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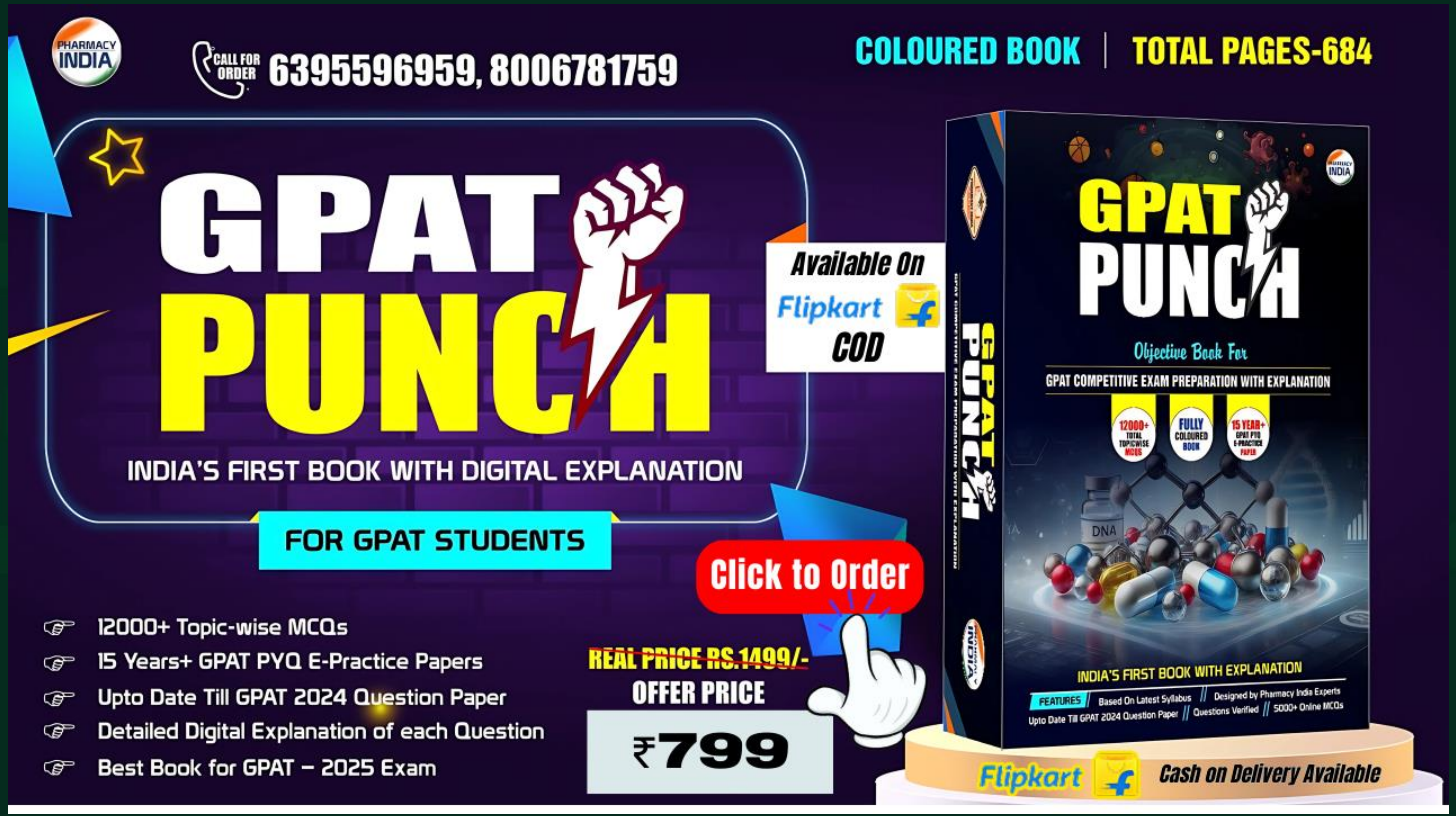

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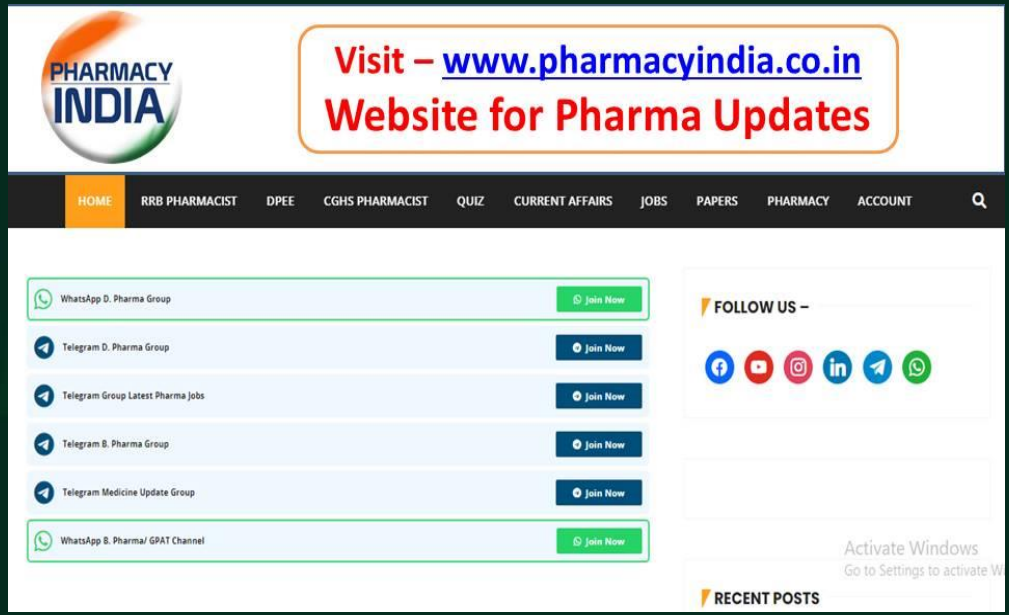

GLYCOSIDES

1. **Chikusetsu saponin is present in: [GPAT 2024]**

(a) Liquorice

(b) Senega

(c) Quillia

(d) Ginseng

1. **Chikusetsu saponin is present in: [GPAT 2024]**

(a) Liquorice

(b) Senega

(c) Quillia

(d) Ginseng

Explanation:

Chikusetsu saponins are a type of triterpenoid saponins found predominantly in the roots of *Panax ginseng*. These compounds are bioactive components responsible for various pharmacological effects, including adaptogenic and immunomodulatory activities.

2. **The most suitable test for digitoxose is: [GPAT 2024]**

(a) Dragendrof's test

(b) Hager's test

(c) Baljet test

(d) Keller–Kiliani

2. **The most suitable test for digitoxose is: [GPAT 2024]**

(a) Dragendrof's test

(b) Hager's test

(c) Baljet test

(d) Keller–Kiliani

Explanation:

The Keller–Kiliani test is a qualitative test used to detect the presence of deoxy sugars such as digitoxose, which are found in cardiac glycosides. The test involves the reaction of digitoxose with ferric chloride in the presence of concentrated sulfuric acid, producing a reddish-brown layer.

3. **Modified borntrager's test is used to detect the presence of which type of glycosides [GPAT-2023 SHIFT-II]**

(a) O-type of glycosides

(b) C-type of glycosides

(c) S-type of glycosides

(d) N-type of glycosides

3. **Modified borntrager's test is used to detect the presence of which type of glycosides [GPAT-2023 SHIFT-II]**

(a) O-type of glycosides

(b) C-type of glycosides

(c) S-type of glycosides

(d) N-type of glycosides

Explanation:

The Modified Borntrager's test is specific for anthraquinone glycosides linked through C-C bonds (C-glycosides). This test involves hydrolysis under acidic conditions, followed by extraction with an organic solvent. Positive results show a pink to red coloration.

4. **Unicellular conical, warty trichomes, paracytic stomata, xylem vessels with annular thickening are important microscopical features of which plant [GPAT-2023 SHIFT-II]**

(a) Datura metel

(b) Cassia angustifolia

(c) Digitalis purpurea

(d) Atropa belladonna

4. **Unicellular conical, warty trichomes, paracytic stomata, xylem vessels with annular thickening are important microscopical features of which plant [GPAT-2023 SHIFT-II]**

(a) Datura metel

(b) Cassia angustifolia

(c) Digitalis purpurea

(d) Atropa belladonna

Explanation:

Microscopical examination of *Cassia angustifolia* reveals unicellular warty trichomes, paracytic stomata, and xylem vessels with annular thickenings, which are characteristic of this plant. These features are essential for its identification in pharmacognostic studies.

5. **Aloe contains _____ type of glycosides [GPAT-2023 SHIFT-II]**

(a) C-glycosides

(b) O-glycosides

(c) S-glycosides

(d) N-glycosides

5. **Aloe contains _____ type of glycosides [GPAT-2023 SHIFT-II]**

(a) C-glycosides

(b) O-glycosides

(c) S-glycosides

(d) N-glycosides

Explanation:

On the Basis of Glycosidic Linkage

1. **O-glycosides:**
   - Sugar molecule is combined with phenol or –OH group of aglycon.
   - **Example:** Amygdaline, Indesine, Arbutin, Salicin, cardiac glycosides, anthraxquinone glycosides like sennosides etc.
2. **N-glycosides:**
   - Sugar molecule is combined with N of the –NH (amino group) of aglycon.
   - **Example:** nucleosides

3. S-glycosides:

- Sugar molecule is combined with the S or SH (thiol group) of aglycon.
- **Example:** Sinigrin

4. C-glycosides:

- Sugar molecule is directly attached with C—atom of aglycon.
- **Example:** Anthraquinone glycosides like Aloin, Barbaloin, Cascaroside and Flavan glycosides, etc.

6. 'Star spots' present in the transverse section of decorticated Rhubarb rhizomes are [GPAT-2022]

(a) Lignified cells

(b) Pericyclic fibres

(c) Concentric vascular bundles

(d) Crystals of calcium oxalate

6. 'Star spots' present in the transverse section of decorticated Rhubarb rhizomes are [GPAT-2022]

(a) Lignified cells

(b) Pericyclic fibres

(c) Concentric vascular bundles

(d) Crystals of calcium oxalate

Explanation:

- In the transverse section of decorticated Rheum rhizomes (commonly known as Rhubarb) (Rheum species, family Polygonaceae) , the "star spots" are typically crystals of calcium oxalate. These crystals are often present in the parenchyma cells and appear as star-like structures when observed under the microscope. Calcium oxalate crystals are a common feature in many plant tissues, and their presence is characteristic of certain plants like rhubarb.

- **Pharmacognostic Identification:** These features help in the identification and standardization of rhubarb as an official drug in pharmacognosy. Microscopical analysis confirms the presence of these crystals alongside other features like vascular bundles and starch grains.

7. **Dioscin, a steroidal saponin glycoside of Dioscorea tubers after hydrolysis gives [GPAT-2022]**

(a) Diosgenin + 3 Glucose

(b) Diosgenin + 3 Rhamnose

(c) Diosgenin + 2 Glucose + 1 Rhamnose

(d) Diosgenin + 1 Glucose + 2 Rhamnose

7. **Dioscin, a steroidal saponin glycoside of Dioscorea tubers after hydrolysis gives [GPAT-2022]**

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(c) Diosgenin + 2 Glucose + 1 Rhamnose

(d) Diosgenin + 1 Glucose + 2 Rhamnose

Explanation:

DIOSCOREA

Synonym: - Yam plant, rheumatic plant.

Biological Source: - dried rhizome of several species of *Dioscorea* like *D. villosa, D. prazeri, D. composite; D. spiculiflora; D. deltoidea* and *D. Floribunda.*

Family: - Dioscoreaceae.

Chemical constituent: -

- Roots contain - **diosgenin (4–6%)** a steroidal sapogenin
  i. Its glycoside smilagenin, epismilagenin and beta isomer yammogenin.
- It also contains **sapogenase** (enzyme), phenolic compounds and **starch (75%).**
- Diosgenin is the hydrolytic product of saponin – **dioscin.**

Dioscin —(Acid hydrolysis)→ Diosgenin + rhamnose + glucose

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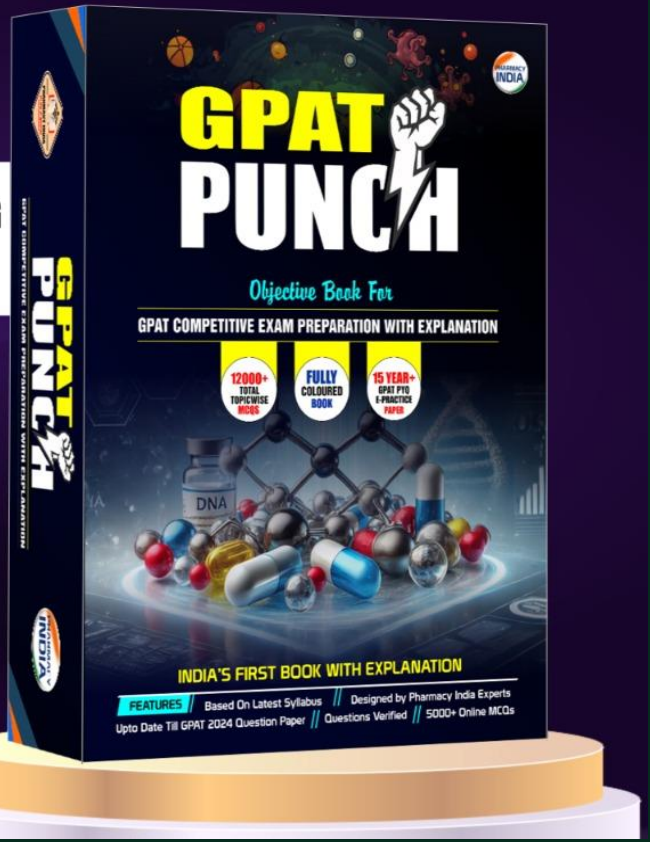

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8. Which of the below statement are true for Rutin [GPAT-2022]

[A] Rutin is a Bioflavonoid

[B] Rutin is a flavonol glycosides

[C] Rutin is used in capillary bleeding

[D] Rutin is used as Vitamin P

(a) A and B only

(b) A, B and C only

(c) A, B and D only

(d) All of these

8. **Which of the below statement are true for Rutin [GPAT-2022]**

[A] Rutin is a Bioflavonoid

[B] Rutin is a flavonol glycosides

[C] Rutin is used in capillary bleeding

[D] Rutin is used as Vitamin P

(a) A and B only

(b) A, B and C only

(c) A, B and D only

(d) All of these

Explanation:

[A] Rutin is a Bioflavonoid

- **True**: Rutin is classified as a bioflavonoid, which are plant-derived polyphenolic compounds. Bioflavonoids are known for their antioxidant, anti-inflammatory, and vascular-protective properties.

[B] Rutin is a flavonol glycoside

- **True**: Rutin is a glycoside of the flavonol quercetin. The glycoside portion consists of the disaccharide rutinose (rhamnose and glucose). This structure classifies it as a flavonol glycoside.

[C] Rutin is used in capillary bleeding

- **True**: Rutin strengthens capillary walls, reduces fragility, and prevents capillary bleeding. This action makes it valuable in managing conditions like hemorrhoids and varicose veins.
- **Mechanism**: Rutin promotes vascular integrity by reducing oxidative stress and improving endothelial function.

[D] Rutin is used as Vitamin P

- **True**: Rutin is traditionally referred to as "Vitamin P" due to its role in enhancing capillary permeability and resistance. Though it is not a true vitamin, this term reflects its therapeutic importance in maintaining vascular health.

9. **In Aloe the mucilage containing parenchymatous cells are present in [GPAT-2020]**

(a) Central parenchymatous region

(b) Pericyclic cells

(c) Epidermis

(d) Vascular bundles

9. **In Aloe the mucilage containing parenchymatous cells are present in [GPAT-2020]**

(a) Central parenchymatous region

(b) Pericyclic cells

(c) Epidermis

(d) Vascular bundles

Explanation:

TRANSVERSE SECTION OF ALOE HAS THREE DISTINCT SECTIONS

- Outermost cuticle
- Epidermis and palisade tissue
- Mucilaginous parenchymatous mesophyll

✓ Mesophyll encloses vascular bundles covered with pericyclic layer.

✓ Inside the pericycle, few large elongated thin walled aloeitc cells are located which contain highly viscous yellow juice gel

✓ At the parenchyma, few calcium oxalate crystals are located

10. **In yam, the presence of, irregular arrangement of the fibres, the ends of which often project from the surface is because of [GPAT-2020]**

(a) Absence of linters

(b) Absence of combing

(c) Presence of impurities

(d) Improper drying

10. In yam, the presence of, irregular arrangement of the fibres, the ends of which often project from the surface is because of [GPAT-2020]

(a) Absence of linters

(b) Absence of combing

(c) Presence of impurities

(d) Improper drying

Explanation:

- Various machines are used for the two yarn types namely combed and carded.
- The cotton-combing machine removes all the shorter fibres, and a thread is spun made of long, well-paralleled, uniform fibres.
- The short comber waste fibers are used to produce the best cotton wool grades.
- The carding machine uses fibers that are shorter and less uniform in length, and the absence of combing is seen by the irregular arrangement of the fibers in the yarn, the ends of which mostly project from the surface.

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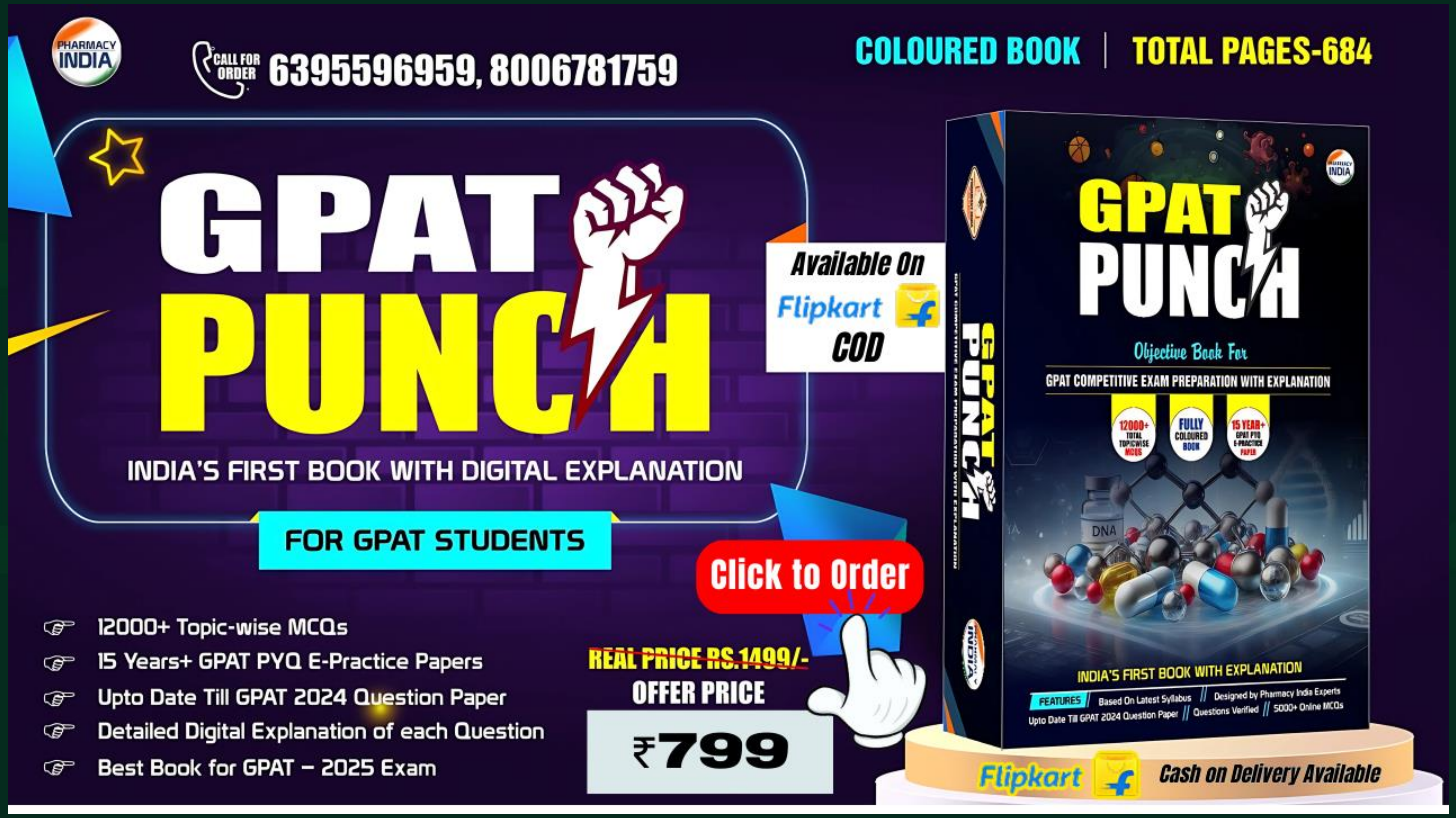

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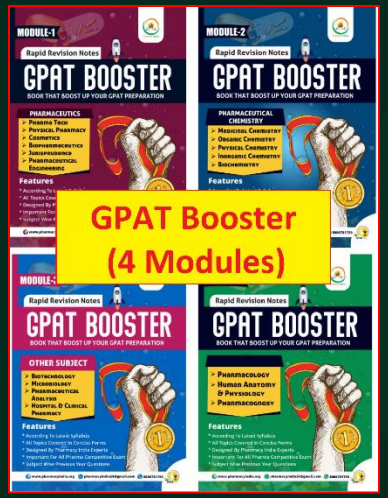

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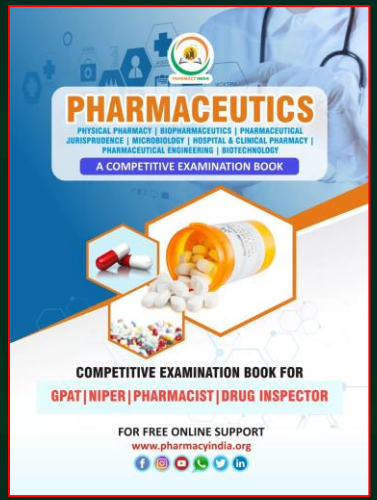

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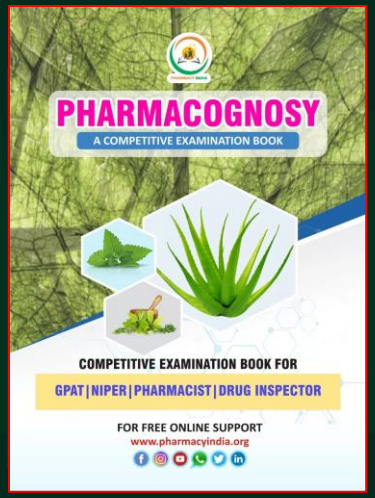

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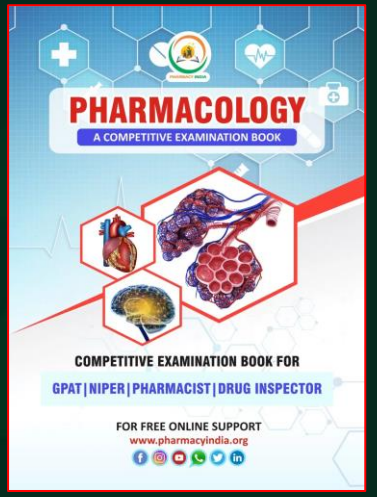

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11. **In Cassia angustifolia short term drought [GPAT-2019]**

(a) Increases the concentration of sennosides A and B

(b) Decreases the concentration of sennosides A and B

(c) Causes loss of leaf biomass

(d) Causes death of the plant

11. **In Cassia angustifolia short term drought [GPAT-2019]**

(a) Increases the concentration of sennosides A and B

(b) Decreases the concentration of sennosides A and B

(c) Causes loss of leaf biomass

(d) Causes death of the plant

Explanation:

- In Cassia angustifolia, Short term drought increased concentration of sennoside A+B (% dw).
- After morphological changes induced by drought had occurred. long-drought did not affect concentration of sennoside A + B, but extreme loss of leaf biomass caused sennoside yield per plant to fall by 78 percent.
- Application of foliar nitrogen increased the total sennoside content of A+ B per plant by 140 percent when the plants were not stressed with water but no effect of foliar nitrogen application was detected in extreme droughts.

Glycoside	R	10-10' Configuration	Composition
Sennoside A	COOH	trans	Mixture of 2 Rhein molecules
Sennoside B	COOH	meso	Mixture of 2 Rhein molecules
Sennoside C	CH2OH	trans	Mixture of Rhein and Aloe-emodin
Sennoside D	CH2OH	meso	Mixture of Rhein and Aloe-emodin

12. **The Glycoside Scilliroside in red squill acts as [GPAT-2019]**

(a) Insecticide

(b) Rodenticide

(c) Acaricide

(d) Molluscide

12. **The Glycoside Scilliroside in red squill acts as [GPAT-2019]**

(a) Insecticide

(b) Rodenticide

(c) Acaricide

(d) Molluscide

Explanation:

EUROPEAN SQUILL (SCILLA)

European squill two varities-White squill, Red squill.

Red squill:

- It is a variety of European squill (*Urginea maritima*).
- Red colour is due to red anthocyanin pigment present in mesophyll cell or scales.
- Red squill contain glycoside called scilliroside and scillirubrosides.
- It is used as a rat poison (Rodenticide)
- Characteristic odour of onion bulbs due to Alkyl or Alkenyl disulphides

13. **Alkanna tinctoria (Boraginaceae) roots are used in [GPAT-2018]**

(a) Dandruff

(b) Tooth paste

(c) Facial cleansing wash

(d) Lipstick formulations and hair dyes

13. **Alkanna tinctoria (Boraginaceae) roots are used in [GPAT-2018]**

(a) Dandruff

(b) Tooth paste

(c) Facial cleansing wash

(d) Lipstick formulations and hair dyes

Explanation:

1. Source and Properties of Alkanna tinctoria:

- **Plant Origin:** *Alkanna tinctoria*, commonly known as Alkanet, belongs to the family Boraginaceae.
- **Constituents:** The roots of *Alkanna tinctoria* contain **alkanin**, a red naphthoquinone pigment, which is responsible for its vibrant red to purple coloration.

2. Uses in Lipstick and Hair Dye Formulations:

- **Lipstick Formulations:** Alkanin is used as a natural coloring agent in cosmetics, particularly in lipstick formulations. Its ability to impart a deep red hue makes it a preferred choice in the cosmetic industry.
- **Hair Dyes:** The dyeing properties of alkanin make it suitable for use in hair dyes, where it provides natural coloration.

3. Pharmacognostic Significance:

- **Pigment Stability:** Alkanin exhibits good stability in oils and fats, making it ideal for formulations like lipsticks, which are oil-based.
- **Non-toxic:** Alkanin is considered safe for topical use and is non-toxic, aligning well with the requirements for cosmetic applications.

14. The constituent of Cochineal is [GPAT-2018]

(a) Cantharidin

(b) Hirudin

(c) Tannic acid

(d) Carminic acid

14. **The constituent of Cochineal is [GPAT-2018]**

(a) Cantharidin

(b) Hirudin

(c) Tannic acid

(d) Carminic acid

Explanation:

1. Origin of Cochineal:

- **Source:** Cochineal is a natural dye obtained from the dried bodies of female insects of the species *Dactylopius coccus*, which thrive on cactus plants (*Opuntia spp.*).
- **Family:** Dactylopiidae (insect family).

2. Active Constituent:

- The primary chemical constituent of cochineal is **carminic acid**, a red anthraquinone derivative that accounts for 17–24% of the dried insect's weight.

- **Chemical Properties:**
  - **Carminic acid** is soluble in water and alcohol.
  - It is responsible for the red coloration, making it a valuable natural dye.

3. Uses of Cochineal:

- **Food Industry:** Used as a natural red coloring agent (E120) in beverages, candies, and dairy products.
- **Pharmaceutical Industry:** Used as a dye in formulations and diagnostic stains.
- **Cosmetic Industry:** Applied in lipsticks, rouges, and other cosmetic products.

15. **Glycosides are condensation products of [GPAT-2017]**

(a) Protein + Aglycone

(b) Sugar + Protein

(c) Sugar + Aglycone

(d) Fats + Aglycone

15. **Glycosides are condensation products of [GPAT-2017]**

(a) Protein + Aglycone

(b) Sugar + Protein

(c) Sugar + Aglycone

(d) Fats + Aglycone

Explanation:

- Glycosides are organic compound from plant or animal sources on enzymatic or acid hydrolysis yields one or more sugar moieties (glycone) along with no sugar moiety (aglycone).
- Glycoside - Aglycone (genin) + Glycine (Sugar)
- Aglycone part - Responsible for chemical and therapeutic property
- Glycone part - Responsible for facilitates absorption of glycosides and helps in transportation of aglycone portion at the site of action.

- Chemically they are acetals or sugar ethers, formed by interaction of hydroxyl group each of sugar and no sugar moiety with loss of water molecule.
- Sugar is mostly B-D-glucose others are galactose, mannose, rhamnose, digitoxoside, cyma rose etc.
- Linkage between glycone and aglycone is called as glycosidic linkage and on the basis of this linkage α and ß stereoisomer is assigned .

16. **A steroidal phytoconstituent lowering blood sugar is obtained from [GPAT-2017]**

(a) Momordica charantia

(b) Quillaja saponaria

(c) Dioscorea deltoidea

(d) Glycyrrhiza glabra

16. **A steroidal phytoconstituent lowering blood sugar is obtained from [GPAT-2017]**

(a) Momordica charantia

(b) Quillaja saponaria

(c) Dioscorea deltoidea

(d) Glycyrrhiza glabra

Explanation: SOME CRUDE DRUGS AND THEIR USES

CRUDE DRUGS	Biological source	USES
Momordica (Karela, bitter melon)	Momordica charantia (Cucurbitaceae)	Stomachic, carminative, tonic and cooling and used for treatment of rheumatism, gout, and disorders of spleen and liver. Mainly fruit juices reduces blood sugar level and for treatment of diabetes mellitus.
Quillaia (Soap bark)	Quillaia Saponaria (Rosaceae)	Emulsifying agents and Experiment. Also used as detergent and in preparation of shampoo

CRUDE DRUGS	Biological source	USES
Dioscuri (Yam)	Dioscuri deltoidei Discordance	Precursor for synthesis of corticosteroids, sex-hormones, and Oral-contraceptive. Used for) treatment of rheumatic arthritis.
Yasti (Glycyrrhiza)	Glycyrrhiza glabra (Leguminosae)	Expectorant and demulcent, cough mixtures. flavoring agent and antispasmodic

17. **Methanolic extract of a crude drug powder when treated with magnesium turnings and concentrated hydrochloric acid turned the solution magenta coloured. The test is termed as [GPAT-2017]**

(a) Shinoda test

(b) Van Urk's Test

(c) Keller Kiliani test

(d) Vitali Morin Test

17. **Methanolic extract of a crude drug powder when treated with magnesium turnings and concentrated hydrochloric acid turned the solution magenta coloured. The test is termed as [GPAT-2017]**

(a) Shinoda test

(b) Van Urk's Test

(c) Keller Kiliani test

(d) Vitali Morin Test

Explanation:

IDENTIFICALTION TESTS	OBSERFATION	INFERENCE
Keller Killani Test – Test for Digitoxin 1 mg extract + 10 ml 70% alcohol after 3 min. extract + Lead acetate, Glacial acetic acid. $FeCl_3$ and transfer into tube containing H_2SO_4	Reddish brown colour appears at the junction of two layers and upper layer shows bluish green colour	Presence of digitoxose sugar
Vitali-Morin Test – Test for atropine: Test solution + Fuming HNO_3 + Evaporate to dry at 100°C+3 % Methanolic KOH solution	Violet colour	Presence of tropane alkaloids (Datura, Belladonna, Hyoscyamus)

IDENTIFICALTION TESTS	OBSERFATION	INFERENCE
Shinoda Test - **Extract/Drug powder + 5 ml 95% Ethanol + Conc. HCl + 0.5 gm magnesium**	Magenta colour	Presence of flavonoids
Van Urk's Test - **Powdered drug + p-dimethyl Aminobenzaldehyde**	Blue colour	Presence of ergot

18. **A crude drug powder was heated with ferric chloride, water and concentrated hydrochloric acid followed by extraction with chloroform. The chloroform layer was treated with ammonia, the ammoniacal layer turned pink. The test indicates presence of phytoconstituent [GPAT-2017]**

(a) Anthraquinone-C-glycosides

(b) Flavanones

(c) Cardiac glycosides

(d) Saponin glycosides

18. A crude drug powder was heated with ferric chloride, water and concentrated hydrochloric acid followed by extraction with chloroform. The chloroform layer was treated with ammonia, the ammoniacal layer turned pink. The test indicates presence of phytoconstituent [GPAT-2017]

(a) Anthraquinone-C-glycosides

(b) Flavanones

(c) Cardiac glycosides

(d) Saponin glycosides

Explanation:

IDENTIFICALTION TESTS	OBSERFATION	INFERENCE
Borntrager's test- **Test for sennosides:** **Test extract + boiled with dil.H_2SO_4 and filter. Filtrate Organic solvent, shake, separate the upper layer and add dil. Ammonia**	Ammonical layer turns pink or red	Presence of anthraquinone glycosides (C-O glycoside)

19. **Sodium cromoglycate has been developed from the molecule which is found in the Ammi visnaga is [GPAT-2016]**

(a) Amarogentin

(b) Khellin

(c) Tubocurarine

(d) Physostigmine

19. **Sodium cromoglycate has been developed from the molecule which is found in the Ammi visnaga is [GPAT-2016]**

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(b) Khellin

(c) Tubocurarine

(d) Physostigmine

Explanation: The common drugs originating from traditional medicinal plants possessing therapeutic values are listed below

DRUGS	SOURCES	USES
Artemisinin	Sweet wormwood Artemisia annua	Antimalarial
Atropine	Deadly nightshade Atropa belladonna and other Solanaceous drugs	Cholinergic blocker
Caffeine	Coffee Coffea arabica, Tea Thea sinensis	CNS stimulant, diuretic
Bromocryptine (also cabergoline, methysergide)	Claviceps purpurea	Parkinson' s disease
Atracrium	Chondodendron aztomentosum	Muscle relaxant during anaesthesia

DRUGS	SOURCES	USES
Podophyllotoxin	Podophyllum peltatum	Anticancer
Sodium Cromoglycate (Template moleulr: khellin)	Ammi visnaga	Antiasthmatic

20. Given below are two statements one is lebelled as Assertion [A] and the other is labelled as Reason [R] [GPAT-2015]

Assertion [A]: After collecting cascara bark, it is allowed to stored for atleast 1 year

Reason [R]: Fresh bark containing Anthranol which causes gripping effect, can be oxidized to anthraquinone upon storage

(a) Both [A] and [R] are true but [R] is not 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

20. Given below are two statements one is lebelled as Assertion [A] and the other is labelled as Reason [R] [GPAT-2015]

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(a) Both [A] and [R] are true but [R] is not 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

Explanation:

IMPORTANT CONSIDERATION DURING CULTIVATION, COLLECTION AND PROCESSING OF CASCARA BARK

- Coppicing method is practicing now a days in order to avoid the destruction of large number of trees.
- Staining and blackening of bark may result while cut the pieces during rainy season.
- While drying, the inner surface should always turn downwards in order to prevent darkening effect which occurs when exposed to sun.

- The freshly collected cascara bark should be kept at least for 1 year before it is used medicinally. Because the fresh bark contains Anthranol which possess gripping and emetic effect. However, upon storage for long period, the Anthranol is oxidized to anthraquinone.

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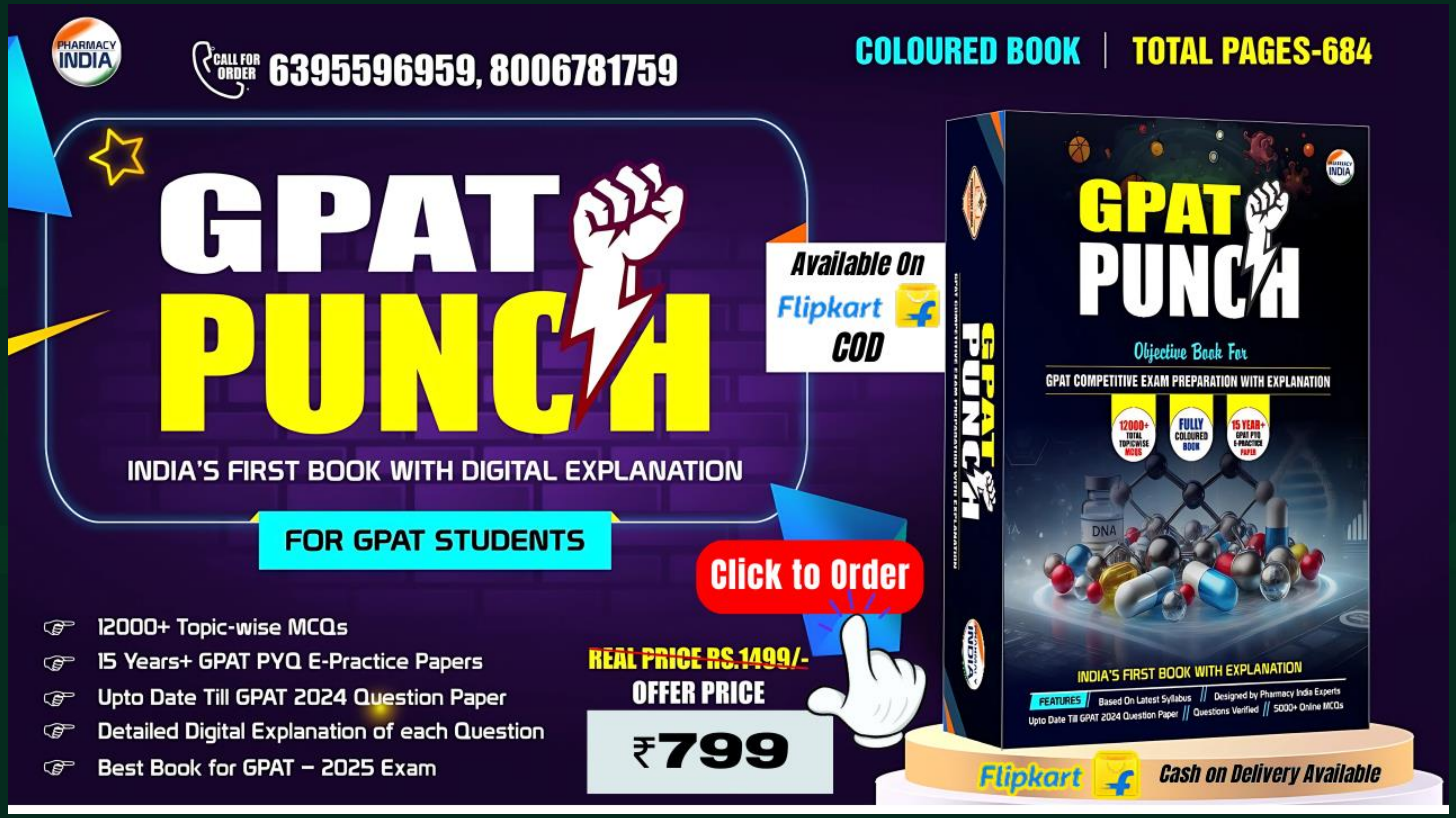

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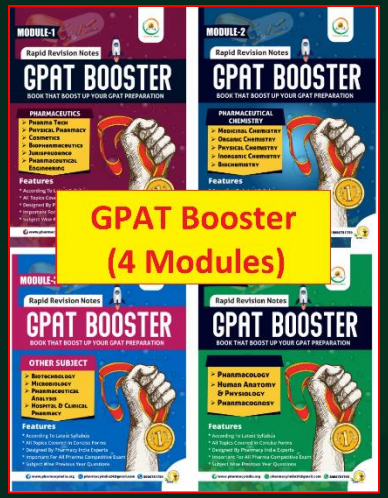

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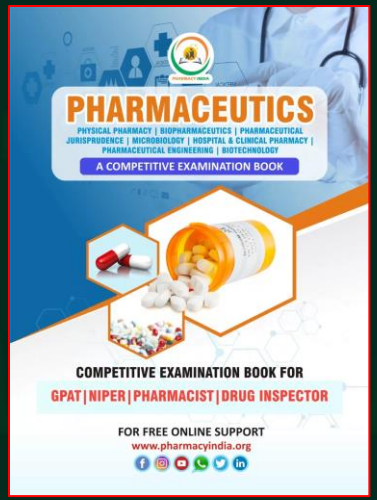

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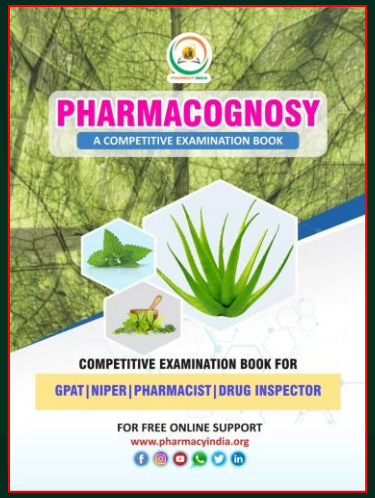

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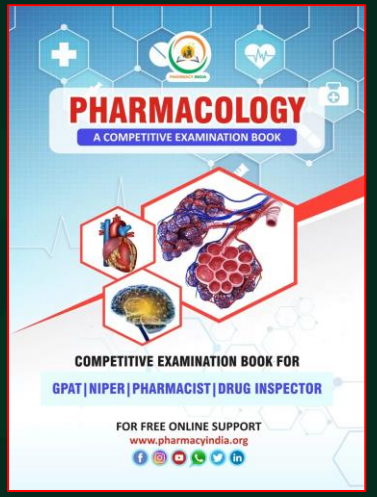

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PHARMACY INDIA

21. **Brahmi has [GPAT-2014]**

(a) Pentacyclic triterpenoid saponin glycoside

(b) Diterpenoid saponin glycoside

(c) Steroidal non-saponin glycoside

(d) Tetracyclic triterpenoid saponin glycoside

21. **Brahmi has [GPAT-2014]**

(a) Pentacyclic triterpenoid saponin glycoside

(b) Diterpenoid saponin glycoside

(c) Steroidal non-saponin glycoside

(d) Tetracyclic triterpenoid saponin glycoside

Explanation: CLASSIFICATION OF GLYCOSIDES

1.	Anthraquinone glycosides		Senna, Aloe, Cascara, Rhubarb.
2.	Cardiac glycosides		Digitalis, Strophanthus, Ouabain, Thevetia, Squill, Oleander.
3.	Saponin glycosides	Tetracyclic triterpenoids	Dioscorea, Shatavari
		Pentacyclic triterpenoids	Ginseng, Liquorice, Senega, triterpenoids Sarsaparilla, Quillaia bark, Brahmi
4.	Cyanogenetic glycosides		Bitter almond, Wild cherry bark

5.	Isothiocyanate glycosides	Black mustard
6.	Flavanol glycosides	Buckwheat, Gingko, Silymarin
7.	Coumarin glycosides	Ammi, Visnaga, Psoralea
8.	Aldehyde glycosides	Vanilla
9.	Phenol glycosides	Bear berry
10.	Steroidal glycoalkaloids	Solanum
11.	Bitter glycosides	Gentian, Picrorrhiza, Chirata, Quassia, Gymnema

22. **Types of fluorescence in UV light shown by Indian Rhubarb is [GPAT-2013]**

(a) Deep violet

(b) Blue

(c) Yellow

(d) Deep red

22. **Types of fluorescence in UV light shown by Indian Rhubarb is [GPAT-2013]**

(a) Deep violet

(b) Blue

(c) Yellow

(d) Deep red

Explanation:

RHUBARB

(1) Indian Rhubarb (Rheum emodi)

- ✓ It is also known as Himalayan rhubarb.
- ✓ It is consisting of dried rhizome and root of Rheum webblanum, Rheum emodi.
- ✓ Not contain rhaponticin
- ✓ Gives deep violet fluorescence in UV light.

(2) Rhapontic Rhubarb

- ✓ It is obtained from the rhizomes of Rheum rhaponticum
- ✓ Estrogenic activity due to rhaponticin.
- ✓ Gives blue fluorescence in UV light.

23. **Isothiocyanate glycosides are prominent in family [GPAT-2013]**

(a) Cruciferae

(b) Liliaceae

(c) Rosaceae

(d) Apocynaceae

23. **Isothiocyanate glycosides are prominent in family [GPAT-2013]**

(a) Cruciferae

(b) Liliaceae

(c) Rosaceae

(d) Apocynaceae

Explanation:

ISOTHIOCYANATE/GLUCOSINOLATE TYPE

- It contains isothiocyanate (S & N containing glycosides) as like following structure
- It is seen in Cruciferae family. It is present in mustard (Sinigrin)
- Many plants also contain myrosinase enzyme.

24. Study the following statements about the stereochemistry of steroidal aglycones in cardiac glycosides [GPAT-2012]

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

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

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

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

Choose the correct statement

(a) P is true while Q, R and S are false

(b) Q is true while P, R and S are false

(c) R is true while P, Q and S are false

(d) S is true while P, R and Q are false

24. Study the following statements about the stereochemistry of steroidal aglycones in cardiac glycosides [GPAT-2012]

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

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

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

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

Choose the correct statement

(a) P is true while Q, R and S are false

(b) Q is true while P, R and S are false

(c) R is true while P, Q and S are false

(d) S is true while P, R and Q are false

Explanation:

The aglycone part of cardiac glycoside is a steroidal moiety so also called as steroidal glycoside.

- Two types - Cardenolides, Bufadienolides
- Occurance of Cardenolides in nature is high as compared to the bufadienolides.

Cardenolide - It has C_{23} steroids having an α, B unsaturated five membered lactone ring attached at 17 ß position. eg-Digitalis, Stropanthus, Thevetia.

Bufadienolide - It has C_{24} steroids having unsaturated six membered lactone ring attached at 17 ß position. Eg. – Squill.

For maximum cardiac activity

(1) Lactone ring is attached to 17ß position. Sugar part is attached to 3ß position.
(2) A/B, C/D ring should have Cis configuration and B/C trans configuration Sugar part helps in its absorption and distribution in body.
(3) When number of hydroxy group is increased on the molecule, the more rapid is the action in the body.
(4) Cardiac glycosides have 5 ß, 14 ß configuration in the aglycone part of the steroid nucleus.

25. The following characteristic properties are given in context of saponins

[P] Saponins give precipitate by shaking with water

[Q] Saponins are diterpenes and give foam on shaking with water

[R] Saponins are triterpenoidal compounds and cause haemolysis of erythrocytes

[S] They are steroidal or triterpenoidal compounds with tendency to reduce surface tension of water

Choose the correct option [GPAT-2012]

(a) P is true; Q is true; R is true; S is true

(b) P is false; Q is true; R is false; S is true

(c) P is false; Q is true; R is true; S is true

(d) P is false; Q is false; R is true; S is true

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(b) P is false; Q is true; R is false; S is true

(c) P is false; Q is true; R is true; S is true

(d) P is false; Q is false; R is true; S is true

Explanation:

- "Sapo" is Latin name for soap (soap-like)
- Group of organic compounds that form persistent froth when shaken with water ever dilute solution Saponins cause haemolysis of red blood cells

SAPONIN GLYCOSIDE

- Aglycone part of these glycoside has soap like action.
- Identified by-Foam forming, Haemolytic index.
- Chemically they contains aglycone called as sapogenin
- Saponin drugs mainly cyclopentene phenanthrene nucleus.

- Triterpenoid (C_{30}) in nature & Reduce surface tension

(A) Tetracyclic triterpenoids (Steroidal Saponin)

(B) Pentacyclic triterpenoids

26. Listed below are some phytoconstituents [GPAT-2012]

[P] Galactomannan

[Q] Glucomannan

[R] Barbaloin

[S] Phyllanthin

Identify the constituents present in Aloe vera

(a) Only P

(b) Q and R

(c) Only S

(d) P and S

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Identify the constituents present in Aloe vera

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Explanation: DESCRIPTION OF ALOE VERA

CRUDE DRUGS & SYNONYMS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USES
Aloe (Kumari, Musabbar)	Aloes is the dried juice of the leaves of Aloe barbadensis (curacao aloes) or Aloe perryi or Aloe foxer belongs to the family Liliaceae.	Curacao aloes almost contain Purgative & about 22 per cent of barbaloin. ingredient in Indian variety aloe vera contains compound very less quantity about 3.5-4 % tincture of of barbaloin. The other benzoin. constituents such as iso barbaloin, B-barbaloin and aloe-emodins and resins polysaccharides such as glucomannan.	Purgative & ingredient in compound tincture of benzoin.

27. Peruvoside is naturally obtained from one of the following plants. Identify the correct name [GPAT-2012]

(a) Dioscorea

(b) Ginseng

(c) Liquorice

(d) Thevetia

27. Peruvoside is naturally obtained from one of the following plants. Identify the correct name [GPAT-2012]

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Explanation: DESCRIPITION OF THEVETIA

CRUDE DRUGS & SYNONYMS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USES
Thevetia, Yellow oleander, Lucky nut tree	It consists of dried seeds of Thevetia nerifolia or Thevetia peruviana belonging to family Apocynaceae	Chief constituents includes, Thevetin A, Thevetin B (cerebroside), peruvoside, Nerrifolin, thevenenin (ruvoside) peruvosidic acid (Perusitin), Sugar units are L-thevetose, and D-glucose.	In elongation of cardiac insufficiency, seeds in the treatment of rheumatism, abortifacient and purgative

28.

Study the following statements IGPAT-2012]

[P] Lutein and zeaxanthin are flavonoids

[Q] Lutein and zeaxanthin are xanthophylls

[R] Lutein and zeaxanthin are required to control age-related macular degeneration

[S] Lutein is a flavonoid while zeaxanthin is its glycoside

Choose the correct answer

(a) P is correct while Q, R and S are incorrect

(b) Q and R are correct while P and S are incorrect

(c) Statement P is the only correct statement

(d) Statement S is the only correct statement

28. Study the following statements IGPAT-2012]

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Choose the correct answer

(a) P is correct while Q, R and S are incorrect

(b) Q and R are correct while P and S are incorrect

(c) Statement P is the only correct statement

(d) Statement S is the only correct statement

Explanation:

- Lutein and zeaxanthin are two fat-soluble antioxidants of the carotenoid class known as xanthophylls.
- Together with their conversion isomer meso-zeaxanthin, they are the main constituent of macular pigment, a compound concentrated in the macula region of the retina responsible for fine vision.
- Lutein and zeaxanthin are considered as agent which minimize the incidence of age-related macular degeneration (AMD).

29. Given herewith are two statements [GPAT-2012]

[P] Digitoxin is a secondary glycoside from Digitalis purpurea

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

Determine the correctness of the above statements

(a) Both P and Q are true

(b) P is true but Q is false

(c) Both P and Q are false

(d) P is false but Q is true

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[P] Digitoxin is a secondary glycoside from Digitalis purpurea

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Determine the correctness of the above statements

(a) Both P and Q are true

(b) P is true but Q is false

(c) Both P and Q are false

(d) P is false but Q is true

Explanation:

- Digoxin belongs to the class of medicines called digitalis glycosides. The production of various secondary metabolites in plants including cardenolides (Digoxin and Digitoxin).
  Digitoxin is a partially hydrolysed glycoside of purpurea glycoside A.

DIGITALIS PURPUREA

Purpurea glycoside A —Hydrolysis→ Digitoxigenin + 3 digitoxose + I glucose. (Digitoxin)

Purpurea glycoside B —Hydrolysis→ Gitoxigenin + 3 digitoxose + I glucose. (Gitoxin)

The cardiac activity is maximum in Purpurea glycoside – A

30. Given below are four statements in context of Hecogenin [GPAT-2012]

[P] It is a saponin

[Q] It is useful for the semi-synthesis of steroidal drugs

[R] It is not a glycoalkaloid

[S] It is obtained from Dioscorea tubers

Choose the correct combination of statements

(a) P, Q and R are correct while S is incorrect

(b) P, Q and S are correct while R is incorrect

(c) Q, R are correct while P, S are incorrect

(d) All are correct statements

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Choose the correct combination of statements

(a) P, Q and R are correct while S is incorrect

(b) P, Q and S are correct while R is incorrect

(c) Q, R are correct while P, S are incorrect

(d) All are correct statements

Explanation:

- Hecogenin is obtained from leaves of Agave sisalana.
- It is a steroidal saponin glycosides. It is not a glycoalkaloid.
- It is an important raw material for the synthesis of variety of steroidal drugs.
- The aglycone non sugar portions is used for the semisynthesis of medicinal steroids, as corticosteroids, sexual hormones and steroid diuretics.

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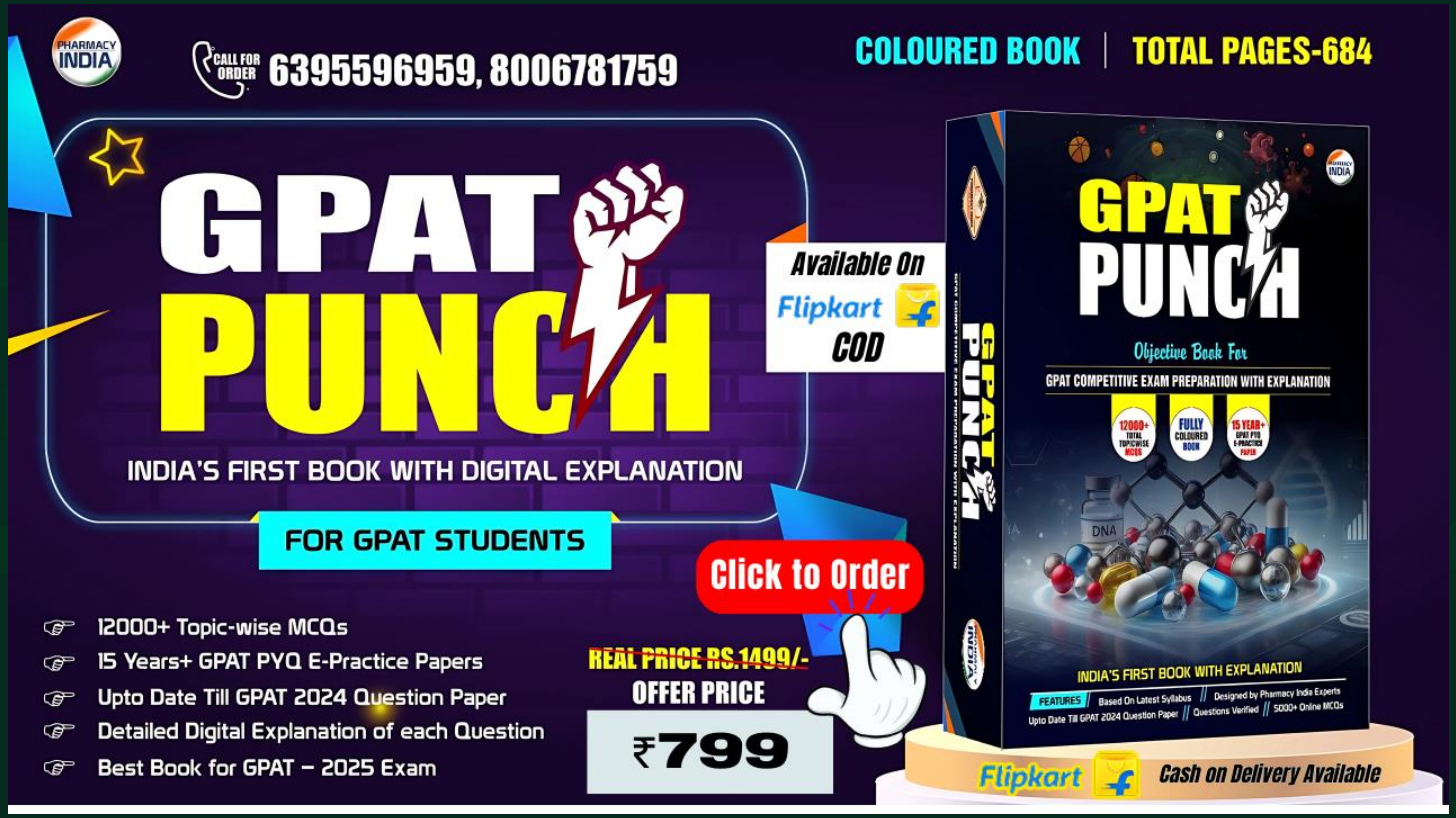

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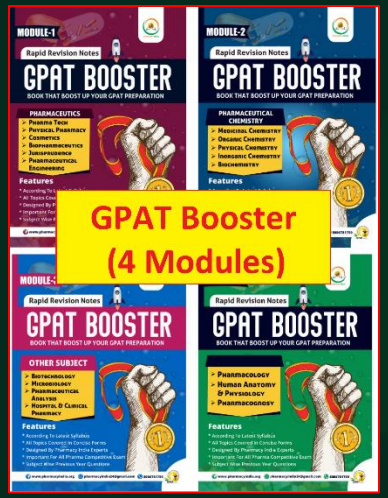

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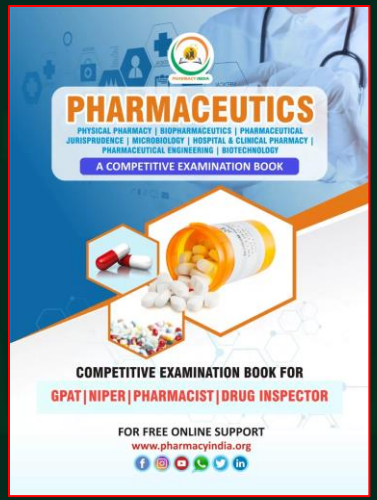

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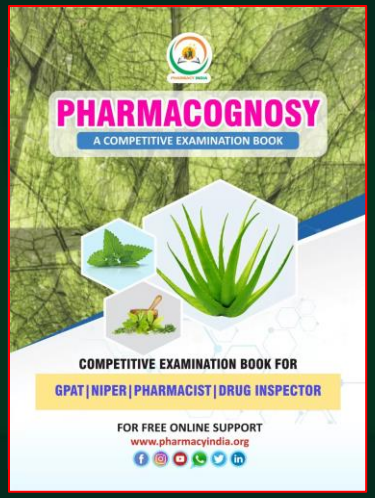

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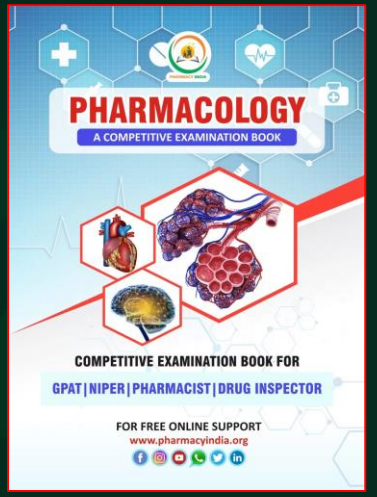

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PHARMACY INDIA

31. **Which one of the following constituents is reported to have anti-hepatotoxic activity [GPAT-2012]**

(a) Podophyllotoxin

(b) Linalool

(c) Andrographolide

(d) Safranal

31. **Which one of the following constituents is reported to have anti-hepatotoxic activity [GPAT-2012]**

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(b) Linalool

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(d) Safranal

Explanation:

CRUDE DRUGS AND SYNONYMS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USES
Andrographoloid or Kalmegh or Green Chirata	It consists of leaves or entire aerial part of Andrographis Paniculate belonging to family Acanthaceae.	Kalmeghin, andrographolide flavonoids and phenol Lactone derivatives such as andrographolide, 14-deoxy-ll- oxo andrographolide, 14-deoxy-11, 12 didehydroandrographolide, 14 deoxyandrographolide and neoandrographolide	Anthelmintic, Hepatoprotective

32. **Anomocytic stomata, trichomes with collapsed cell and absence of calcium oxalate crystals are some of the microscopic features of which plant [GPAD 2011]**

(a) Digitalis

(b) Hyoscyamus

(c) Mentha

(d) Senna

32. **Anomocytic stomata, trichomes with collapsed cell and absence of calcium oxalate crystals are some of the microscopic features of which plant [GPAD 2011]**

(a) Digitalis

(b) Hyoscyamus

(c) Mentha

(d) Senna

Explanation:

MICROSCOPIC CHARACTERS OF DIGITALIS

- Dorsiventral leaf.
- Anomocytic stomata in upper epidermis.
- Numerous covering trichomes and few glandular trichomes present
- Collapsed cell trichomes are important characteristic of digitalis leaf.
- Free of calcium Oxalate crystals and sclerenchyma (stone cells).
- Collenchyma at 3 different places:
- (characteristic of digitalis leaf)
- Upper epidermis, Lower epidermis, Pericyclic part

33. Which of the following statements are true for ginseng root [GPAT-2011]

[P] It is among the most traded plant material of Brazil

[Q] It is obtained from Panax ginseng and Panax quinquefolium

[R] It is obtained from young plants of six months to one year age

[S] It contains derivatives of protopanaxadiol

(a) P and Q

(b) R and S

(c) Q and R

(d) Q and S

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(b) R and S

(c) Q and R

(d) Q and S

Explanation: DESCRIPTION OF PANAX

SYNONYM	BIOLOGICAL SOURCES	CHEMICAL CONSTITUENTS	USES
Panax, Ginseg, Ninjin	It consists of dried roots of Panax ginseng (Korean-most traded plant material) Panax japonica (Japan) Panax notoginseng (Chinese) Panax pseudoginseng (Himalayan) and Panax quinquefolium (American) belonging to the family Araliaceae	Ginsenosides derived from diol 20(S)-protopanaxadiol and the triol, 20(S)-protopanaxatriol Panaxosides Panaxadiol Dammarol (aglycone from Ginsenosides)	Immunomodulatory Demulcent Expectorant Emetic Stimulant and sediative Tonic Carminative Adaptogen and Aphrodiasiac

34. **Khellin is an active constituent of which one of the following plants [GPAT-2011]**

(a) Prunus serotina

(b) Tribulus terrestris

(c) Ammi visnaga

(d) Vanilla planifolia

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(b) Tribulus terrestris

(c) Ammi visnaga

(d) Vanilla planifolia

Explanation:

CRUDE DRUGS AND SYNONYMS	BIOLOGICAL SOURCES	CHEMICAL CONSTITUENTS	USES
Bishop's flower, Greater Ammi, Pick Tooth, Visnaga, Toothpick weed,	It consists of fruits of Ammi visnaga family Umbelliferae.	Khellin and visnagin, (γ-benzopyrone derivatives), Khellol khellol, visnadin, samidin, dihydrosamidin	Muscle relaxant, Anti-asthmatics, Diuretics

35. **Which of the following drugs is a triterpenoid containing root [GPAT-2011]**

(a) Valerian

(b) Brahmi

(c) Shatavari

(d) Adulsa

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		Pentacyclic triterpenoids	Ginseng, Liquorice, Senega, Sarsaparilla, Quillaia bark, Brahmi
4.	Cyanogenetic glycosides		Bitter almond, Wild cherry bark

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36. **The following options carry the name of the plant, part used and its family. Find a wrong combination [GPAT-2011]**

(a) Aegle marmelos, fruit and Rutaceae

(b) Conium maculatum, fruit and Umbelliferae

(c) Glycyrrhiza glabra, root and stolon and Leguminosae

(d) Strophanthus gratus, seed and Scrophulariaceae

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(d) Strophanthus gratus, seed and Scrophulariaceae

Explanation:

CRUDE DRUGS AND SYNONYM	BIOLOGICAL SOURCES
Bael fruits, Bel, Indian Beal, Bengal Quince, Belan	It consists of the unripe or half-ripe fruits or their slices or irregular pieces of Aegle marmelos belonging to family Rutaceae
Poison Hemlock	The drug consists of the dried unripe fruits of Conium maculatum belonging to the family Umbelliferae
Radix Glycyrrhizae, Sweet liquorice	It consists of subterranean peeled and unpeeled and unpeeled stolons, roots and subterranean stems of Glycyrrhiza glabra belonging to family Leguminosae
Ouabain	It consists of dried ripe seeds of Strophanthus gratus belonging to family: Apocynaceae

37. **Bacopa monnieri plant belongs to the family [GATE-2010]**

(a) Scrophulariacea

(b) Leguminosae

(c) Polygalaceae

(d) Rubiaceae

37. Bacopa monnieri plant belongs to the family [GATE-2010]

(a) Scrophulariacea

(b) Leguminosae

(c) Polygalaceae

(d) Rubiaceae

Explanation:

CRUDE DRUGS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USE
Brahmi / Bacopa	It consists of fresh leaves and steam of the plant Bacopa moniera family. Scrophulariaceae	Brahmin (Alkaloid) herpes tin, & mixture of 3 alkaloid (saponin, Bacoside A & B) Beutalic Acid, stgmesterol, monnierin, hersaponin. Bacoside A & B on acid hydrolysis yield triterpenoid aglycone bacogenins A & B respectively.	Nervine tonic, asthama, epilepsy, insanity and aperient (laxative) and also diuretic

38. **Ginkgo biloba is used for its [GATE-2010]**

(a) Expectorant activity

(b) Lipid lowering activity

(c) PAF antagonistic activity

(d) Antidepressant activity

38. Ginkgo biloba is used for its [GATE-2010]

(a) Expectorant activity

(b) Lipid lowering activity

(c) PAF antagonistic activity

(d) Antidepressant activity

Explanation: DESCRIPTION OF GINKGO

CRUDE DRUGS AND SYNONYMS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USES
Ginkgo (Maiden Hair tree or kew tree)	It consist of dried leaves of Ginkgo biloba belonging to the family Ginkgoaceae	• Flavonol – mono, di or tri glycosides of Kaempferol, Quercetin • Bi – Flavone – Ginkgetin, Bilobetin • Diterprprnr lactone – Ginkgkides A, B, C	Anti-asthmatic, Bronchodilator, Platelet – activating factor (PAF) antagonists.

39. **Quassia wood is adulterated with [GATE-2010]**

(a) Brucea antidysentrica

(b) Cassia angustifolia

(c) Cinnamomum zeylanicum

(d) Cephaelis ipecacuanha

39. Quassia wood is adulterated with [GATE-2010]

(a) Brucea antidysentrica

(b) Cassia angustifolia

(c) Cinnamomum zeylanicum

(d) Cephaelis ipecacuanha

Explanation:

BIOLOGICAL SOURCES OF QUASSIA WOOD

Quassia or Jamaica Quassia consists of dried wood of the stem of Aeschrion excels or Picrasma excelsa or Picrasma excels belonging to family Simarubaceae

SUBSTITUENTS

- Quassia amara, or Surinon (Simarubaceae) distinguished by the absence of calcium oxalate crystals.
- Bruise antidysentrica which is also contain brucentin which shows anticancer property.

ADULTRANTS: Cassia angustifolia

40. An example of N-glycoside is [GATE-2010]

(a) Adenosine

(b) Sinigrin

(c) Rhein-8-glucoside

(d) Aloin

40. An example of N-glycoside is [GATE-2010]

(a) Adenosine

(b) Sinigrin

(c) Rhein-8-glucoside

(d) Aloin

Explanation:

On the Basis of Glycosidic Linkage

1. **O-glycosides:**
   - Sugar molecule is combined with phenol or –OH group of aglycon.
   - **Example:** Amygdaline, Indesine, Arbutin, Salicin, cardiac glycosides, anthraxquinone glycosides like sennosides etc.
2. **N-glycosides:**
   - Sugar molecule is combined with N of the –NH (amino group) of aglycon.
   - **Example:** nucleosides

3. S-glycosides:

- Sugar molecule is combined with the S or SH (thiol group) of aglycon.
- **Example:** Sinigrin

4. C-glycosides:

- Sugar molecule is directly attached with C—atom of aglycon.
- **Example:** Anthraquinone glycosides like Aloin, Barbaloin, Cascaroside and Flavan glycosides, etc.

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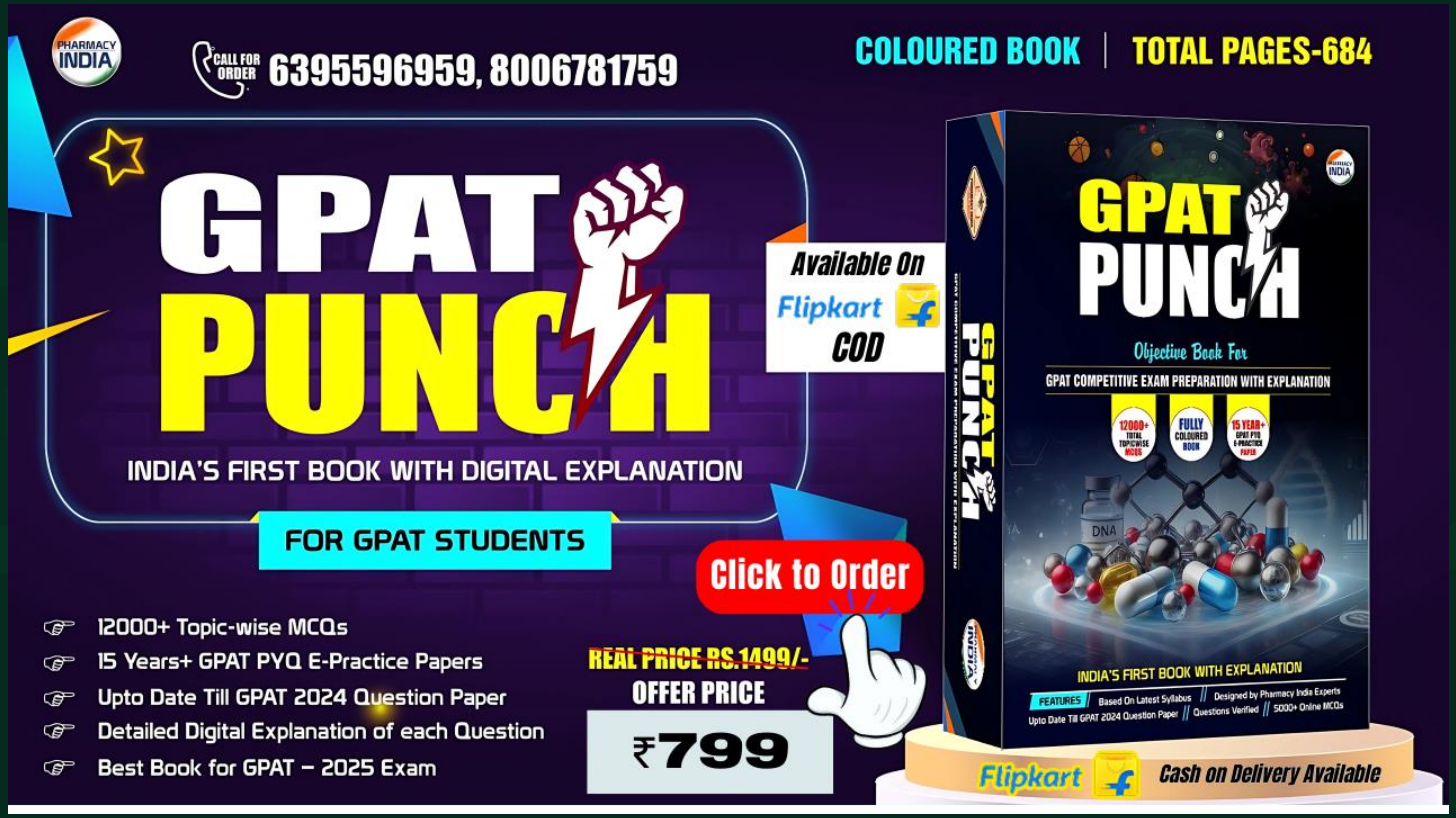

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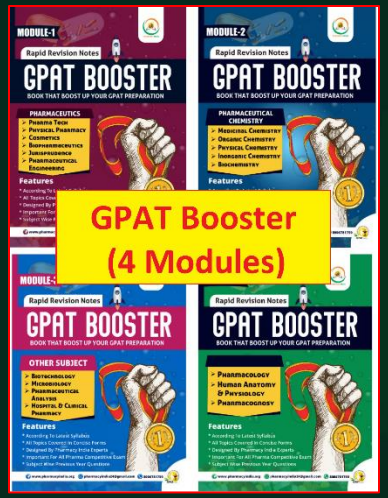

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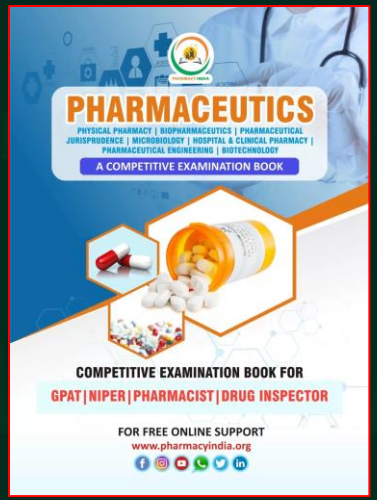

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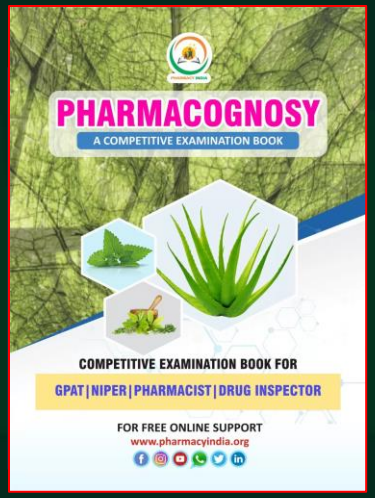

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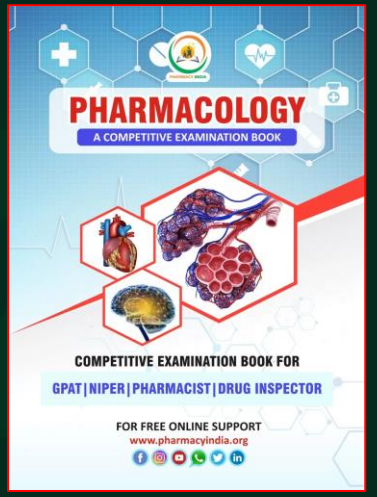

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PHARMACY INDIA

41. **The amount of barbaloin present in Aloe vera is [GATE-2010]**

(a) <1%

(b) 3.5-4%

(c) 1-1.5%

(d) 2-2.5%

41. **The amount of barbaloin present in Aloe vera is [GATE-2010]**

(a) <1%

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(d) 2-2.5%

Explanation: DESCRIPTION OF ALOE VERA

CRUDE DRUGS & SYNONYMS	BIOLOGICAL SOURCE	CHEMICAL CONSTITUENTS	USES
Aloe (Kumari, Musabbar)	Aloes is the dried juice of the leaves of Aloe barbadensis (curacao aloes) or Aloe perryi or Aloe foxer belongs to the family Liliaceae.	Curacao aloes almost contain Purgative & about 22 per cent of barbaloin. ingredient in Indian variety aloe vera contains compound very less quantity about 3.5-4 % tincture of of barbaloin. The other benzoin. constituents such as iso barbaloin, B-barbaloin and aloe-emodins and resins polysaccharides such as glucomannan.	Purgative & ingredient in compound tincture of benzoin.

42. Triterpenoids are active constituents of [GATE-2010]

(a) Jaborandi

(b) Rhubarb

(c) Stramonium

(d) Brahmi

42. Triterpenoids are active constituents of [GATE-2010]

(a) Jaborandi

(b) Rhubarb

(c) Stramonium

(d) Brahmi

Explanation:

Saponin glycosides	Tetracyclic triterpenoids	Dioscorea, Shatavari
	Pentacyclic triterpenoids	Ginseng, Liquorice, Senega, triterpenoids Sarsaparilla, Quillaia bark, Brahmi

43. **Cardiac glycoside have the following configuration in the aglycone part of the steroid nucleus [GATE-2010]**

(a) 5α, 14α

(b) 5a, 14β

(c) 5β, 14 α

(d) 5β, 14β

43. **Cardiac glycoside have the following configuration in the aglycone part of the steroid nucleus [GATE-2010]**

(a) 5α, 14α

(b) 5a, 14β

(c) 5β, 14 α

(d) 5β, 14β

Explanation:

The aglycone part of cardiac glycoside is a steroidal moiety so also called as steroidal glycoside.

- Two types - Cardenolides, Bufadienolides
- Occurance of Cardenolides in nature is high as compared to the bufadienolides.

Cardenolide - It has C_{23} steroids having an α, B unsaturated five membered lactone ring attached at 17 ß position. eg-Digitalis, Stropanthus, Thevetia.

Bufadienolide - It has C_{24} steroids having unsaturated six membered lactone ring attached at 17 ß position. Eg. – Squill.

For maximum cardiac activity

(1) Lactone ring is attached to 17ß position. Sugar part is attached to 3ß position.

(2) A/B, C/D ring should have Cis configuration and B/C trans configuration Sugar part helps in its absorption and distribution in body.

(3) When number of hydroxy group is increased on the molecule, the more rapid is the action in the body.

(4) Cardiac glycosides have 5 ß, 14 ß configuration in the aglycone part of the steroid nucleus.

44. Klunge's test is for the identification of [GATE-2009]

(a) Barbaloin

(b) Isobarbaloin

(c) Aloinosides

(d) Aloesin

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(a) Barbaloin

(b) Isobarbaloin

(c) Aloinosides

(d) Aloesin

Explanation:

S.NO	CHEMICAL TEST	VARIETY OF ALOES		
1.	Modified Anthraquinone test indicate presence of C-glycoside which is aloe emodin	Aq. Solution of drug + $FeCl_3$ + HCl → hydrolysis give free anthraquinone which is collected in carbon tetrachloride or ether → organic layer separated and shaken with ammonia → Ammonia layer shows rose pink to cherry colour		
2.	Nitrous acid test (this test is due to isobarbaloin)	Nitrous acid test (this test is due to isobarbaloin)	Faint pink	Very less change in colour

S.NO	CHEMICAL TEST	VARIETY OF ALOES			
3.	Nitric acid test	Deep brown-red colour	Brown colour change to green	Pale brownish-yellow colour	Yellowish brownish
4.	Cupraloin test (Klunge's isobarbaloin test) $CuSO_4$ + NaCl + 90% alcohol	Wine red persisting for 4 hrs	Faint colour rapidly changing to yellow	No colour	

45. Indian Rhubarb can be distinguished from Rhapontic Rhubarb by the fluorescence it emits under UV light. Indian Rhubarb gives [GATE-2009]

(a) Deep yellow

(b) Deep violet

(c) Orange

(d) Pale green

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(a) Deep yellow

(b) Deep violet

(c) Orange

(d) Pale green

Explanation:

RHUBARB

(1) Indian Rhubarb (Rheum emodi)

- ✓ It is also known as Himalayan rhubarb.
- ✓ It is consisting of dried rhizome and root of Rheum webblanum, Rheum emodi.
- ✓ Not contain rhaponticin
- ✓ Gives deep violet fluorescence in UV light.

(2) Rhapontic Rhubarb

- ✓ It is obtained from the rhizomes of Rheum rhaponticum
- ✓ Estrogenic activity due to rhaponticin.
- ✓ Gives blue fluorescence in UV light.

46. A transverse section of Glycyrrhiza glabra when treated with 80% sulphuric acid gives [GATE-2000]

(a) Deep yellow color

(b) No reaction, but only charring

(c) Deep blue color

(d) Deep red color

46. A transverse section of Glycyrrhiza glabra when treated with 80% sulphuric acid gives [GATE-2000]

(a) Deep yellow color

(b) No reaction, but only charring

(c) Deep blue color

(d) Deep red color

Explanation:

LIQUORICE

Synonyms: - Radix Glycyrrhizae, Sweet liquorice, Mulethi

Biological Source: - Liquorice consists of subterranean peeled and unpeeled stolons, roots and subterranean stems of *Glycyrrhiza glabra*.

Family: - Leguminosae.

Chemical Test: -

80% sulphuric acid + section or powder of the drug

↓

Orange yellow colour is produced

↓

Due to transformation of flavone glycoside liquiritin to chalcone glycoside isoliquiritin

47. **Microscopy of the bulbs of Urginea indica family Liliaceae shows [GATE-2008]**

(a) Prisms of calcium oxalate

(b) Calcium carbonate and silica

(c) Rosettes if calcium oxalate

(d) Raphides of calcium oxalate

47. **Microscopy of the bulbs of Urginea indica family Liliaceae shows [GATE-2008]**

(a) Prisms of calcium oxalate

(b) Calcium carbonate and silica

(c) Rosettes if calcium oxalate

(d) Raphides of calcium oxalate

Explanation:

URGINEA

Biological Source

- Urginea consists of dried slices of the bulbs of Urginea indica Family :- Liliaceae

Microscopy

- Epidermis : Single layer of polygonal elongated epidermis coverd with the cuticle.
- Mesophyll : It consists of raphides of calcium crystals, mucilage sheath, small round starch grains and vascular bundle (annular and spiral xylem vessels)

48. Aloe barbadensis has two of the following characters [GATE-2007]

[P] The drug obtained is white in color and has a bitter taste

[Q] The drugs is opaque, yellowish brown to chocolate brown in color and breaks with a waxy fracture

[R] The drug has a pungent odour and is amorphous under the microscope

[S] Under the microscope, acicular crystals are visible.

(a) [P], [R]

(b) [P], [S]

(c) [Q], [S]

(d) [Q], [R]

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Explanation:

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TRANSVERSE SECTION OF ALOE HAS THREE DISTINCT SECTIONS

- Outermost cuticle
- Epidermis and palisade tissue
- Mucilaginous parenchymatous mesophyll

✓ Mesophyll encloses vascular bundles covered with pericyclic layer.

✓ Inside the pericycle, few large elongated thin walled aloeitc cells are located which contain highly viscous yellow juice gel

✓ At the parenchyma, few calcium oxalate crystals are located

49. **The characteristic odour of onion bulbs is attributed to [GATE-2007]**

(a) Quercetin glycosides

(b) Furostanol glycosides

(c) Heterogeneous sulfated polysaccharides

(d) Alkyl or alkenyl Disulphide

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(b) Furostanol glycosides

(c) Heterogeneous sulfated polysaccharides

(d) Alkyl or alkenyl Disulphide

Explanation:

EUROPEAN SQUILL (SCILLA)

European squill two varities-White squill, Red squill.

Red squill:

- It is a variety of European squill (*Urginea maritima*).
- Red colour is due to red anthocyanin pigment present in mesophyll cell or scales.
- Red squill contain glycoside called scilliroside and scillirubrosides.
- It is used as a rat poison (Rodenticide)
- Characteristic odour of onion bulbs due to Alkyl or Alkenyl disulphides

50. **The chief constituent of the seeds strophanthus gratus or woods of Acokanthera schimperi belonging to the family Apocynaceae is G-strophanthin. On hydrolysis, it gives [GATE-2007]**

(a) Scillarenin

(b) Ouabagenin

(c) Cannogenin

(d) Diosgenin

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(a) Scillarenin

(b) Ouabagenin

(c) Cannogenin

(d) Diosgenin

Explanation:

Ouabain (G- stropanthin)

- Stropanthus gratus seeds contains 4- 8% of oubain (G- stropanthin) a rhamnose glycoside.
- Oubain is also principle glycoside of the wood of plant Acokanthera schimperi.
- **Family: -** Apocynaceae
- It is 2 times more potent than k- stropanthin.
- Used as a reference standard for bioassay of cardiac glycoside.

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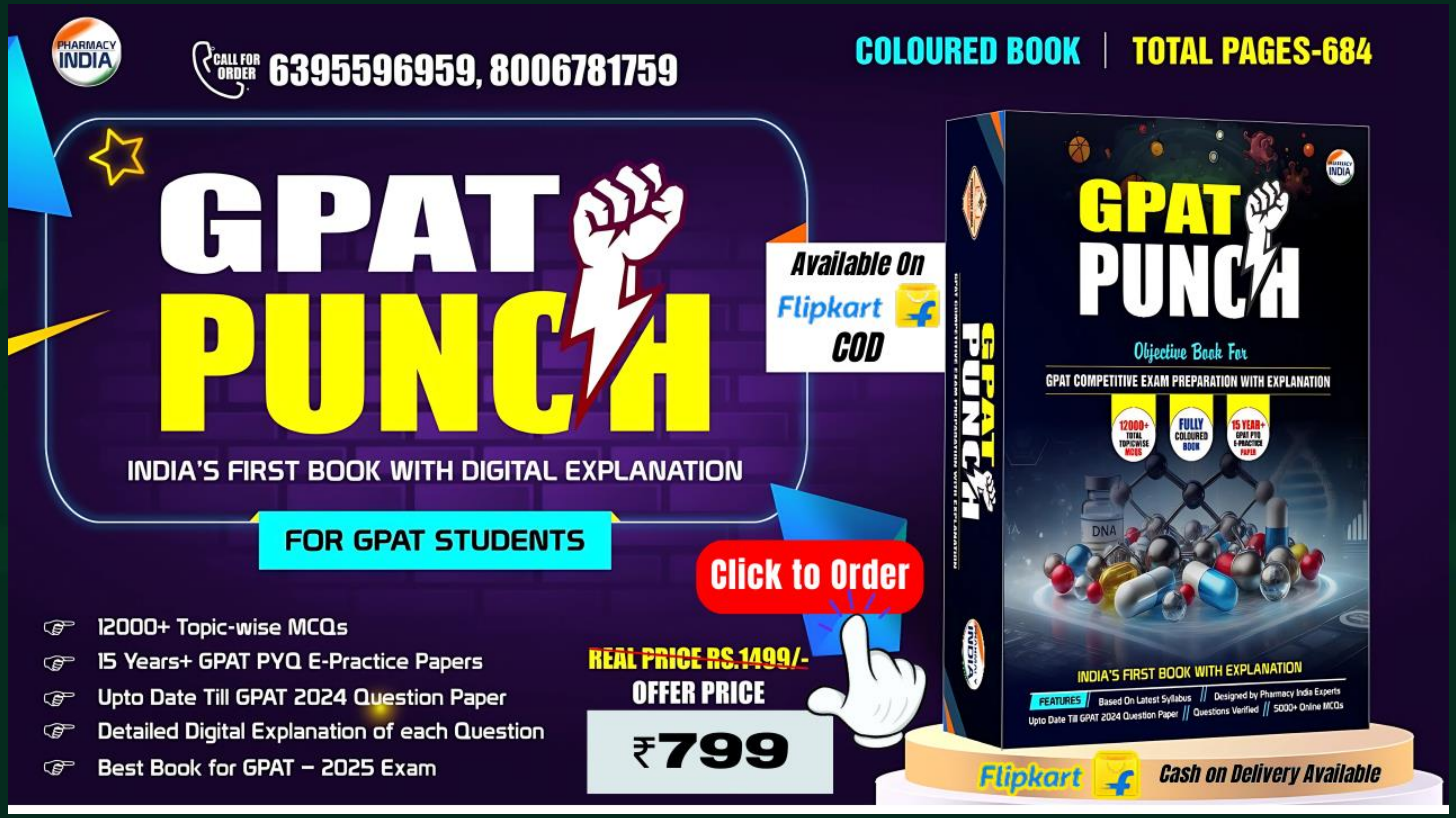

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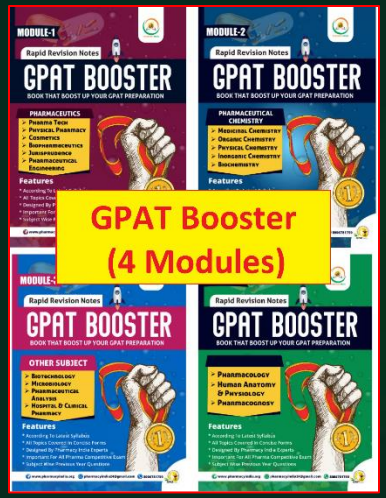

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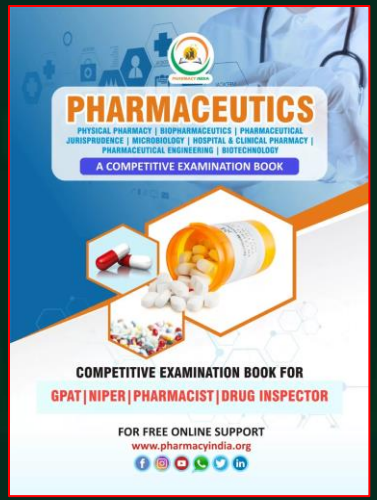

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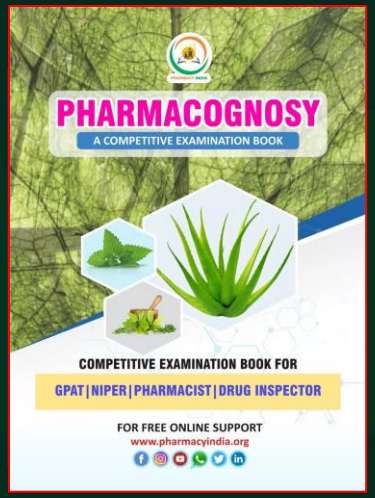

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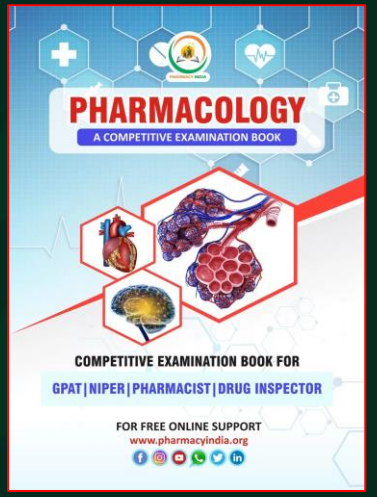

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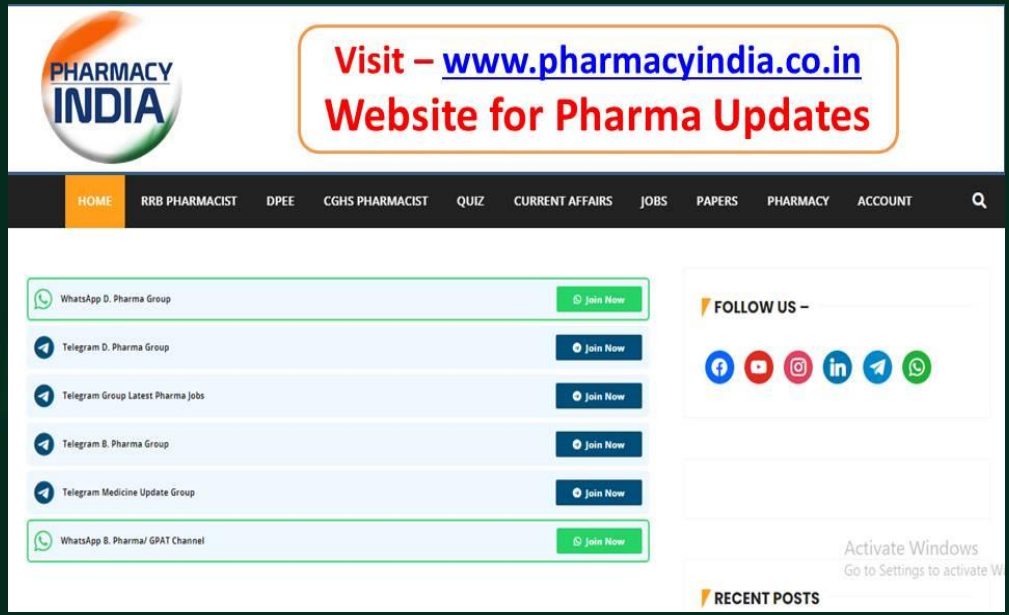

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