

Biology OCR New Spec A2
2 Lesson Teacher

ACADEMIC YEAR **2017/2018**

TUTOR/S RESPONSIBLE FOR SCHEME AHT

TUTOR/S RESPONSIBLE FOR TEACHING AHT

SPECIFICATION TITLE/NUMBER **OCR GCE Biology**

AVAILABLE TEACHING WEEKS 31

TOPICS COVERED:

Module 5

- 5.1.1 Communication and Homeostasis
- 5.1.2 Excretion as an example of Homeostatic Control
- 5.1.3 Neuronal Communication
- 5.1.4 Hormonal Communication
- 5.1.5 Plant and Animal Responses

Module 6

- 6.1.1 Cellular Control
- 6.1.2 Patterns of Inheritance
- 6.1.3 Manipulating Genomes
- 6.2.1 Cloning and Biotechnology

Lesson	TOPIC	RESOURCES	Learning Outcomes		Possible homework	
1.1	<p>Introduction</p> <p>5.1.1 Communication and homeostasis</p> <p>THERMOREGULATION</p>	Course notes pages 2-8	<p>Prep</p> <input type="checkbox"/> <p>Com p</p> <input type="checkbox"/>	<p>(a) The need for communication systems in multicellular organisms</p> <p>(b) The communication between cells by cell signalling</p> <p>(c) The principles of homeostasis</p> <p>(d) The physiological and behavioural responses involved in temperature control in Ectotherms and endotherms.</p>	<p>Pre p</p> <input type="checkbox"/> <p>Co mp</p> <input type="checkbox"/>	* get students to complete pages 7&8 of notes for homework.
1.2	<p>5.1.2 Excretion as an example of homeostatic control</p> <p>THE LIVER: Anatomy and histology</p>	Course notes pages 9-15	<p>Prep</p> <input type="checkbox"/> <p>Com p</p> <input type="checkbox"/>	<p>(a) The term excretion and its importance in maintaining metabolism and homeostasis</p> <p>(b) (i) The structure and functions of the mammalian liver (ii) the examination and drawing of stained sections to show the histology of liver tissue</p>	<p>Pre p</p> <input type="checkbox"/> <p>Co mp</p> <input type="checkbox"/>	HW1: Exam Questions thermoregulation and the liver

2.1	The Liver: Chemical Reactions Liver Revision Poster	Course notes pages 17 - 19	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	<ul style="list-style-type: none"> Describe the process of deamination, detoxification and the ornithine cycle. 	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
2.2	THE KIDNEY Anatomy PAG1: Histological drawings of the kidney	Course notes pages 20-24	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(a) i) The structure, mechanisms of action and functions of the mammalian kidney (ii) the dissection, examination and drawing of the external and internal structure of the kidney (iii) the examination and drawing of stained sections to show the histology of nephrons Practical - get students to make drawings from photographs and examine slides, locating the glomerulus, bowman's capsule, PCT, DCT	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
3.1	The Kidney: Ultrafiltration, Selective Reabsorption, Water Reabsorption. Osmoregulation	Course notes pages 25-28	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(a) The control of the water potential of the blood (b) Mechanisms of action and functions of the mammalian kidney (a) The control of the water potential of the blood (to continue with the role of ADH, and the role of the posterior pituitary gland).	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	<ul style="list-style-type: none"> Get students to complete MCQ's on pages 40-47

3.2	KIDNEY FAILURE, PREGNANCY TESTING AND ANABOLIC STEROIDS	Course notes page 29-33	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(a) The effects of kidney failure and its potential treatments (b) How excretory products can be used in medical diagnosis (pregnancy testing and anabolic steroids)	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
4.1	PAG 2: KIDNEY DISSECTION	Course notes pages 34 - 39	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	KIDNEY DISSECTION AND SMALL TEST ON EXCRETION - LIVER AND KIDNEYS	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

4.2	REVISION OF EXCRETION	Exam Questions pages 48-51	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	Get students to make revision posters for the liver and kidney	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	End of topic exam questions from text book
5.1	RESTING POTENTIAL AND ACTION POTENTIAL	Course notes pages 52 - 59	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(a) The roles of mammalian sensory receptors in converting different types of stimuli into nerve impulses (b) The structure and functions of sensory, relay and motor neurones	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	
5.2	RESTING POTENTIAL AND ACTION POTENTIAL	Course notes pages 60-66	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(a) The generation and transmission of nerve impulses in mammals	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	Exam Questions pages 69 - 72 of notes

6.1	SYNAPSES		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(a) The structure and roles of synapses in neurotransmission.	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
6.2	MOCK EXAM Going Over Mock Exam		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
7.1	5.1.4 Hormonal communication The Adrenal Glands	Course notes pages 73-80		(a) Endocrine communication by hormones (b) The structure and functions of the adrenal glands		
7.2	THE PANCREAS			(a) (c) (i) the histology of the pancreas (ii) the examination and drawing of stained sections of the pancreas to show the histology of the endocrine tissue		Exam Questions on pages 86-89 of course notes

Hols Oct Half Term			Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
8.1	DIABETES	Course notes pages 81-85	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(a) How blood glucose concentration is regulated (b) The differences between Type 1 and Type 2 diabetes mellitus (f) The potential treatments for diabetes mellitus.	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
8.2	5.1.5 Plant and animal responses	Course notes pages 90-94	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(a) (i) The types of plant responses (ii) practical investigations into phototropism and geotropisms (b) The roles of plant hormones (c) The experimental evidence for the role of auxin in the control of apical dominance	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

9.1	PRACTICAL INVESTIGATIONS ON PLANT HORMONES	Course notes pages 95 - 100	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(d) The experimental evidence for the role of gibberellin in the control of stem elongation and seed germination (e) Practical investigations into the effect of plant Hormones on growth (f) The commercial use of plant hormones	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
9.2	MAMMALIAN NERVOUS SYSTEM	Course notes pages 101- 105	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(g) The organisation of the mammalian nervous system (h) The structure of the human brain and the functions of its parts	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	Get students to complete table on pages 106-107 for homework

10.1	REFLEXES	Course notes pages 108-110	Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(i) Reflex actions GET STUDENTS TO MAKE A BRAIN POSTER DETAILING THE LOCATION AND FUNCTION OF EACH BRAIN PART.	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
10.2	HEART RATE		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	j) The coordination of responses by the nervous and endocrine systems (k) The effects of hormones and nervous mechanisms on heart rate TALK ABOUT PAG 11	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
11.1	PAG 11		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	PAG 11 - HEART RATE	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

11.2	MUSCLES	Course notes pages 116 - 120	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(l) (i) the structure of mammalian muscle and the mechanism of muscular contraction (ii) the examination of stained sections or photomicrographs of skeletal muscle.	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	
12.1	MUSCLES CONTINUED	Course Notes pages 121 - 123	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	MUSCLE REVISION POSTER AND EXAM QUESTIONS	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	Complete exam questions on pages 124 - 128
12.2	AS REVISION		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	REVISION OF CONTENT OF MODULE 2 FROM AS. EXAM QUESTIONS AND EXERCISES TO ENSURE STUDENTS HAVE NOT FORGOTTEN FUNDAMENTALS. WILL ALSO HELP WITH GENETICS.	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	

13.1	REVISION FOR MOCK		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	REVISION FOR MOCK	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
13.2	MOCK		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
14.1	Going through Mock		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

14.2			Prep <input type="checkbox"/> Comp <input type="checkbox"/>	SET AND GO THROUGH THE CHRISTMAS HOMEWORK	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
Hols Winter			Prep <input type="checkbox"/> Comp <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
15.1	6.1 Genetics and evolution 6.1.1 Cellular control			(a) types of gene mutations and their possible effects on protein production and function (b) the regulatory mechanisms that control gene expression at the transcriptional level, posttranscriptional level and post-translational level		
15.2	BODY PLANS AND APOPTOSIS			(c) the genetic control of the development of body plans in different organisms (d) the importance of mitosis and apoptosis as mechanisms controlling the development of body form. (e)		

16.1	6.1.2 Patterns of inheritance	-	Prep <input type="checkbox"/> Comp p <input type="checkbox"/>	(a) (i) the contribution of both environmental and genetic factors to phenotypic variation (ii) how sexual reproduction can lead to genetic variation within a species (b) (i) genetic diagrams to show patterns of inheritance	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
16.2	GENETICS		Prep <input type="checkbox"/> Comp p <input type="checkbox"/>	(ii) the use of phenotypic ratios to identify linkage (autosomal and sex linkage) and epistasis	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
17.1	GENETICS		Prep <input type="checkbox"/> Comp p <input type="checkbox"/>	(c) using the chi-squared (χ^2) test to determine the significance of the difference between observed and expected results genetics problems	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

17.2	POPULATION GENETICS		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(f) the genetic basis of continuous and discontinuous variation (g) the factors that can affect the evolution of a species (h) the use of the Hardy-Weinberg principle to calculate allele frequencies in populations	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	
18.1			Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(g) the role of isolating mechanisms in the evolution of new species (h) (i) the principles of artificial selection and its uses (ii) the ethical considerations surrounding the use of artificial selection.	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	
18.2	6.1.3 Manipulating genomes	-	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(a) the principles of DNA sequencing and the development of new DNA sequencing techniques (b) (i) how gene sequencing has allowed for genome-wide comparisons between individuals and between species (ii) how gene sequencing has allowed for the sequences of amino acids in polypeptides to be predicted (iii) how gene sequencing has allowed for the development of synthetic biology	Prep <input type="checkbox"/> Comp <input type="checkbox"/>	

19.1			Prep <input type="checkbox"/> Com p <input type="checkbox"/>	REVISION FOR MOCK EXAM	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
19.2	MOCK		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	MOCK	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
20.1	Going through the mock		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

20.2	DNA PROFILING		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(c) the principles of DNA profiling and its uses d) the principles of the polymerase chain reaction (PCR) and its application in DNA analysis (e) the principles and uses of electrophoresis for separating nucleic acid fragments or proteins	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
Hols Spring Half Term			Prep <input type="checkbox"/> Comp <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
21.1	Genetic engineering		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(f) (i) the principles of genetic engineering (ii) the techniques used in genetic engineering (g) the ethical issues (both positive and negative) relating to the genetic manipulation of animals (including humans), plants and microorganisms (h) the principles of, and potential for, gene therapy in medicine.	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

21.2			Prep <input type="checkbox"/> Com p <input type="checkbox"/>	REVISION AND CONSOLIDATION OF GENETIC ENGINEERING	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
22.1	6.2 Cloning and biotechnology		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(a) (i) natural clones in plants and the production of natural clones for use in horticulture (ii) how to take plant cuttings as an example of a simple cloning technique (b) (i) the production of artificial clones of plants by micropropagation and tissue culture (ii) the arguments for and against artificial cloning in plants	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
22.2	CLONING		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	(c) natural clones in animal species (d) (i) how artificial clones in animals can be produced by artificial embryo twinning or by enucleation and somatic cell nuclear transfer (SCNT) (ii) the arguments for and against artificial cloning in animals (e) the use of microorganisms in biotechnological processes	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

23.1	GROWTH CURVE AND ASEPTIC TECHNIQUES		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(f) the advantages and disadvantages of using microorganisms to make food for human consumption (g) (i) how to culture microorganisms effectively, using aseptic techniques (ii) the importance of manipulating the growing conditions in batch and continuous fermentation in order to maximise the yield of product required (h) (i) the standard growth curve of a microorganism in a closed culture (ii) practical investigations into the factors affecting the growth of microorganisms	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
23.2	Immobilised enzymes		Prep <input type="checkbox"/> Comp <input type="checkbox"/>	(i) the uses of immobilised enzymes in biotechnology and the different methods of immobilisation.	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
24.1			Prep <input type="checkbox"/> Comp <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

24.2			Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
25.1	MOCK WEEK		Prep <input type="checkbox"/> Com p <input type="checkbox"/>	Mock	Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
25.2	Going through the mock		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

Hols Easter			Prep <input type="checkbox"/>		Pre p <input type="checkbox"/>	
			Com p <input type="checkbox"/>		Co mp <input type="checkbox"/>	
26.1	PAG Completion		Prep <input type="checkbox"/>		Pre p <input type="checkbox"/>	
			Com p <input type="checkbox"/>		Co mp <input type="checkbox"/>	
26.2	PAG Completion		Prep <input type="checkbox"/>		Pre p <input type="checkbox"/>	
			Com p <input type="checkbox"/>		Co mp <input type="checkbox"/>	

27.1	PAG Completion		Prep <input type="checkbox"/>		Pre p <input type="checkbox"/>	
27.2	PAG Completion		Com p <input type="checkbox"/>		Co mp <input type="checkbox"/>	
28.1	REVISION		Prep <input type="checkbox"/>		Pre p <input type="checkbox"/>	

28.2	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
29.1	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
29.2	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

30.1	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
30.2	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	
31.1	REVISION		Prep <input type="checkbox"/> Com p <input type="checkbox"/>		Pre p <input type="checkbox"/> Co mp <input type="checkbox"/>	

31.2	REVISION		Prep <input type="checkbox"/>		Prep <input type="checkbox"/>	Comp <input type="checkbox"/>
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