity drug that has been withdrawn from the market. It is an inverse agonist for the cannabinoid receptor CB1. Its main effect is reduction of appetite.
Hence, option D is the CORRECT answer.

112. Standards used for calibration of spectra are given below, which of the below two are CORRECT

[P] Polystyrene is used as standard for wave number calibration of IR spectra
[Q] Polyvinyl chloride is used as standard for wave number calibration of IR spectra
[R] Trimethyl siloxane is used as standard for wave length calibration of Visible spectra
[S] Holonium oxide is used as standard for wave length calibration of UV spectra

(A) P & Q (B) P & S (C) Q & R (D) R & S

Answer: B

Explanation:

Polystyrene is used as standard for wave number calibration of IR spectra, so statement Q is false.
Holonium oxide is used as standard for wave length calibration of UV spectra, so statement R is false.
Hence, option B is the CORRECT answer.

113. A Precipitation titration method in which $AgNO_3$ is used as standard solution and chromate ions used as an indicator

(A) Mohr method (B) GayLussac method
(C) Volhard's method (D) Fajan's method

Answer: A

Explanation:

Argentometry is a type of titration meant for determining the chloride ion in a sample by titrating with silver nitrate. Under Argentometry there are three methods namely Mohr method, Volhard method and Fajan's method.
In Mohr method, silver nitrate is used for titration and chromate ions as indicator for detection of chloride ions in sample.
Volhard method (a type of back titration) involves the addition of excess silver nitrate to the analyte; the silver chloride is filtered, and the remaining silver nitrate is titrated against ammonium thiocyanate. In this method ferric ammonium sulfate is used as an indicator.
In Fujans method, titration is done by silver nitrate but dichlorofluorescein is used as an indicator.
Gay-Lussac method is used for determination of silver.
Hence, option A is the CORRECT answer.

114. The concentration of cresol in Lysol is

(A) 2% w/v (B) 2% v/v (C) 50% w/v (D) 50% v/v

Answer: D

Explanation:

Lysol is the synonym for "Cresol with soap solution" which is used as disinfectant that is to be applied only for inanimate (lifeless) objects. The actual miscibility of cresol with water is just 2%v/v but Lysol contains 50%v/v of cresol. This rise in its miscibility is possible due to the presence of soap formulation in Lysol composition.

Hence, option D is the CORRECT answer.

115. **Assertion [a]:** Regioselective reaction produces selective constitutional isomer.

Reason [r]: It shows preference for aliphatic compounds

(A) Both **[a]** and **[r]** are true but **[r]** is NOT the correct reason for **[a]**

(B) **[a]** is true but **[r]** is false

(C) Both **[a]** and **[r]** are true and **[r]** is the correct reason for **[a]**

(D) Both **[a]** and **[r]** are false

Answer: B

Explanation:

Regioselectivity is the ability to produce a selective constitutional isomer preferably involving an aromatic compounds. So, the given reason is false. Hence, option B is the CORRECT answer.

116. Data: 100 mg of drug is administered intravenously to a volunteer and is assumed to follow one compartment open model. The initial plasma drug concentration is found to be 5 µg/ml. What is the total clearance, if the elimination rate constant of the above drug is found o be 0.3 $hour^{-1}$.

(A) 100 ml/min (B) 70 ml/min

(C) 60 ml/min (D) 10 lts/hr

Answer: A

Explanation:

Total clearance, $Cl_T = K_E V_d$

Given, dose of rug administered intravenously, X_o = 100 mg

initial plasma drug concentration, C_o = 5 µg/ml

elimination rate constant K_E = 0.3 $hour^{-1}$

K_E is directly given whereas V_d is not given hence we can calculate V_d by using the formula,

$V_d = X_o / C_o$ = 100 mg/ (5 µg/ml) = (100 x 1000 µg) / (5 µg/ml) = 20,000 ml = 20 liters.

Therefore, Total clearance, $Cl_T = K_E V_d$ = 0.3 $hour^{-1}$ x 20 liters = 6 liters/ hour = 6000 ml/ 60 min = 100 ml/ min

Hence, option A is the correct answer.

117. Stannous fluoride is used in tooth pastes as

(A) Desensitizing agent (B) Abrasive (C) Surfactant (D) Sweetner

Answer: A

118. Doxapram is used as

(A) Laxative (B) Emetic (C) Respiratory stimulant (D) Astringent

Answer: C

119. $5HT_3$ receptor antagonist used as antiemetic is

(A) Buspirone (B) Ondansetron (C) Scopalamine (D) Domperidone

Answer: B

Explanation:

Buspirone is an anti-anxiety drug which is a serotonin 5-HT_{1A} receptor partial agonist.

Ondasetron is a serotonin 5-HT_3 receptor antagonist used mainly as an antiemetic to treat nausea and vomiting.

Scopalamine (levo-duboisine or hyoscine) is a tropane alkaloid drug with muscarinic antagonist (anti-cholinergic) effects used in the treatment of motion sickness.

Domperidone is an anti-emetic drug but it is an anti-dopaminergic drug.

Hence, option B is the CORRECT answer.

120. If Cl_{Cr} of patient is 100 ml/min and that of a normal person is 130 ml/min, what will be the dose of a drug suitable for that patient if its normal dose is 250 mg.

(A) 185.5 mg (B) 192.5 mg (C) 197.5 mg (D) 204.5 mg

Answer: B

Explanation:

Given, Cl_{Cr} of patient = 100 ml/min

Cl_{Cr} of normal person = 130 ml/min

normal dose = 250 mg.

We know, Renal Function, RF = Cl_{Cr} of patient/ Cl_{Cr} of normal person = (100 ml/min)/ (130 ml/min) = 0.77

Formula to be used: Dose adjustment in a kidney patient:

Dose required = Normal Dose x Renal Function = 250 mg x 0.77 = 192.5 mg

Hence, option B is the correct answer.

121. Which one of the below statements is TRUE about Benorylate

(A) It is an ester-linked co-drug of aspirin and sulindac

(B) It is a banned drug particularly in geriatrics

(C) It is supposed to cause Reyes syndrome

(D) It is a prodrug of benzoyl peroxide and erythromycin

Answer: C

Explanation:

Benorylate is an ester-linked co-drug of aspirin with paracetamol. It is used as an anti-inflammatory and antipyretic medication. In addition, because it is converted to aspirin, benorylate is not recommended in children due to concerns about Reye syndrome. It is not a banned drug.

Hence, option C is the CORRECT answer.

122. Biological source of Punarnava

(A) Boerhaavia diffussa - Acanthaceae (B) Boerhaavia vasica - Gentianaceae

(C) Boerhaavia decussate - Convoluvulaceae (D) Boerhaavia diffussa – Nyctaginaceae

Answer: D

123. DTAB is constructed by

(A) Central or State Govt. (B) Director, Central Drugs Laboratory

(C) Director General, Health Sciences (D) President, Pharmacy Council of India

Answer: A

124. Fuller's earth is the synonym for

[P] Soap stone [Q] Floridin [R] Whilkinite [S] Multana mitti

(A) P & S (B) Q & R (C) Q & S (D) R &S

Answer: C

Explanation:

Soap stone is the synonym for Talc.

Floridin and Multana mitti are synonyms for Fuller's earth.

Whilkinite is the synonym for Bentonite.

Hence, option C is the CORRECT answer.

125. Which of the below is WRONG match

(A) Psoralea corylifolia – Leguminosae (B) Coffea arabica - Rutaceae

(C) Polygola senega – Polygalaceae (D) Panax ginseng – Araliaceae

Answer: B

Explanation:

Coffee is the dried ripe seed of Coffea Arabica or Coffea liberica, family Rubiaceae.

Hence, option B is false matching so it is the CORRECT answer.

126. When the principle of conservation of energy is applied to the flow of fluids, the resulting equation is called as

(A) Reynolds (B) Bernoulli's (C) Fanning (D) Hagen-Poiseuille

Answer: B

Explanation:

Reynolds number is a dimensionless number that gives a measure of the ratio of inertial forces to viscous forces and is used to determine whether the flow is laminar of turbulent.

When the principle of conservation of energy is applied to the flow of fluids, the resulting equation is called as Bernoulli's equation.

Fanning equation is used to estimate the friction losses at walls.

Hagen–Poiseuille equation gives the pressure drop in a fluid flowing through a long cylindrical pipe. Hence, option B is the CORRECT answer.

127. In Mass spectroscopy, the spectra are plotted as

(A) Absorbance vs concentration (B) Temperature vs current

(C) % Abundance vs m/e (D) Volts vs m/e

Answer: C

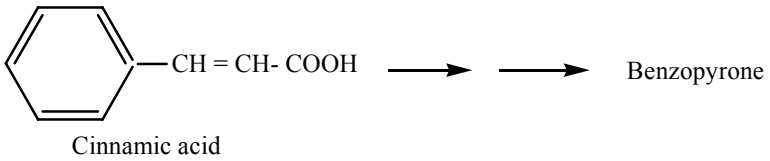
128. In Iodometry and Iodimetry titrations, which of the below is used as indicator

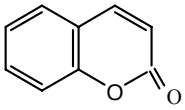
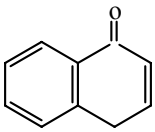
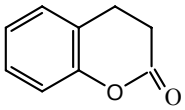
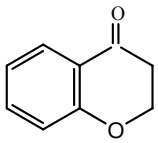
(A) Phenolphthalein (B) Methyl red

(C) Sodium thiosulfate (D) Starch

Answer: D

129. Cinnamic acid is the precursor for the synthesis of which one of the benzopyrone given below.



(A) 
(B) 
(C) 
(D) 

Answer: A

130. Stefan-Boltzmann law says about

(A) Total amount of radiation emitted by a black body

(B) Total amount of radiation emitted by a grey body

(C) Super saturation principles

(D) None

Answer: A

131. Which of the below coloring agent is obtained from insect source

(A) Caramel (B) Aspartame (C) Cyclamate (D) Cochineal

Answer: D

Explanation:

Caramel is called as burnt sugar obtained by heating of sugars. It is used as sweetener and flavorant in various products.

Aspartame is an artificial sweetener of amino acid derivative (non-saccharide category). It is a methyl ester of aspartic acid and phenylalanine dipeptide. It is said to be 200 times sweeter than sucrose.

Cyclamate is also an artificial sweetener which is about 30-50 times sweeter than sugar. It was banned due to the reason that it is carcinogenic and causes liver damage. Cyclamate is the sodium or calcium salt of cyclamic acid (cyclohexanesulfamic acid), which itself is prepared by the sulfonation of cyclohexylamine. Chemically sodium cyclamate is sodium N-cyclohexylsulfamate.

Cochineal also called as Carmine, is a pigment of a bright-red color obtained from the aluminum salt of carminic acid, which is produced by some scale insects, such as the cochineal scale and the Polish cochineal.

Hence, option D is the CORRECT answer.

132. The IUPAC name of Etoricoxib

(A) 5-chloro-6'-methyl-2-[4-(methylsulfonyl)phenyl]-1,3'-bipyridine

(B) 5-chloro-6'-methyl-3-[4-(methylsulfonyl)phenyl]-2,2'-bipyridine

(C) 5-chloro-6'-methyl-3-[4-(methylsulfonyl)phenyl]-2,3'-bipyridine

(D) 5-chloro-6'-methyl-2-[4-(methylsulfonyl)phenyl]-1,2'-bipyridine

Answer: C

133. Which of the below statement is TRUE

(A) Entropy is the heat content of the system

(B) Enthalpy expresses disorderliness or randomness

(C) Internal energy of a system talks about only potential energy of that system

(D) The entropy of a system approaches a constant value as the temperature approaches zero

Answer: D

Explanation:

Entropy expresses disorderliness or randomness and is a thermodynamic property that talks about the energy which is not available for thermodynamic process.

The enthalpy of a system is defined as a measure of total energy of a thermodynamic system. Enthalpy, H = Internal energy + (Pressure x Volume)

Internal energy is the sum of all forms of energy intrinsic to a thermodynamic system. It covers both potential and kinetic energies required to create the system.

So, all the three statements A, B and C are false whereas the given D statement is True. Hence, option D is the CORRECT answer.

134. The equation, $id = 708\ n\ CD^{1/2}m^{2/3}t^{1/6}$ is related to

(A) Mass spectroscopy (B) Amperometry

(C) Polarogrphy (D) Potentiometry

Answer: C

Explanation:

In Polarography, ILKOVIC Equation is used to define Diffusion current (id).

$id = 708\ n\ CD^{1/2}m^{2/3}t^{1/6}$

where,

id = maximum current in amperes,

n= number of electrons required per molecule of electro-active substance,

C = Concentration,

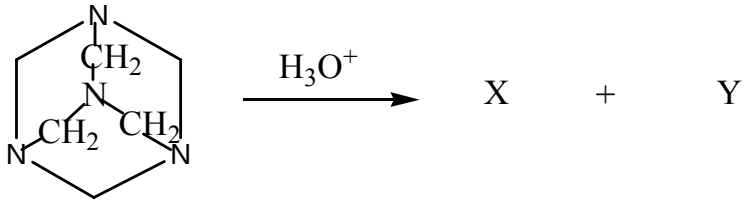
D = Diffusion coefficient,

r = rate of mercury flow from Dropping Mercury Electrode (DME),

t = drop time

Hence, option C is the CORRECT answer.

135. Methanamine under mild acidic condition gives 'X' and 'Y'. Identify them.



Methanamine

(A) X = 6COOH, Y = $4NH_3$ (B) X = 6COOH, Y = $4NH_3OH$

(C) X = 6HCHO, Y = $4NH_3$ (D) X = 4HCHO, Y = $4NH_3$

Answer: C

136. How many optical isomers are possible for butane-2,3-diol

(A) 5 (B) 4 (C) 3 (D) 8

Answer: C

137. Drug of choice in Cerebral malaria

(A) Quinine (B) Mefloquine (C) Chloroquine (D) Primaquine

Answer: A

138. Tricyclic antidepressants are finally excreted in conjugation with

(A) Sulfation (B) Glutathione (C) Glucuronide (D) Methylation

Answer: C

139. Drug preferred in Supra-ventricular arrhythmia

(A) Nifedipine (B) Verapamil (C) Diltiazem (D) Nicorandil

Answer: B

Explanation:

Nifedipine is an anti-anginal drug acts as calcium channel blocker.

Verapamil is a class IV antiarrhythmic, more effective than digoxin in controlling ventricular rate hence more preferred in supra-ventricular arrhythmia.

Diltiazem is also a calcium channel blocker preferred in supra-ventricular arrhythmia.

Nicorandil is an anti-anginal drug acts as vasodilation.

Hence, option B is the CORRECT answer.

140. Which two of the below statements are FALSE

[P] KBr pellets are used for solid sampling in IR spectroscopy

[Q] In Mull technique liquid sample is mixed with Nujol

[R] Nernst glower and Global source are used as light sources in IR

[S] Bolometer is used a source of light for IR spectroscopy

(A) P & Q (B) P & S (C) Q & R (D) Q & S

Answer: D

Explanation:

Mull technique is applicable when dealing with solid samples.

Bolometer is not the source and it is the detector used in IR spectroscopy.

So, statements Q and R are false, hence option D is the CORRECT answer.

141. Which of the below two statements are TRUE related to Henna

[P] Henna imparts orange-red colour, which is more stable in acidic pH (5.0)

[Q] Lawsone, the active constituent of leaves shows anti-bacterial and anti-fungal properties

[R] Henna is obtained from the biological source of lawsonia inermis, Family Liliaceae

[S] Aqueous extract of henna leaves, degrades on addition of acid and fades by addition of alkali

(A) P & Q (B) Q & R (C) P & S (D) R &S

Answer: A

Explanation:

Henna is obtained from the biological source of lawsonia inermis, family Lythraceae.

Aqueous extract of henna leaves, shades on addition of acid which deepens by addition of alkali.

So the statements R and S are false, hence, option A is the CORRECT answer.

142. Temperature conversion can be done by the formula

(A) 9C = 5F - 160 (B) 5C = 9F - 160

(C) 9C = 5F + 160 (D) 5C = 9F + 160

Answer: A

143. **Assertion [a]:** Clove is used in cigarettes called Kretek, along with a blend of tobacco and other flavors.

Reason [r]: Eugenol, one of the chemicals in clove, acts like menthol to reduce the harshness of tobacco smoke.

(A) Both **[a]** and **[r]** are true but **[r]** is NOT the correct reason for **[a]**

(B) **[a]** is true but **[r]** is false

(C) Both **[a]** and **[r]** are true and **[r]** is the correct reason for **[a]**

(D) Both **[a]** and **[r]** are false

Answer: C

144. The ring system present in amrinone and milrinone is

(A) Pyrimidine (B) Bipyridine (C) Pyrazolidine dione (D) Pyrrole

Answer: B

145. All the following drugs have β-hydroxy heptanoic acid chains, EXCEPT

(A) Atorvastatin (B) Pravastatin (C) Simvastatin (D) Fluvastatin

Answer: C

Explanation:

In Simvastatin dimethyl butanoic acid chain whereas the remaining three agents have β-hydroxy heptanoic acid chains are present in their structures.

146. Each of the following options list the name of the drug, its source and its toxicity. Choose an option showing a WRONG combination

(A) Cycloserine, Streptomyces orchidaceus, CNS toxicity

(B) Chloramphenicol, Streptomyces venezuelae, Gray baby syndrome

C) Gentamicin, Micromonospora purpurea, Nephrotoxicity

(D) Rifampicin, Staphylococus aureus, Hepatotoxicity

Answer: D

Explanation:

Rifampicin is a semisynthetic compound derived from Amycolatopsis rifamycinica (formerly known as Amycolatopsis mediterranei and Streptomyces mediterranei). Rifampicin is able to cause Hepatotoxicity. So, the source given for Rifampicin is wrong. Hence, option D is the CORRECT answer.

147. Opioids are hepatically metabolized via

(A) CYP2C8 (B) CYP2D6 (C) CYP3A4 (D) CYP2C19

Answer: B

148. The following drug can be used in Leishmaniasis

(A) Miltefosine (B) Suramin (C) Megazol (D) Eflornithine

Answer: A

Explanation:

Miltefosine is an anti-protozoal drug used in the treatment of visceral and cutaneous leishmaniasis.

Suramin is used for treatment of human sleeping sickness caused by trypanosomes and onchocerciasis.

Megazol is used in the treatment of Trypanosomiasis.

Eflornithine is used in the treatment of facial hirsutism and African trypanosomiasis (sleeping sickness).

Hence, option A is the CORRECT answer.

149. Tetrazole ring system is present in

(A) Losartan (B) Triamterene

(C) Pantoprazole (D) Omeprazole

Answer: A

Explanation:

Losartan is an anti-hypertensive drug containing tetrazole and imidazole ring systems in its structure.

Triamterene is a potassium sparing diuretic containing pteridine ring system in its structure.

Pantoprazole and Omeprazole are proton pump inhibitors containing pyridine and Benzimidazole ring systems in their structure.

Hence, option A is the CORRECT answer.

150. In NMR spectrometry, the units for chemical shift (δ)

(A) Gauss (B) Parts per million (C) Siemen (D) Nano meter

Answer: B

Explanation:

Gauss is the unit of magnetic field.

Parts per million (ppm) can be used as unit for chemical shift in NMR.

Siemen is the unit of electric conductance.

Nanometer is the unit of length.

Hence, option B is the CORRECT answer.

With Best Regards,

MYBO TEAM

Contact E-mail: mybogroup@gmail.com

NANO BOOK OF PHARMA EQUATIONS, Vol-I,

First **GPAT book** from MYBO Publishers (Just Rs. 55/-)

For Highlights of this book visit www.mybogroup.com/track/

Available at below places:

UNIVERSAL BOOK CENTER,
4-5-150, Women's College Road,
Hasmath Gunj, Koti Main Rd,
KOTI, HYDERABAD,
Andhra Pradesh 500195.
Contact No. 040-23449924

LIBRARIAN,
G. Pulla Reddy College of Pharmacy,
MEHDIPATNAM, HYDERABAD,
Andhra Pradesh 500028.
Contact No. 9440725130

BALAJI BOOK BINDERS,
Opp S.P. Office Road, Sai Restaurant Lane, **OLD CBI**, Vidya Nagar,
Near III Town Police station,
VISAKHAPATNAM 530017
Contact No. 0891-2710285, 9705929214

SRI RAJESWARI BOOK LINKS,
30-6-8, Opposite Premasamajam,
DABA GARDENS,
VISAKHAPATNAM,
Andhra Pradesh 530020.
Contact No. 0891-6661718

SYNAPSE LIFE SCIENCES,
2-5-346/1, Beside Kakatiya Mahila Degree College, Nakkalagutta,
HANMAKONDA, WARANGAL,
Andhra Pradesh 506001.
Contact No. 0870-2567472; 9502271088

CHANDRA SEKHAR,
KAKINADA.
Contact No. 9494973068

RANJIT,
VIJAYAWADA.
Contact No. 8106345367

PHARMA ACADEMY,
GUNTUR.
Contact No. 9849702527

CHINNA,
RAJAHMUNDRY.
Contact No. 9966667509

M.V.K. KUMAR,
TADEPALLIGUDEM.
Contact No. 9247896044

For Other Areas Assistance:
Contact
MYBO PRO: 9177464656
MYBO Treasurer: 9966877115

For Queries or Bulk Orders:
Drop a mail to: mybogroup@gmail.com
along with your details.