

(Hormones in reproduction (menstrual cycle, FSH, LH, oestrogen, contraception, fertility treatments))

Q1.(2021)

FSH (release from pituitary)
stimulates maturation of egg /
ovum / follicle

oestrogen (release from ovary)
inhibits FSH production **and**
stimulates LH production

LH (release from pituitary)
stimulates ovulation

progesterone (release from
ovary) inhibits FSH **and** LH
production

oestrogen **and** progesterone
maintain the uterus lining

Q2.a)(2023)

as volume of follicles rises
oestrogen concentration (in
blood) rises (for 7 / 8 days)

Q2.b)(2023)

(volume of one follicle)

$$= \frac{4}{3} \times 3.14 \times 11^3$$

$$= 5572.4533$$

(total volume of follicles)

$$= 39\,000 \text{ (mm}^3\text{)}$$

$$\frac{39\,000}{5572} = 6.99\ldots$$

Q2.c)(2023)

(lack of FSH causes) lack of
oestrogen (production)

breast development is
dependent on oestrogen (from
follicles)

Q2.d)(2023)

gametes correct:

H + h and H + h

correct derivation of offspring
genotypes:

HH Hh Hh hh

correct phenotype for each
genotype

Q2.e)(2023)

mother (has **hh** so) passes on **h**

father (has **Hh** so) passes on **H**
or **h** with equal probability

(so) child will be **Hh** / hetero-
zygous with 0.5 probability and
produces FSH
