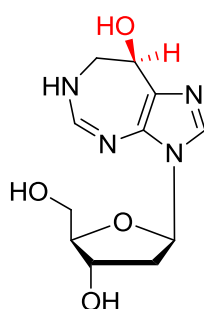
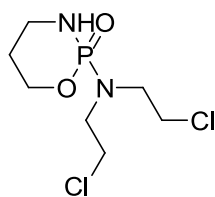


I. Choose the best answer:

1. What is the term used to indicate the growth of new blood vessels?
  - a. Apoptosis
  - b. Biosynthesis
  - c. Angiogenesis
  - d. Metastasis
2. Pentostatin is a natural product used for the treatment of leukaemia. What is the role of the region shown in red?



- a. Transition state analogue
  - b. Transition state isostere
  - c. Transition state bioisostere
  - d. Suicide substrate
3. Which of the following statements is not true about the structure shown below?



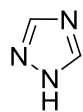
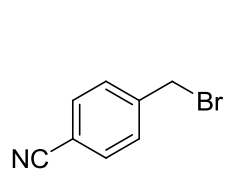
- a. It acts as a prodrug
  - b. The structure is metabolised to release acrolein
  - c. It is relatively non-toxic
  - d. It cannot be taken orally
4. Which of the following statements is true about mitomycin C:
  - a. It is a natural product
  - b. It is an alkylating agent
  - c. All of the above
  - d. None of the above

5. The following antimetabolites are classified as purine analogues except:
- Cladribine
  - Fludarabine
  - Vidarabine
  - Gemcitabine
6. Which of the following statements is true about melphalan :
- It is an alkylating agent
  - It is L-phenylalanine mustard
  - All of the above
  - None of the above
7. All of the following alkylating agents form aziridinium ring except:
- Mechlorethamine
  - Ifosfamide
  - Busulfan
  - Chlorambucil
8. Which of the following statements is not true about exemestane:
- It is a steroid
  - It is reversible aromatase inhibitor
  - It is used mainly in the treatment of breast cancer
  - All of the above
9. Which of the following statements is true about paclitaxel:
- It inhibits tubulin depolymerisation
  - It induces G2/M arrest
  - All of the above
  - None of the above
10. Which of the following drug contains Michael acceptor moiety?
- Ibrutinib
  - Imatinib
  - Nilotinib
  - Sorafenib

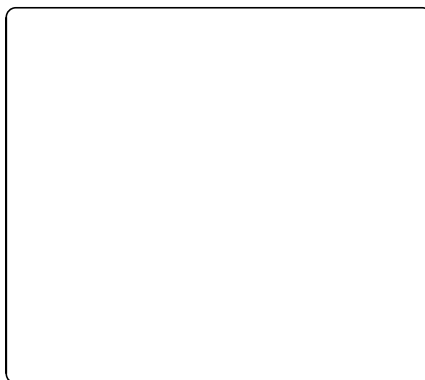
11. Which of the following agents exhibits its pharmacological effect by production of ROS?
- a. Bleomycin
  - b. Raloxifen
  - c. Oxaliplatin
  - d. All of the above
12. Extravasation of mechlorethamine can be treated by administration of:
- a. Electrophile
  - b. Nucleophile
  - c. All of the above
  - d. None of the above
13. Which of the following drugs is probably the least immunogenic?
- a. Trastuzumab
  - b. Rituximab
  - c. Panitumumab
  - d. Ibritumomab
14. Which of the following drugs is not considered as DNA cross-linking agent?
- a. Dacarbazine
  - b. Procarbazine
  - c. Temozolomide
  - d. All of the above
15. All of the following protein kinase inhibitors contain urea moiety except:
- a. Lenvatinib
  - b. Regorafenib
  - c. Sorafenib
  - d. Palbociclib

II. What is the role of mesna in detoxification of cyclophosphamide? (Draw the full mechanism)

III. Complete the following synthetic route:



$\xrightarrow{\text{CH}_2\text{Cl}_2, \text{rt}, 15 \text{ h}}$



$\xrightarrow{t\text{-BuOK, DMF}}$



IV. Complete the following reaction:

