※ 注意：請於試卷內之「非選擇題作答區」作答，並應註明作答之題號。

一、請簡述過敏性疾病(hypersensitivity diseases)的種類、各自的免疫致病機制以及特徵性病變。(20 分)

二、請簡述腫瘤或腫瘤細胞的特徵。(10 分)

三、請簡述何種結構或機制，讓呼吸至動物肺泡腔的空氣保持無菌狀態。(20 分)

四、Cell death can occur in many ways. Please compare differences between necrosis and apoptosis, including mechanisms and histologic changes **(10 points).** Which experiments will you perform to distinguish between necrosis and apoptosis? **(7 points)**

五、Please match a disease with the possible mechanism of systemic edema in the table. **(1.5 point each)**

| Terminology | Definition |
|---|---|
| 1. (　　) Hypoalbuminemia | A. Increased hydrostatic pressure<br>B. Reduced hydrostatic pressure<br>C. Increased osmotic pressure in vessels<br>D. Reduced osmotic pressure in vessels<br>E. Lymphatic obstruction<br>F. Increased vascular permeability<br>G. Decreases vascular permeability<br>H. Increased sodium retention |
| 2. (　　) Feline infectious peritonitis virus infection | |
| 3. (　　,　　) Liver cirrhosis | |
| 4. (　　,　　) Congestive heart failure | |
| 5. (　　) Protein-losing gastroenteropathy | |
| 6. (　　) Glomerulopathies (nephrotic syndrome) | |

六、Please match pathological findings with types of cell injury **(1.5 point each)**

| Pathological findings | Definition |
|---|---|
| 1. (　　) Renal infarcts | A. Coagulative necrosis<br>B. Liquefactive necrosis<br>C. Zenker's necrosis<br>D. Gangrene necrosis<br>E. Caseous necrosis<br>F. Fat necrosis |
| 2. (　　) Cerebral infarcts | |
| 3. (　　) Myocardial infarcts | |
| 4. (　　) Tuberculosis | |
| 5. (　　) Abcess | |
| 6. (　　,　　) Ergot intoxication | |
| 7. (　　) Nutmeg liver | |
| 8. (　　) Pancreatitis | |

見背面

七、Please match the terminology with its definition **(1.5 point each)**

| Terminology | Definition |
|---|---|
| 1. (  ) Metaplasia | **A.** Reversible change in which one differentiated cell type is replaced by another differentiated cell type. |
| 2. (  ) Hyperplasia | **B.** Disordered growth of cells (loss of uniformity and architectural orientation) |
| 3. (  ) Serous atrophy | **C.** Increase in organ size or tissue mass caused by an increase in the number of constituent cells |
| 4. (  ) Transudate | **D.** The decrease in size or amount of skeletal muscle cells |
| 5. (  ) Embolus | **E.** The depletion of fat in adipose tissue |
| 6. (  ) Frameshift mutation | **F.** The cytoplasm of the proximal tubule epithelial cells is filled with eosinophilic homogeneous droplets—protein that has been resorbed by the cells from the glomerular filtrate. |
| 7. (  ) Nonsense mutation | **G.** Excessive production of normal protein in the cytoplasm of some plasma cells |
| 8. (  ) Hyaline cast | **H.** Deposition of sodium urate crystals or urates in tissue |
|  | **I.** Protein in lumens of renal tubules in a proteinuria |
|  | **J.** The result of the deposition of immunoglobulin, complement, and/or plasma proteins, including fibrin in the wall of a vessel. |
|  | **K.** A base-pair substitution does not result in a change in the amino acid. |
|  | **L.** Mutation produces a change in a single amino acid. |
|  | **M.** Mutation produces a stop codon in the mRNA, which terminates translation of the polypeptide. |
|  | **N.** Mutation alters all of the codons downstream from the site of insertion or deletion. |
|  | **O.** Increased water shift from intravascular to the interstitial space due to disturbance of starling forces |
|  | **P.** Increased water shift from intravascular to the interstitial space due to damage to the capillary wall |
|  | **Q.** An area of necrosis secondary to decreased blood flow |
|  | **R.** A blockage-causing piece of material, inside a blood vessel. |