TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Applied & Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR DIPLOMA IN:
PHARMACEUTICAL TECHNOLOGY (DPT 12J, M & S)

APM: 2322: ORGANIC/INORGANIC PHARMACEUTICAL CHEMISTRY IV

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: FEBRUARY 2015
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination

- *Answer Booklet*

Answer **ALL** questions in section **A** & **B.** Choose any **TWO** questions in section **C**
This paper consist of **SEVEN** printed pages

SECTION A

1. The yellow fluorescence on teeth caused by Tetracycline use is:
    A. Tetracycline magnesium orthophosphate
    B. Tetracycline calcium orthophosphate complex
    C. Tetracycline aluminium orthophosphate complex
    D. All of the above

2. Tetracycline is a:
    A. Narrow spectrum antibiotic
    B. Broad spectrum antibiotic
    C. Group of antibiotic with no cross resistance
    D. B and C
    E. A and C

3. Microclide antibiotics are obtained from:
    A. Actinomycetes
    B. Streptonycetes
    C. Penicillium species
    D. None of the above

4. The use of chloramphenical is limited by:
    A. Lack of a depo preparation
    B. Shout half life
    C. Haematological side effects (a plastic anaemia)
    D. Atotoxicity

5. Which of the following is an akylating agent?
    A. Cyclophosphamide
    B. Busulfan
    C. Decavbazine
    D. All of the above

6. Amptoterian B is obtained from:
    A. Streptonyces neclosa
    B. Actinomycetes
    C. Lichens
    D. None of the above

7. B – lactamases are:
    A. Antibiotics e.g. amoxicillin
    B. Enzymes produced by bacteria
    C. Hydrolytic products of B- lactam antibiotics
    D. All of the above

8. Ototoxicity and Nephrotoxicity are a common side effect of:
    A. Cephalosporins
    B. Tetracychines
    C. Ammoglycosides
    D. Penicillins

9. The use of ethambutol in children is contraindicated because:
    A. It causes colour blindness
    B. It is terratogenic
    C. It has not been tested in children
    D. All of the above

10. Natural penicillins are orally inactive because:
    A. They are proteinous in nature
    B. They form chelates, hence precipitated
    C. They are unstable in acid media (hydrolyzed)
    D. None of the above

11. Which of the following combination of antibiotics is not recommended?
    A. Bactericidal and cell wall synthesis luhibitors
    B. Antibiotics with different mechanisms of action
    C. Bactericidal and bacteriostatic
    D. All of the above

$N(CH_3)_2$

Use the above figure to answer question 12 to 15. Name the substituents R_1, R_2, R_3, R_4 in

12. Tetracycline
    A. H; CH_3; OH; H
    B. H; CH_3; OH; OH
    C. CI; CH_3; OH; H
    D. H; CH_3; $N(CH_3)$; CH_3

13. Doxycycline
    A. $N(CH3)_2$; CH_3; H; OH
    B. $N(CH3)_3$; CH_3; CH_3; CH_3
    C. H; CH_3; OH; H
    D. H; CH_3; $N(CH_3)_3$; CH_3

14. Minocycline
    A. $N(CH_3)_2$; H; H; H
    B. $N(CH_3)_3$; H; H; H
    C. H; CH_3; OH; H
    D. $H(CH_3)_3$; H; H; H
    E. CI; CH_3; OH; OH

15. Which substitution decreases chemical stability?
    A. At C_1

B. C_3
C. C_6
D. C_8

16. Bactericidal effect means:
    A. Inhibition of cell division
    B. Causing cell death
    C. Causing cell lysis
    D. Inhibiting metabolic process

17. Which of the following antibiotics does not interface with protein biosynthesis:
    A. Enythromyan
    B. Chloramphemial
    C. Linconycin
    D. Amoxicillin

N

Use the above structure to answer question 18 to 20

18. The above structure represents:
    A. Rauwolfia alkaloids
    B. Cocaine
    C. Sulphomides
    D. Conchona allcaloids
    E. Cinchonine

19. What compound is represented by:
    R_1 and R_2 being OCH_3; $-CH = CH_2$ (-) isomer respectively:
    A. Coca
    B. Quinidine
    C. Quinine
    D. Cinchonine

20. The (+) isomer of compound 19 above:
    A. Quinidine
    B. Cinchonidine
    C. Chinchocaine
    D. Quinine

21. In a radiation change a nucleus usually losses just one particle of α and β, it is frequently accompanied by:
    A. X-ray
    B. Gamma ray
    C. Both of the above
    D. None of the above

22. Which of the following is not a type of gas filled defector:
    A. Proportional counter
    B. G.M Counter
    C. Semiconductor defector
    D. Ionization chamber

23. Beta particles penetrate tissue up to:
    A. 100cm
    B. 1000cm
    C. 1cm
    D. 10cm

24. 1 Becqurel is equivalent to:
    A. 2.7×10^{-11} curie
    B. 2.7×10^{-70} curie
    C. 2.7×10^{-8} curie
    D. 2.7×10^{-5} curie

25. Which statement is correct regarding the handling and storage of radio materials:
    A. Radioactive materials should never be touched with bare hands
    B. Sufficient protective clothing must be used while handling the materials
    C. Should be kept in suitable labeled containers
    D. All of the above

26. Cu deficiency can lead to:
    A. Leucopenia
    B. Granulocytopenia
    C. Anemia
    D. All of the above

27. Zinc deficiency is associated with:
    A. Impaired growth
    B. Parakevatosis
    C. Retired sexual motivation
    D. All of the above

28. An essential element is called so because:
    A. It must occur in all healthy tissues
    B. Facilitate a great many essential life processes
    C. It must cause reproducible life processes
    D. All of the above

29. Condition causing hyponatremia:
    A. Extreme urine loss
    B. Metabolic acidosis
    C. Addison disease
    D. All of the above

30. The advantages of sodium lactate over sodium bicarbonate
    A. Rapidly metabolized
    B. It may be sterilized by boiling
    C. Both of the above
    D. None of the above

31. In metabolic acidosis
    A. HCO_3 excess
    B. CO_2 decreased
    C. HCO_3 deficit
    D. All of the above

32. Acute metabolic alkalosis may be corrected by:
    A. KCL
    B. $NaHCO_3$
    C. NaCl
    D. $CaCl_2$

33. Combination of antacid are prepared because:
    A. To attain synergistic effect
    B. To enhance antacid effect
    C. An attempt to balance the constipative effect of calcium and aluminium with the Laxative effect of magnesium
    D. All of the above

34. The major side effect associated with saline Catheartic is:
    A. Excessive loss of body fluids in form of watery stools
    B. Convulsions
    C. Cardiac disorder
    D. Constipation

35. Excess use of magnesium sulphate leads to:
    A. Hyper magnesaemia
    B. Gastrointestinal irritation
    C. Watery diarrhea
    D. All of the above

36. Antiflatulents are generally included in antacid formulation. They act by:
    A. Reducing the surface tension of bubbles in the stomach
    B. Avoid absorption of antacid
    C. Prevent the formation of Hcl
    D. All of the above

37. Simethicone is:
    A. Antacid
    B. Defoaming agent
    C. Astringent
    D. None of the above

38. Hydrolyaptatite is mixture Ca2+ salt of:
    A. CO_3^{2-}
    B. PO_4^{3-}
    C. OH
    D. All of the above

39. $AgNO_3$ is categorized into:
    A. Oxidative antimicrobial agent
    B. Halogenated antimicrobial agent
    C. Protein PP+ antimicrobial agent
    D. All of the above

40. Hydrogen peroxide is used as:
    A. Antiseptic
    B. Acidifying agent
    C. Protective
    D. Antioxidant

SECTION B

1. List nephatoxic reactions of antimicrobial agents

2. Why is tetracycline contraindicated in children and pregnancy?

3. Give the contents of whitefields ointment and their mechanism of action

4. List the 1st line drugs in the management of tuberculosis

5. Draw the general structure of penicillin's

6. List the FOUR classes of Radiopharmaceutical **(4 marks)**

7. Explain the meaning of dosimetry and give its SI units **(4 marks)**

8. What are topical antimicrobials? Give their classification **(4 marks)**

9. What is a mouth wash? Give the active ingredients of a medicated mouth wash **(4 marks)**

10. List any FOUR characteristics of an ideal anti acid preparation **(4 marks)**

SECTION C (Answer any TWO questions)

1. Write short notes on:
    A. Synergistic antibiotic combination
    B. Suprainfection

2. Discuss the SAR of tetracycline

3. Discuss the mechanism of action of topical antimicrobial agents **(20 marks)**