



**PROGRAM:** NURSING

**SUBJECT:** PHYSIOLOGY 1

**CODE :** HPH 1A10

**DATE :** EXAMINATION - 30 MAY 2017

**TIME :** 12:30

**DURATION:** 90 MINUTES

**WEIGHT :** 50:50

**TOTAL MARKS:** 50

---

**EXAMINERS** : DR S EAGLETON

**MODERATOR** : MRS P DE LANGE-JACOBS

**NUMBER OF PAGES** : 3 PAGES

---

**INSTRUCTIONS:** YOU MAY KEEP THE QUESTION PAPER.

**REQUIREMENTS:** 1 x EXAMINATION SCRIPT

---

Answer this section in the answer book provided. Number the questions exactly as they are number on the question paper. **Keep subsections of questions together.**

**QUESTION 1**

- 1.1 Name and define the two types of homeostatic feedback mechanisms. (2)
- 1.2 Explain the differences between non-polar covalent bonds, polar covalent bonds and ionic bonds and give one example of each type of bond.  $6 \times \frac{1}{2} = (3)$
- 1.3 **Explain** what will happen to a red blood cell if it is placed in a/an:
- 1.3.1 Hypotonic solution (2)
- 1.3.2 Hypertonic solution (2)
- 1.3.3 Isotonic solution (1)

[10]

**QUESTION 2**

- 2.1 Relate the plasma membrane structure to the following transport mechanisms across the membrane:
- 2.1.1 Simple diffusion (1)
- 2.1.2 Facilitated diffusion (2)
- 2.1.3 Active transport (3)

- 2.2 MATCHING - Relate the functions of the organelles in column 2 to the organelles in column 1.

Write down the number and corresponding letter only.  $10 \times \frac{1}{2} = (5)$

Column 1	Column 2
2.2.1.Centriole	a) modifies proteins
2.2.2.Mitochondria	b) serves as a mini-circulatory system for the cell
2.2.3.Ribosome	c) directs the formation of the mitotic spindle during cell division
2.2.4.Lysosome	d) moves substances along the cell surface
2.2.5.Microtubule	e) sac of digestive enzymes
2.2.6.Golgi apparatus	f) detoxifies drugs
2.2.7.Nucleolus	g) site of protein synthesis
2.2.8.Secretory vesicle	h) energy-generating powerhouse of the cell
2.2.9. Rough endoplasmic reticulum	i) provides support and maintains cell shape
2.2.10 Smooth endoplasmic reticulum	j) involved in cell motility
	k) assembles and packages material to be secreted by the cell
	l) regulates the entrance and exit of materials from the cell
	m) site of ribosome synthesis
	n) packages protein for release from the cell
	o) synthesizes membrane lipids

- 2.3 Discuss **four** characteristics of cancer cells that distinguish them from normal cells. (4)

[15]

**QUESTION 3**

- 3.1 Describe the stages in the regeneration of the skin after an injury. (5)

[5]

**QUESTION 4**

- 4.1 Relate each of the following structures found in compact bone to their function:

- 4.1.1 Osteocytes (1)  
 4.1.2 Lamellae (1)  
 4.1.3 Canaliculi (1)  
 4.1.4 Periosteum (1)

- 4.2 Describe the steps involved in the repair of a fractured bone (4)

- 4.3 Distinguish between the effects of calcitonin and parathyroid hormone on:

- 4.3.1 Osteoblasts  $2 \times \frac{1}{2} = (1)$   
 4.3.2 Osteoclasts  $2 \times \frac{1}{2} = (1)$

[10]

**QUESTION 5**

- 5.1 Match the structure (column B) and example (column C) of each type of joint with the type of joint in column A. Write out the **words** from columns B and C next to the number of the joint type from column A.

Column A	Column B	Column C
5.1.1 Suture	Cartilage bridge between bones	Epiphyseal lines
5.1.2 Synchondrosis	Fibrous connection	Teeth in their sockets
5.1.3 Synostosis	Fused bones	Epiphyseal cartilage
5.1.4 Gomphosis	Interlock bones	Skull

$8 \times \frac{1}{2} = (4)$

- 5.2 List the **six** different types of diarthroses, and give an example of each.  $12 \times \frac{1}{2} = (6)$

[10]

**Total = 50**