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QUESTION 1: Write a short note on spermatogenesis and testosterone.

ANSWER: Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of testis. This process start with the mitotic division of the stem cells located close to the basement membrane of tubules. These cell are called spermatogonial stem cells. The mitotic division of these produces two type of cells, TYPE A cell replenish the stem cell and TYPE B cell differentiate into primary spermatocyte. The primary spermatocyte divides meiotically (meiosis I) into two SECONDARY SPERMATOCYTE: each secondary spermatocyte divides into two equal haploid spermatids by meiosis II. The spermatids are transformed into spermatozoa (sperm) by the process of spermiogenesis. These develop into matured spermatozoa, also known as sperm cells. Thus the primary spermatocyte gives rise to two cells and the secondary spermatocyte, the two secondary spermatocytes by their subdivision produce Four spermatozoa and four haploid stem cell located close to the basement membrane of tubules.

TESTOSTERONE: is the primary male sex hormone and anabolic steroid. In male humans, testosterone plays a key role in the development of male reproductive tissues such as testes and prostate, as well as promoting secondary sexual characteristics such as increased muscle and bone mass, and growth of body hair. In addition testosterone is involved in health and well being and prevention of osteoporosis. Insufficient level of testosterone in men may lead to abnormalities including frailty and bone loss.

Testosterone is a steroid from androstane class containing a keto and hydroxyl groups at position three and seventeen respectively. It is biosynthesized in several steps from cholesterol and converted in the liver to inactive metabolites. It extract its action through binding to and activation of the androgen receptor.