

Ollscoil na hÉireann
NATIONAL UNIVERSITY OF IRELAND

DR H H STEWART MEDICAL SCHOLARSHIP EXAMINATION, 1998

PHYSIOLOGY
Professor K M Spyer

Thursday, 28 May 1998

2.30 - 5.30

Answer four questions

1. Compare and contrast the physiological processes that subserve the senses of taste and smell.
2. Describe the reflex effects from muscle spindles and Golgi tendon organs. How would the afferent discharge in 1a and 1b fibres be affected when the muscle is caused to contract by a stimulus to the alpha motor fibres in its nerve?
3. The following values were obtained from a subject given a standard hearing test (all values in dB):

	<u>LEFT EAR</u>		<u>RIGHT EAR</u>	
	<u>AIR</u>	<u>BONE</u>	<u>AIR</u>	<u>BONE</u>
250Hz	+60	+5	+5	0
500Hz	+65	+5	+10	+5
1000 Hz	+70	+10	+10	+5
2000 Hz	+60	+5	+5	0
4000 Hz	+65	+10	+10	+5

Plot the data as an audiogram. What kind of hearing loss is present in this subject? Discuss other possible causes of hearing loss.

4. "Spermatogenesis" and "oogenesis" are the processes by which gametes are formed in males and females. Compare and contrast the means by which mature gametes are formed in the two sexes.
5. Describe and explain the changes which occur in the cardiovascular system in heart failure. How do the consequences differ for failure of left or right ventricles respectively?
6. What are the mechanisms of ventilatory acclimatisation to high altitude, and what are the consequences for an individual who fails to acclimatise adequately?
7. What is meant by the so-called diving responses seen in breath-hold diving, mentioning the underlying physiological mechanisms.