Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

OHS – Cambridge International Examinations

Subject:AICE Level BiologyDate: **\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| Self-Assess | Details |
|  | **Chapter 16 – Inherited Change Part I**  *This information is taken from Jones & Fosbery (JF) Ch 16 (4th Edition)*  Review the objectives for this chapter page 364 and make sure you place the section “O” in your notebook under that tab.  \*\*\*Review from Chapter 5  Explain what is meant by homologous pairs of chromosomes.  **The nucleus contains chromosomes**  Chromosomes –  Karyogram-  Homologous pairs –  Sex chromosomes –  Autosomes –  Genes-  Locus-  Alleles-  ***SAQ 16.1- Look at Figures 16.2 and 16.3 and try to decide why the numbered chromosomes are arranged in the particular order shown (5)***  **Haploid and diploid cells**  Diploid –  Haploid –  **Two Types of Nuclear Division**  **Use Figure 16.6 to sketch the life cycle of an animal. Make sure to label the stages during growth, sexual reproduction and fertilization. Then summarize both growth and sexual reproduction.**  Growth-  Sexual Reproduction-      Genetic Variation-  **Figure 16.7 shows a life cycle in which the chromosomes number is a not halved; b halved. Sketch both life cycles and make sure to label everything. (10)**    Outline the role of meiosis in sexual reproduction  Describe the behaviour of homologous chromosomes during meiosis and explain how this leads to genetic variation.  **Meiosis**    Meiosis-  Independent assortment-  Crossing over-  **Sketch a homologous pair chromosomes showing crossing over (5).**  Genetics-  **Refer to Figure 16.8 and 16.9: Meiosis and cytokinesis in an animal cell. Be able to describe and draw out all stages of meiosis I and meiosis II below. Don’t forget to label.**    **SAQ 16.2 and 16.3 (page 370) Complete both questions.**  **Gametogenesis in humans: Refer to Figure 16.10 and 16.11**  List the process of spermatogenesis-  List the process of oogenesis-  **Gametogenesis in flowing plants**  **Figure 16.12: Sketch and label the structure of a flower**  Sketch out the process of pollen formation and gametogenesis in plants by using the figures from page 372 and 373. Briefly describe the processes and use all terminology discussed in this section of the text. |
| O Inherited change  **Content**  • **Passage of information from parent to offspring**  • **Nature of genes and alleles and their role in determining the phenotype**  • **Monohybrid and dihybrid crosses**  **Learning Outcomes**  Candidates should be able to:  (a) **[PA] describe, with the aid of diagrams, the behaviour of chromosomes during meiosis, and the**  **associated behaviour of the nuclear envelope, cell membrane and centrioles (names of the main**  **stages are expected, but not the sub-divisions of prophase);**  (b) **explain how meiosis and fertilisation can lead to variation;**  (c) **explain the terms *locus*, *allele*, *dominant*, *recessive*, *codominant*, *homozygous*, *heterozygous*,**  ***phenotype* and *genotype* (see section 5);**  (d) **use genetic diagrams to solve problems involving monohybrid and dihybrid crosses, including**  **those involving sex linkage, codominance and multiple alleles (but not involving autosomal**  **linkage or epistasis);**  (e) **use genetic diagrams to solve problems involving test crosses;**  (f) **[PA] use the chi-squared test to test the significance of differences between observed and**  **expected results (the formula for the chi-squared test will be provided);**  (g) **explain, with examples, how mutation may affect the phenotype;**  (h) **explain, with examples, how the environment may affect the phenotype;**  (i) **explain how a change in the nucleotide sequence in DNA may affect the amino acid sequence in a**  **protein and hence the phenotype of the organism;**  (j) **use the knowledge gained in this section in new situations or to solve related problems.** | | |