Part I. (75 Points)

There are 50 multiple choice questions worth 1.5 points each (75 Points). Please use the Scantron Sheet provided. If you feel there is no correct answers, leave the Scantron blank for that particular question and write NONE as well as an explanation for your answer on your exam for that question.

1. The drug illustrated below:

   I acts as a competitive inhibitor of 5α-reductase.
   II has been used to treat benign prostatic hyperplasia.
   III binds tightly to human androgenic receptors.

   a I only
   b III only
   c I and II only
   d II and III only
   e I, II, and III

   Answer __

2. The drug illustrated below:

   I can cause hypoglycemia.
   II inhibits the release of insulin from β cells in the pancreas.
   III has a short duration of action (< 8 hours).

   a I only
   b III only
   c I and II only
   d II and III only
   e I, II, and III

   Answer __

3. The drug illustrated below:

   I has potent androgenic activity.
   II can be used orally.
   III is a prodrug.

   a I only
   b III only
   c I and II only
   d II and III only
   e I, II, and III

   Answer __
4. The drug illustrated below:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
</tbody>
</table>

I is known to be highly nephrotoxic.
II is considered a bifunctional alkylating agent.
III predominately forms intrastand DNA adducts.

- a I only
- b III only
- c I and II only
- d II and III only
- e I, II, and III

**Answer**

5. The drug illustrated below:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
</tbody>
</table>

I is converted to its 5'-ribosyl monophosphate derivative.
II is a feedback inhibitor for DeNovo purine biosynthesis.
III unlike, 6-mercaptopurine, can be used without dose adjustment with allopurinol.

- a I only
- b III only
- c I and II only
- d II and III only
- e I, II, and III

**Answer**

6. The drug illustrated below:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
</tbody>
</table>

I cannot cause hypoglycemia.
II causes a decrease in plasma glucagon levels.
III decreases glucose absorption from the GI tract.

- a I only
- b III only
- c I and II only
- d II and III only
- e I, II, and III

**Answer**

7. The drug illustrated below:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
</tbody>
</table>

I is a prodrug of cytarabine, ara-C.
II has synergistic activity when used with 5-fluorouracil.
III requires thymidine phosphorylase for biologically active.

- a I only
- b III only
- c I and II only
- d II and III only
- e I, II, and III

**Answer**
8. The compound illustrated below:

Lapatinib, Tykerb®

- I is approved for patients with metastatic breast cancer.
- II can be administered orally.
- III targets protein tyrosine kinase associated with HER2/neu receptors.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer ___

9. The drug illustrated below:

- I requires the formation of an iron chelate for biological activity.
- II ultimately causes free radical damage to DNA resulting in strand breaks.
- III is effective orally.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer ___

10. The drug illustrated below:

- I has a quick onset.
- II is to best taken 15-30 minutes before meals.
- III has a short duration of action.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer ___
11. The drug illustrated below:

I is commonly cross allergenic with sulphonamide antibiotics.
II has a short duration of action (< 3 hours).
III can cause hypoglycemia

a I only
b III only
c I and II only
d II and III only
e I, II, and III

Answer __

12. The drug illustrated below:

I is used to protect against cardiotoxicity from doxorubicin.
II prevents hemorrhagic cystitis.
III is an antiandrogen used to treat prostate cancer.

a I only
b III only
c I and II only
d II and III only
e I, II, and III

Answer __

13. The drug illustrated below:

I is to be taken once a month at bedtime.
II acts by inhibiting the action of osteoblasts.
III inhibits farnesyl diphosphate synthetase.

a I only
b III only
c I and II only
d II and III only
e I, II, and III

Answer __

14. The drug illustrated below:

I is an irreversible inhibitor of aromatase.
II is a metabolite of 17β-estradiol.
III is a component of Premarin®.

a I only
b III only
c I and II only
d II and III only
e I, II, and III

Answer __
15. The drug illustrated below:

I. is a topoisomerase II targeting agent in mammalian cells.
II. has been associated with cardiotoxicity.
III. is administered iv only.

a I only
b III only
c I and II only
d II and III only
e I, II, and III  

Answer __

16. The drug illustrated below:

**Insulin Lispro**

I. is a short-acting insulin with a rapid onset.
II. is typically administered by sc injection.
III. is often used together with **Insulin Aspart** to provide a more balanced level of insulin in plasma over time.

a I only
b III only
c I and II only
d II and III only
e I, II, and III  

Answer __

17. The drug illustrated below:

I. is a competitive aromatase inhibitor.
II. is used to treat prostate cancer.
III. forms a metabolite that blocks androgenic receptors.

a I only
b III only
c I and II only
d II and III only
e I, II, and III  

Answer __

18. The drug illustrated below:

I. requires metabolic oxidation for activity.
II. has been used with MESNA to reduce an adverse side effect.
III. is a bifunctional alkylating agent.

a I only
b III only
c I and II only
d II and III only
e I, II, and III  

Answer __
19. The drug illustrated below:

\[
\begin{array}{c}
\text{H}_2\text{C} \text{-NCH}_3 \\
\text{HO} \\
\text{H}_2\text{C} \text{-NCH}_3 \\
\text{O} \\
\text{H}_3\text{CCH}_2\text{C} \text{-OH} \\
\end{array}
\]

I is a prodrug.
II is a substrate for MDR1 (p-glycoprotein).
III stabilizes the cleaved complex formed from topoisomerase I and DNA, thereby preventing re-ligation.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer __

20. The drug illustrated below:

\[
\begin{array}{c}
\text{F} \\
\text{F} \\
\text{NH}_2 \\
\text{F} \\
\text{F} \\
\text{O} \\
\end{array}
\]

I prevents inactivation of GLP-1.
II is a dipeptidylpeptidase-4 inhibitor.
III indirectly causes an increase in insulin release.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer __

21. The drug illustrated below:

\[
\begin{array}{c}
\text{H}_3\text{C} \text{-NCH}_3 \text{-CH}_2\text{CH}_2\text{Cl} \\
\text{H}_3\text{C} \text{-NCH}_3 \text{-CH}_2\text{CH}_2\text{Cl} \\
\end{array}
\]

I can be administered orally.
II requires metabolic oxidation for activation.
III primarily cross-links two individual DNA strands.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer __

22. The drug illustrated below:

\[
\begin{array}{c}
\text{CH}_3 \text{-NCH}_3 \text{-O-CH}(\text{aryl}) - \text{Cl} \\
\text{H}_3\text{C} \text{-NCH}_3 \text{-O-CH}(\text{aryl}) - \text{Cl} \\
\end{array}
\]

I acts as an antiestrogen in breast tissue.
II has been used to treat advanced metastatic breast cancer.
III is considered a selective estrogen receptor modulator.

a  I only  
b  III only  
c  I and II only  
d  II and III only  
e  I, II, and III  

Answer __
23. The drug illustrated below:

<table>
<thead>
<tr>
<th>I</th>
<th>can increase insulin sensitivity in muscle.</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>activates peroxisome-proliferator-activated receptor γ (PPRγ).</td>
</tr>
<tr>
<td>III</td>
<td>increases the release of glucagon.</td>
</tr>
</tbody>
</table>

| a | I only |
| b | III only |
| c | I and II only |
| d | II and III only |
| e | I, II, and III |

**Answer**

24. The drug illustrated below:

<table>
<thead>
<tr>
<th>I</th>
<th>inhibits the action of osteoclasts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>is a nitrogen-containing bisphosphonate.</td>
</tr>
<tr>
<td>III</td>
<td>has been reported to be linked to jaw bone deterioration in a limited number of patients.</td>
</tr>
</tbody>
</table>

| a | I only |
| b | III only |
| c | I and II only |
| d | II and III only |
| e | I, II, and III |

**Answer**

25. The drug illustrated below:

<table>
<thead>
<tr>
<th>I</th>
<th>inhibits DNA synthesis by limiting the DeNovo synthesis of certain purine and pyrimidine bases.</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>can cause a “thymidineless death”.</td>
</tr>
<tr>
<td>III</td>
<td>binds “pseudo” irreversibly to thymidylate synthetase.</td>
</tr>
</tbody>
</table>

| a | I only |
| b | III only |
| c | I and II only |
| d | II and III only |
| e | I, II, and III |

**Answer**

26. The drug illustrated below:

<table>
<thead>
<tr>
<th>I</th>
<th>is a metabolite of calcitonin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>is calcitriol.</td>
</tr>
<tr>
<td>III</td>
<td>is needed to increase the absorption of calcium and phosphorous from the gut.</td>
</tr>
</tbody>
</table>

| a | I only |
| b | III only |
| c | I and II only |
| d | II and III only |
| e | I, II, and III |

**Answer**
27. The anticancer drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Drug" /></td>
<td>primarily forms adducts with a single strand of helical DNA.</td>
<td>can cause nephrotoxicity.</td>
<td>can be administered orally.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III

**Answer** __

28. The agents illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Insulin" /></td>
<td>have an intermediate duration of action</td>
<td>start working in 1 to 3 hours.</td>
<td>cannot cause hypoglycemia.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III

**Answer** __

29. The drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Drug" /></td>
<td>ultimately acts as a monofunctional alkylating agent.</td>
<td>can be administered orally.</td>
<td>is used to treat brain tumors.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III

**Answer** __

30. The drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Drug" /></td>
<td>is used to treat chronic myelogenous leukemia (CML).</td>
<td>is used to treat GI-stromal tumors.</td>
<td>is a protein tyrosine kinase inhibitor.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III

**Answer** __
31. The drug illustrated below:

I is an agonist of estrogen receptors in endometrial tissue.
II can inhibit the action of osteoblasts.
III can reduce the risk of vertebral fractures.

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer:

32. The drug illustrated below:

I can be used to treat lymphatic cancer.
II can reduce inflammation.
III is used topically.

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer:

33. The drug illustrated below:

I is used to treat prostate cancer.
II is a competitive inhibitor of dihydrotestosterone at androgenic receptors
III inhibits 5α-reductase, the enzyme which reduces testosterone to 5α-dihydrotestosterone

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer:

34. The drug illustrated below:

I is a potent androgen used to build muscle mass.
II is administered iv only.
III is used to treat endometriosis.

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer:
35. Hasimoto’s Thyroiditis:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="" /> Levothyroxine</td>
<td>is often treated with levothyroxine.</td>
<td>is an autoimmune disease.</td>
</tr>
</tbody>
</table>

a I only
b III only
c I and II only
d II and III only
e I, II, and III  \[\text{Answer }\]

36. The drug indicated below:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>![image2]</td>
<td>is an endogenous steroid with mineralocorticoid activity.</td>
<td>is associated with increased NaCl elimination in urine.</td>
</tr>
</tbody>
</table>

a I only
b III only
c I and II only
d II and III only
e I, II, and III  \[\text{Answer }\]

37. The drug illustrated below:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>![image3] Gemtuzumab, ozogamicin Mylotarg®</td>
<td>is chemically-linked to a cytotoxic agent.</td>
<td>is used to treat AML.</td>
</tr>
</tbody>
</table>

a I only
b III only
c I and II only
d II and III only
e I, II, and III  \[\text{Answer }\]

38. The following term

<table>
<thead>
<tr>
<th>BCG</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>refers to a vaccine against tuberculosis developed from a bovine tuberculosis bacillus.</td>
<td>refers to Bacille Calmette-Guérin vaccine.</td>
<td>is instilled into the urinary bladder to treat early-stage (Ta or T1) bladder cancer.</td>
</tr>
</tbody>
</table>

a I only
b III only
c I and II only
d II and III only
e I, II, and III  \[\text{Answer }\]
39. The agent indicated below:

| Bevacizumab, Avastin® | I is an antibody that binds to endothelial growth factor receptor. | II is a humanized monoclonal antibody. | III prevents the vascularization (angiogenesis) that is associated with tumor growth |

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

40. The drug illustrated below:

| ![Drug Illustration](image) | I is a glucocorticoid. | II has a comparatively short duration of action. | III cannot be used topically. |

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

41. The term indicated:

| Chronic Myelogenic Leukemia (CML) | I is uncontrolled growth granulocytes. | II is linked with bone marrow cells that have the Philadelphia (Ph) chromosome. | III is also referred to as non-Hodgkin’s Lymphoma |

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

42. The drug illustrated below:

| ![Drug Illustration](image) | I is used to treat urinary bladder cancer. | II is administered by instillation through the urethra. | III is a topoisomerase II-targeting agent. |

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___
43. The agent designated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>is a ribonucleotide reductase inhibitor.</td>
<td>is a mimic of cytosine.</td>
<td>is a false feedback inhibitor of DeNovo purine biosynthesis.</td>
</tr>
</tbody>
</table>

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

44. The drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>is a competitive antagonist of 5α-dihydrotestosterone.</td>
<td>has greater androgenic activity than testosterone.</td>
<td>is a metabolite of testosterone.</td>
</tr>
</tbody>
</table>

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

45. For the drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>the 6α-fluoro group reduces mineralocorticoid activity in favor of glucocorticoid activity.</td>
<td>the 9α-fluoro group enhances both mineralocorticoid and glucocorticoid potency.</td>
<td>the 16α-methyl group reduces mineralocorticoid activity in favor of glucocorticoid activity.</td>
</tr>
</tbody>
</table>

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___

46. The drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>is used to prevent renal toxicity associated with cisplatin administration.</td>
<td>is transformed by alkaline phosphatase to a cytoprotectant.</td>
<td>is used to prevent hemorrhagic cystitis.</td>
</tr>
</tbody>
</table>

a) I only  
b) III only  
c) I and II only  
d) II and III only  
e) I, II, and III  

Answer ___
47. The drug illustrated below:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td>is converted to a metabolite in osteoclasts that competes with ATP binding sites and disrupts cellular energetics.</td>
<td>inhibits ribonucleotide reductase.</td>
<td>blocks farnesyl diphosphate synthase in osteoclasts.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III  **Answer**

48. The drug illustrated below:

<table>
<thead>
<tr>
<th>Trastuzumab</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td>is a monoclonal antibody used to treat metastatic breast cancers that overexpresses human epidermal growth factor 2, HER2.</td>
<td>is a murine monoclonal antibody.</td>
<td>is used in the treatment of follicular lymphoma that possesses the membrane surface protein, CD20.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III  **Answer**

49. The drug illustrated below:

<table>
<thead>
<tr>
<th><img src="image" alt="Diagram" /></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>is administered orally.</td>
<td>can prevent the hemorrhagic cystitis associated with administration of ifosfamide.</td>
<td>is rapidly converted to its disulfide in the bloodstream.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III  **Answer**

50. The drug indicated below:

<table>
<thead>
<tr>
<th>Exenatide, Byetta®</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td>slows gastric emptying.</td>
<td>inhibits glucagon release.</td>
<td>stimulates insulin release.</td>
</tr>
</tbody>
</table>

- a) I only
- b) III only
- c) I and II only
- d) II and III only
- e) I, II, and III  **Answer**
Part 2  Generic Names (9 Points). Provide the Generic Names for the Compounds listed on the following page. In the space provided under the structure of each the compounds illustrated, write the correct CAPITALIZED letter corresponding to the choice of answers given on the bottom of the page. The letter “Z” may be used as an answer as seldom or as often as needed.

<table>
<thead>
<tr>
<th>Compound Structure</th>
<th>Answer</th>
<th>Compound Structure</th>
<th>Answer</th>
<th>Compound Structure</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Compound 1" /></td>
<td>A. Repaglinide</td>
<td><img src="image2.png" alt="Compound 2" /></td>
<td>J. Cladribine</td>
<td><img src="image3.png" alt="Compound 3" /></td>
<td>S. Glyburide</td>
</tr>
<tr>
<td><img src="image4.png" alt="Compound 4" /></td>
<td>B. Alendronate</td>
<td><img src="image5.png" alt="Compound 5" /></td>
<td>K. Rosiglitazone</td>
<td><img src="image6.png" alt="Compound 6" /></td>
<td>T. Flutamide</td>
</tr>
<tr>
<td><img src="image7.png" alt="Compound 7" /></td>
<td>C. Daunorubicin</td>
<td><img src="image8.png" alt="Compound 8" /></td>
<td>L. Temozolomide</td>
<td><img src="image9.png" alt="Compound 9" /></td>
<td>U. Carmustine</td>
</tr>
<tr>
<td><img src="image10.png" alt="Compound 10" /></td>
<td>D. Miglitol</td>
<td><img src="image11.png" alt="Compound 11" /></td>
<td>M. Anastrazole</td>
<td><img src="image12.png" alt="Compound 12" /></td>
<td>V. Triamcinolone acetonide</td>
</tr>
<tr>
<td><img src="image13.png" alt="Compound 13" /></td>
<td>E. Aldosterone</td>
<td><img src="image14.png" alt="Compound 14" /></td>
<td>N. Cyclophosphamide</td>
<td><img src="image15.png" alt="Compound 15" /></td>
<td>W. Mitoxanthrone</td>
</tr>
<tr>
<td><img src="image16.png" alt="Compound 16" /></td>
<td>F. Carboplatin</td>
<td><img src="image17.png" alt="Compound 17" /></td>
<td>O. Progesterone</td>
<td><img src="image18.png" alt="Compound 18" /></td>
<td>X. 6-Mercaptopurine</td>
</tr>
<tr>
<td><img src="image19.png" alt="Compound 19" /></td>
<td>G. Tolazamide</td>
<td><img src="image20.png" alt="Compound 20" /></td>
<td>P. Tamoxifen</td>
<td><img src="image21.png" alt="Compound 21" /></td>
<td>Y. Ixabepilone</td>
</tr>
<tr>
<td><img src="image22.png" alt="Compound 22" /></td>
<td>H. Floxuridine</td>
<td><img src="image23.png" alt="Compound 23" /></td>
<td>Q. Allopurinol</td>
<td><img src="image24.png" alt="Compound 24" /></td>
<td>Z. None of These</td>
</tr>
<tr>
<td><img src="image25.png" alt="Compound 25" /></td>
<td>I. Procarbazine</td>
<td><img src="image26.png" alt="Compound 26" /></td>
<td>R. Testosterone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part 3 Nomenclature 16 Points.
Provided **ALL** chiral centers as required and specify the orientation of all functionality or hydrogen atoms by using **BOLD** lines/wedges or **HASHED** lines/wedges. Specify as required if attached functionality is a hydrogen or a methyl substituent.

Example

1. Pregn-4-ene-3,20-dione, 9-fluoro-11,17,21-trihydroxy-, (11β)-

2. 2-[[6-[4-(2-hydroxyethyl)-1-piperazinyl]-2-methyl-4-pyrimidinyl]amino]thiazole

4. Androst-4-en-3-one, 9-fluoro-11,17-dihydroxy-16-methyl-, (11β,16α,17β)-

Exam Total:
Part 1. Multiple Choice 75 Points _____
Part 2. Generic Names 9 Points _____
Part 3 Nomenclature 16 Points _____

Total _____