

Core 1

(a) State what is meant by the term *sexual reproduction*.

.....

.....

..... [3]

(b) Fig. 1 shows the male reproductive system.

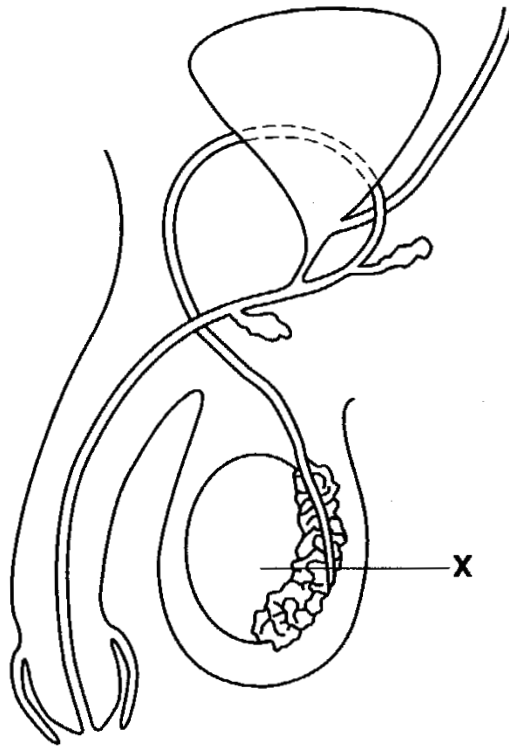


Fig. 1

(i) Name the part labelled **X** and state **two** of its functions.

Name

Function 1

Function 2

.....[3]

(ii) Birth control can be brought about by surgery. Mark clearly on Fig. 1 where such an operation would be carried out in a male. [1]

Core 1

- (c) The male sex hormone causes a number of changes in the body during puberty. State **two** of these changes other than changes to the reproductive system.

1.

.....

2.

.....[2]

[Total : 9]

Core 2

Table 1 shows the average masses of girls and boys from birth to 20 years of age.

Table 1

girls		boys	
age/years	mass/kg	age/years	mass/kg
0	3	0	4
1	9	1	10
4	16	4	16
8	25	8	28
12	40	12	38
16	53	16	59
20	56	20	65

(a) (i) Plot both sets of data as separate curves on the grid provided opposite. [5]

(ii) Using your graph, state at which ages the average masses of girls and boys are the same.

.....[2]

(iii) State **two** factors, apart from its sex, which could affect the mass of a baby at birth.

1.

2.[2]

(b) (i) What evidence in the graph shows that girls undergo puberty before boys?

.....[1]

(ii) Name the hormone responsible for the changes which occur at puberty in females.

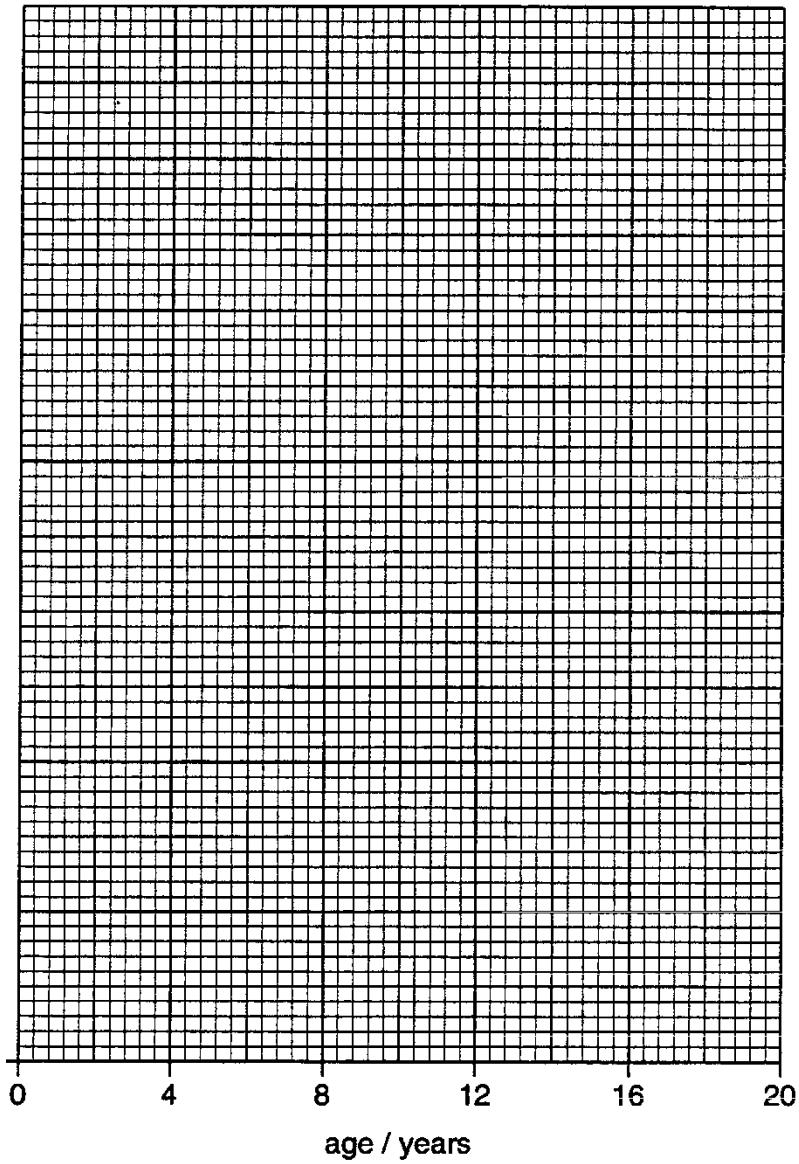
.....[1]

(iii) State **two** changes which occur at puberty in females.

1.

2.[2]

[Total: 13]



Extension 1

Pregnant women at high risk of having a baby with Down's syndrome are often offered an amniocentesis. This technique is shown in Fig. 2

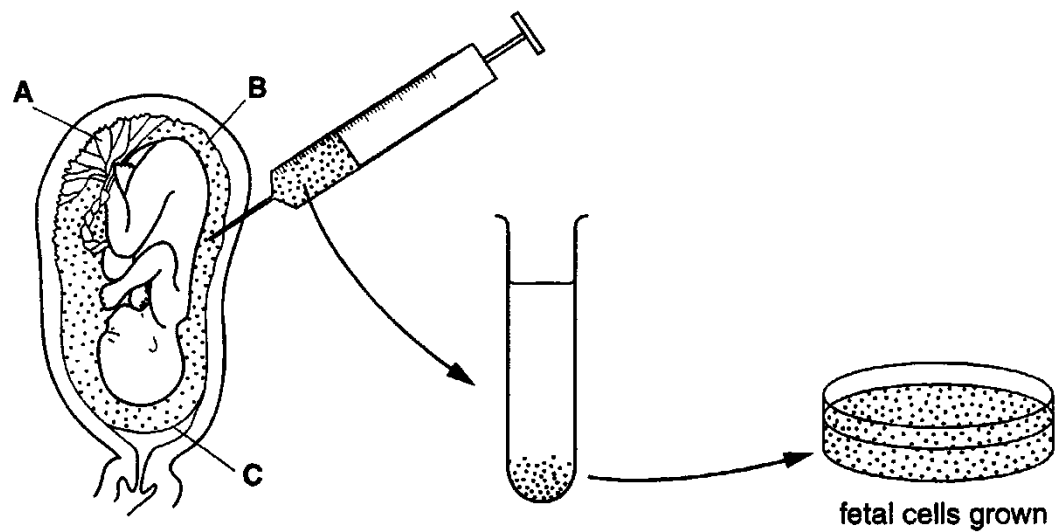


Fig. 2

(a) Complete the table by identifying the parts labelled A, B and C and stating a function of each one.

part	name	function
A		
B		
C		

[6]

The technique involves taking a sample of B from within the uterus. Fetal cells in the sample are then grown and analysed.

(b) (i) Suggest how the cells would be different from normal cells if the fetus has Down's syndrome.

.....
..... [1]

(ii) What is the cause of this difference?

.....
..... [1]

Extension 1

(c) Suggest how the sex of the fetus could be identified by observation of fetal cells.

.....

.....

.....

..... [3]

During pregnancy women may also be monitored in other ways, including urine sampling.

(d) Suggest why the urine of pregnant women is analysed.

.....

.....

..... [2]

[Total: 13]

Extension 2

- (a) Describe the movement of **named** materials from the mother to the fetus. [6]
- (b) Describe the signs, symptoms and effects of the disease syphilis. [6]
- (c) Explain
 - (i) how HIV is transmitted, and
 - (ii) how its spread can be prevented. [7]
- (d) Explain why the methods for treating syphilis cannot be used for the treatment of AIDS. [2]

Core 1

- a increase in numbers / producing new individuals
 requiring the fusion / joining
 of gametes / sperm and ovum / two special cells / genetic material / DNA
 form two individuals

- b(i) X – testis
 production of sperm / gametes
 production of testosterone / male hormone

- (ii) mark / cut shown clearly on sperm duct, not at the junction with the urethra

- c any two from
 deepening of voice / breaking of voice
 development of facial hair
 development of pubic / axillary hair
 widening of shoulder girdle
 enlargement of limb muscles

Core 2

- a(i) five marks awarded as follows
 - vertical axis labelled
 - logical scale
 - points plotted accurately
 - points joined
 - lines identified
- (ii) 10 / 11 years
14 / 15 years
- (iii) any two from
 - mother's diet
 - genetic factors
 - disease
 - if mother smokes / passive smoking
 - if it is a single / multiple birth / premature birth
- b(i) increase in mass in teenage years begins earlier / girls at 12 are heavier than boys
- (ii) oestrogen
- (iii) any two of these
 - onset of menstrual cycle / periods start / ovulation starts
 - widening of hips
 - development of breasts / mammary glands
 - axillary hair / pubic hair
 - redistribution of fat layer under skin

Extension 1

- a A = placenta reference to transfer / exchange of materials, mother to foetus / v.v.
 B = amniotic fluid cushions foetus from physical damage / absorbs excretory materials from foetus / supports foetus
 C = amnion / amniotic sac / amniotic membrane
 contains amniotic fluid / secretes amniotic fluid
- b(i) reference to presence of 47 chromosomes / extra chromosome
- (ii) reference to mutation
 reference to unequal chromosome division
 reference to extra number 21 chromosome
- c reference to use of microscope / analyse or observe chromosomes
 presence of xx chromosomes = girl / female
 presence of xy chromosomes = boy / male
- d EITHER
 reference to testing for presence of glucose
 to test for diabetes
- OR
 reference to testing for protein
 reference to possible consequences of protein loss
 reference to testing for diseases
 reference to testing for drugs
 reference to checking hormone levels

Extension 2

- a any six of these points
- reference to placenta
 - allows maternal blood to come close to that of foetus
 - allows diffusion of materials
 - reference to foetal capillaries
 - reference to transfer of oxygen
 - from maternal red blood cells / haemoglobin
 - reference to transfer of glucose / amino acid / other named nutrient
 - reference to transfer of antibodies
 - reference to plasma, linked to above
 - pass from placenta to foetus via umbilical cord / vein
- b any six of the following
- chancre / hard lump / painless sore / blister
 - on part of body which contacted partner
 - reference to rash / sore throat
 - reference to raised temperature
 - reference to headache
 - reference to ulceration / sores on other parts of body
 - reference to discharge
 - any tertiary symptom or effect: hair loss / teeth / nose / skeleton / skin / brain / nervous system / liver / blood vessels / paralysis / blindness / infertility / insanity / aneurism / death / damage to foetus
 - reference to 3 stage disease / stages named
- c(i) any four of these
- transmitted in named body fluid e.g. blood, semen
 - passed during unprotected sex
 - reference to use of shared needles / razors / unsterilised needles
 - reference to blood transfusions with unscreened blood / organ transplants
 - reference to transmission from mother to foetus
- (ii) any three of these
- reference to education about AIDS / HIV
 - use of condom during sexual intercourse / reference to safe sex
 - use of sterile needles / do not share needles / avoid contact with contaminated blood
 - avoid casual sex
- d any two from
- syphilis is caused by a bacterium
 - HIV is a virus, not AIDS
 - antibiotics are not effective against viruses