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THE OPEN UNIVERSITY OF SRILANKA
FACULTY OF HEALTHSCIENCES
DEPARTMENT OF BASIC SCIENCES
ACADEMIC YEAR 2020/2021 – SEMESTER I



BACHELOR OF PHARMACY HONOURS
BSU3431-HUMAN PHYSIOLOGY – LEVEL 3
CONTINUOUS ASSESSMENT I (NBT I)

DURATION: 1.5 HOURS

DATE: 26th NOVEMBER 2021

TIME: 09.00 AM – 10.30 AM

REGISTRATION NO:

IMPORTANT INSTRUCTIONS/ INFORMATIONS TO CANDIDATES

This question paper consists of **13** pages with **20 Multiple Choice Questions (Part A)** and **04 Structured Essay Questions (Part B)**.

Write your Registration Number in the space provided.

Answer **ALL** questions.

Multiple Choice Questions (Part A): Indicate answers in the answer sheet provided by placing a cross (X) in **INK** in the relevant cage. (Answers in pencil will **NOT** be marked)

- **Structured Essay Questions (Part B):** Write answers within the space provided.
- Do not remove any page part of this question paper from the examination hall.
- Mobile phones and any other electronic equipment are **NOT** allowed. Leave them outside.
- Please fill the address sheet (See last page).

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REGISTRATION NO:

ANSWER SHEET FOR PART A

Q. No.	(a)	(b)	(c)	(d)
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REGISTRATION NO:

Part A – Multiple Choice Questions*(20 marks)*

Choose the most suitable / best answer and indicate with a 'X' in the answer sheet provided.

1. Which one of the following is **correct** regarding the anaerobic respiration?
 - a) It takes place when oxygen molecules available
 - b) It is a very efficient way of producing ATP molecules
 - c) Two ATP molecules are produced from complete breakdown of a glucose molecule
 - d) A glucose molecule is converted to carbon dioxide and lactic acid

2. Select a mode of active transport from the followings.
 - a) Facilitated diffusion
 - b) Simple diffusion
 - c) Osmosis
 - d) Endocytosis and Exocytosis

3. An action potential of a nerve
 - a) can cause the region, becomes more negative than the outside
 - b) is a localized change in the potential of an axonal membrane
 - c) is a result of the opening of voltage-gated potassium ion channels
 - d) allows K^+ to diffuse down against the concentration gradient

4. Exocytosis
 - a) is a process in which white blood cells destroy bacteria
 - b) involves binding of substance to a carrier molecule
 - c) is secretion of large molecules from glands
 - d) is the movement of molecules according to a concentration gradient

5. According to the Sliding Filament Theory, muscle contraction begins
 - a) when thin actin filament slides between the thick myosin filaments
 - b) when Ca^{2+} release into the sarcoplasm
 - c) when calcium ions move away from the thin filaments
 - d) when sarcomere becomes shorten in length

6. Which one of the following is **correct** regarding the resting membrane potential of a nerve cell?
- It has a positive value
 - It is the potential, across a neuronal membrane at its resting stage
 - It has more negative charges in the outside of the cell membrane
 - It is actively involved in sending signals
7. During muscle contraction ATP is mainly produced by
- Aerobic cellular respiration
 - Creatine phosphate pathway
 - Anaerobic cellular respiration
 - Glycolysis
8. Which one of the following is **correct** regarding the muscle contraction?
- Every cardiac muscle fibre is controlled by a motor neuron
 - Cardiac and smooth muscle cells are controlled by nerves or hormones
 - In the cardiac and smooth muscle cells, the electrical signal spreads from cell to cell via gap junctions
 - Skeletal muscle contracts in response to pacemaker cells which are spontaneously active
9. Macrophages are involved in
- endocytosis
 - exocytosis
 - cell mediated immunity
 - humoral immunity
10. Which one of the following is **correct** regarding nervous tissue?
- Myelin sheath decreases the speed of nerve impulses
 - Neurons are associated with electrical signaling
 - Neurons undergo mitosis
 - It doesn't use chemical messengers to transmit signals
11. Universal recipient is a person with a blood group of,
- B
 - A
 - O
 - AB

12. Which one of the following is **incorrect** regarding RhoGAM?
- It contains anti-Rh antibodies
 - It is an injection of a serum
 - They prevent the activation of baby's immune system
 - It prevents making of mother's own anti-Rh antibodies in a large scale
13. If there is a decreased blood pressure in the human body, it will
- increase the release of ADH hormone
 - decrease the venous return
 - activate the parasympathetic nervous system
 - increase vasodilatation of blood vessels
14. Total peripheral resistance and cardiac output are two major factors which influence
- venous return
 - mean arterial pressure
 - heart rate
 - stroke volume
15. The first heart sound is produced by the
- closure of atrioventricular valves
 - contraction of ventricles
 - relaxation of ventricles
 - closure of semilunar valves
16. An example of passive immunity includes
- providing an injection of weakened pathogens
 - BCG vaccination
 - injecting anti venom in snake bites
 - injecting with dead pathogens
17. The tidal volume is
- the largest amount of air that can be expired after a maximal inspiratory effort
 - the amount of air that moves into the lungs with each inspiration
 - the air inspired with a maximal inspiratory effort
 - the volume of air left in the lungs after a maximal expiratory effort

18. Which one of the following is **incorrect** regarding lung compliance?

- a) It is the distensibility of lungs
- b) It measures the change in lung volume
- c) It diminishes by chronic inflammation
- d) It decreases with an increase production of surfactant

19. Match the disease with the relevant cause.

Disease	cause
i. Tuberculosis	A. airway hyperresponsiveness
ii. Bronchial asthma	B. an accumulation of fluid in the lungs
iii. Pneumonia	C. bacterial infection of the lungs

- a) B, A, C b) C, A, B c) B, C, A d) C, B, A

20. Select the **incorrect** statement regarding the immune system.

- a) It defends against pathogens
- b) The leucocytes and erythrocytes are involved in immune mechanism
- c) The system removes damaged cells
- d) It destroys abnormal body cells, including cancer cells

REGISTRATION NO:

Part B –Structured Essay Questions
(80 marks)

Write answers in the space provided.

- 1) a) What is meant by **Homeostasis**? (2 marks)

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- b) Briefly describe the homeostasis mechanism to maintain the body temperature. (10 marks)

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- c) Compare **four (04)** features of skeletal and smooth muscles. (8 marks)

Skeletal Muscle	Cardiac Muscle
i.	
ii.	
iii.	
iv.	

- 2) a) Give **two (02)** examples of leucocytes active in the immune system.

(4marks)

i.

ii.

- b) List **five (05)** functions of the cell membrane.

(10 marks)

i.

ii.

iii.

iv.

v.

- c) Draw a labeled diagram of the **neuromuscular junction**. (6 marks)

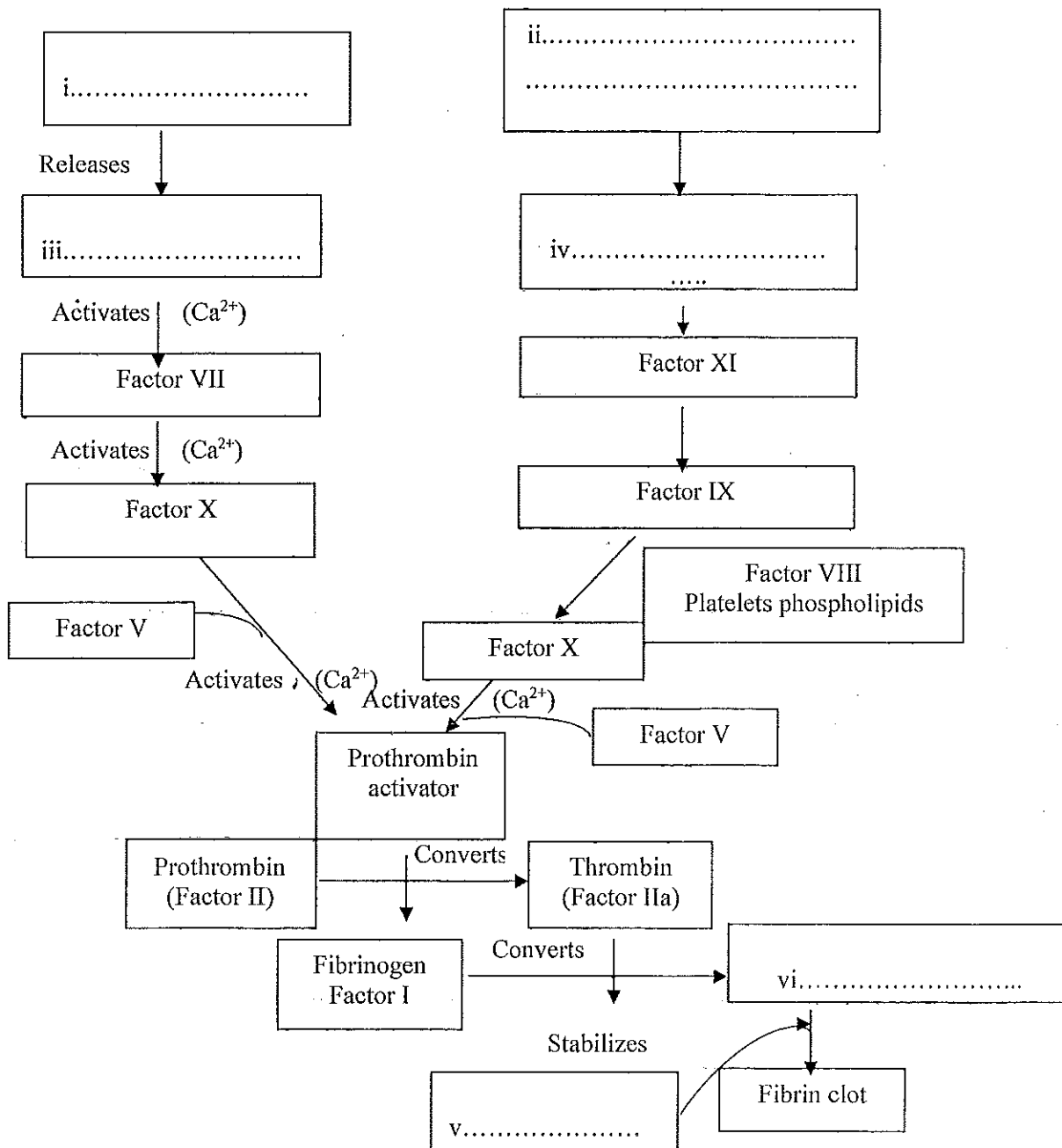
- 3) a) Complete the Agglutinogens and agglutinins present relevant to each blood group type. (8 marks)

Blood group/ type	Agglutinogens on red blood cells	Agglutinins in the plasma
Type A		
Type B		
Type AB		
Type O		

b) Fill in the blanks from i – vi considering the blood clotting mechanism. (12 marks)

Extrinsic clotting mechanism

Intrinsic clotting mechanism



4. a) A doctor has recorded blood pressure (BP) of a patient as **110 mmHg/80 mmHg**.
Considering BP value calculate the following parameters. (8 marks)

i. Systolic blood pressure

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ii. Diastolic blood pressure

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iii. Pulse pressure

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iv. The Mean Arterial Pressure (MAP)

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b) What is the importance of surfactant present in the alveolar wall. (4 marks)

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c) Explain the pathophysiology of bronchial asthma. (8 marks)

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