

**Navrachana University**  
**School of Liberal studies and Education**  
**B.Sc.Program**  
**End-Semester Examination November 2017**  
**TY BSc Semester V**  
**Physiological aspects of Biochemistry (BC301)**

Marks: 40

Date: 20/11/2017  
 Time: 1:00 – 3:00 PM

**Instructions:**

- All the Questions are Compulsory
- Please read the questions carefully and answer accordingly
- Draw a neat and labeled diagram wherever necessary

**Q1. Fill in the blanks**

(1× 6= 6M)

1. \_\_\_\_\_ toxin obtained from puffer fish blocks AP.
2. Pacinian corpuscles are receptors for which sense \_\_\_\_\_.
3. \_\_\_\_\_ Disease patients often have a peculiar edema behind eyes, called exophthalmos.
4. The kidney secretes \_\_\_\_\_ for the purpose of stimulating bone marrow activity.
5. \_\_\_\_\_ regulates movement into esophagus, \_\_\_\_\_ regulates movement into stomach during peristaltic movement in gastrointestinal tract.
6. \_\_\_\_\_ leaks into the blood from cells outside blood vessels and initiates formation of prothrombinase.

**Q2. State whether following statement is true or false with justification**

(1× 5= 5 M)

1. Microvolt is the measuring unit of RMP.
2. Paracrine means when signaling occur through direct contact with the adjacent cells via components of the cell membrane.
3. There are 21 pairs of spinal nerves.
4. Intrinsic factor is released into the stomach from parietal cells.
5. Antidiuretic hormone decrease water permeability of cells in Distal Collecting Tubule and collecting duct of kidney.

**Q3. Answer the following questions in short**

(1× 6=6 M)

1. State the full form of NIDDM.
2. Mention role of prolactin hormone?
3. Name the neuroglia's of PNS.
4. Define Rigor Mortis
5. What is role of renin in kidney function ?
6. How does  $Ca^{+2}$  play an important role in blood clotting mechanism ?

**Q4. Answer the following questions in brief**

(2 × 3=6 M)

1. State and explain different function of astrocytes?
2. Explain sliding filament mechanism in skeletal muscles?
3. How does chemical digestion take place in colon. Explain in brief.

**Q5. Answer the following questions in detail (any 3)**

(3 ×3= 9M)

1. Explain in detail major steps involved in testosterone hormone mechanism of action.
2. Explain how the nerve impulse passes along a neuron in context of action potential?
3. Gastric glands present in mucosal layer, play an important role in digestion of food. Explain in brief with suitable examples.
4. A 27 year old female was seen by medical personnel at an after hours clinic. She complained of nausea and weakness. Physical examination showed the patient had some edema. Since the patient's medical record showed a history of diabetes, her family physician was notified. Further patient history revealed the patient had been treated 2 weeks prior for a recurring urinary tract infection with two types of antibiotics. However, over the past week, the patient's urine output began to decrease markedly. Alarmed by this information, the family's physician ordered several series of blood tests and asked the patient's husband to transport her to the hospital for admission and further evaluation. This patient's symptoms may well indicate the serious and lifethreatening condition know as acute renal failure.
  - a. How does the kidney maintain the proper pH balance and the proper balance of water in the body?
  - b. According to you, why patient experiencing edema ?
  - c. What blood chemistry values are reflective of the kidneys ability to excrete waste? Give any suitable examples.

**Q6. Write short notes on given topics (any 2)**

(3X2=6M)

1. Skeletal Muscle fiber proteins
2. Chemical synaptic transmission
3. List out the mechanisms regulating GFR and explain any one of them in detail.

**Q7 Why does regular aerobic exercise provide more cardiovascular benefit than weight training does?**

(Hint: The heart responds to the demands placed on it in a way similar to skeletal muscle.)

(2M)

\*\*\*\*\*ALL THE BEST\*\*\*\*\*