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University Examinations 2023/2024

THIRD YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN MEDICAL MICROBIOLOGY

HMM 3321: NATURAL PRODUCTS AND BIOLOGICS

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: Answer all questions in Section A and section B, and any TWO questions in section C

SECTION A - MCQ

1. The following statement(s) relating to the traditional herbal medicinal products is false?
 - A. Attributing a preventive or curative effect to these products is forbidden
 - B. They contain one or more herbal substances, preparations or their combination as active agents.
 - C. The products may also contain vitamins and minerals
 - D. Their authorization is possible via abridged registration
 - E. They can be distributed in pharmacies
2. The following is the advantage of collecting medical herbs from their natural habitat.
 - A. The whole process (culturing, harvesting, etc.) can be controlled
 - B. The appropriate harvesting and quality can be guaranteed
 - C. The stock is homogeneous
 - D. No culturing costs are involved

- E. The properties of the plants can be modified by cross-breeding
3. Which following is false:
- A. The alphabetical system of classification is popular in the pharmacopoeias.
 - B. An advantage of the taxonomical system of classification is that it is devoid of ambiguities
 - C. The pharmacological classification is decreasing in use
 - D. Leaves and seeds are examples of organized drugs.
 - E. Roots are part of organized drug
4. True alkaloids are always present in plants as
- A. Salts of organic acid
 - B. Salts of inorganic acid
 - C. Salts of meconic acid
 - D. Salts of benzoic acid
 - E. Tanins
5. The following methods is used to get alkaloids in base form from plant material?
- A. Adding ammonium hydroxide and water to the pulverized drug
 - B. Making an extract with mineral acid and organic solvent
 - C. Making an extract with base and organic solvent
 - D. Adding mineral acid and water to the powdered drug
 - E. Adding ammonium hydroxide to the powdered drug.
6. Which of the following factors does not influence the effectiveness of extraction?
- A. Temperature
 - B. The polarity of the solvent
 - C. The particle size of the grounded drug
 - D. The refractive index of the compounds to be extracted
7. Plants growing in their native countries are said to be:
- A. naturalized
 - B. geographical source.
 - C. original source.
 - D. indigenous

8. The following assay is for determination of the volatile oil contents of herbal drugs;
- A. Steam distillation
 - B. Extraction with light petrol
 - C. Distillation by Marcusson's method
 - D. Determination of the loss on drying
9. Which of the following groups of compounds consists of primary metabolites?
- A. Alkaloids
 - B. Lignans
 - C. Flavonoids
 - D. Carbohydrates
10. Which of the following structural features is characteristic of saponins?
- A. Their skeleton may be built up from 10, 15, 20 or 30 carbon atoms
 - B. They are triterpene glycosides
 - C. They are glycosides with aromatic rings
 - D. They are heterocyclic molecules containing sulphur.
11. All of crude drugs used in Ancient Egyptian period except :
- A. myrrh.
 - B. poppy
 - C. taxol
 - D. pomegranate
12. Ethnobotany is:
- A. the process by which animals self-medicate, by selecting and using plants, soils, and insects to treat and prevent disease.
 - B. the study of the traditional use of plants for medicinal purposes
 - C. the study of the pharmacological qualities of traditional medicinal substances;
 - D. the study of chemicals derived from marine organisms.
13. Crude drugs means;
- A. collection

- B. extraction
 - C. drying
 - D. A and C
14. Plant material obtained in the tropics is normally dried by:
- A. sun-dried
 - B. oven dried.
 - C. lyophilization
 - D. garbiling
15. Soxhlet is:
- A. chemical tests
 - B. type of plant classification
 - C. method for extracting material from plant d- morphological test
 - D. All the above
16. The following drug is not under the class of organized drug :
- A. Leaves
 - B. flowers
 - C. Fruits
 - D. Gums
17. Drug which does not belong to leaves class
- A. Senna
 - B. Digitalis
 - C. Eucalyptus
 - D. turmeric
18. Drug not belonging to volatile oil class:
- A. Peppermint
 - B. Clove
 - C. Castor oil
 - D. Garlic

19. Which of the following amino acids is the most soluble in water at pH 7.0?

- A. Glutamate
- B. Tryptophan
- C. Leucine
- D. Tyrosine
- E. Phenylalanine

20. What part of plants do cloves come from?

- A. Stem
- B. Seed
- C. Bud
- D. Fruit

SECTION B - ANSWER ALL QUESTIONS

1. Differentiate between medicated syrup and non-medicated syrup. (4 Marks)
2. Elaborate various properties, which should be present in an ideal emulsion. (5 Marks)
3. Outline the importance of natural drug substances in the modern system of medicine. (5 Marks)
4. Define the adulteration of crude drugs and state the types of adulterants. (5 Marks)
5. How are prodrugs useful in overcoming problems of stability & bioavailability? (5 Marks)
6. Describe any four factors affecting the posology of a drug. (5 Marks)
7. Describe various steps of tablet coating. (5 Marks)
8. Explain the meaning of the following terms as used in the biology of natural products;
 - a) Suspensions (2 Marks)
 - b) Aromatic waters (2 Marks)
 - c) Pastes (2 Marks)

SECTION C - ANSWER TWO QUESTIONS

1. Discuss the regulatory issues for natural products. (20 Marks)
2. Discuss preparation methods of solutions and pharmaceutical importance of solutions (20 Marks)
3. Analyze the stability problems of emulsions and discuss the remedies. (20 Marks)