Core 1

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

.....

.....

.....[3]

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

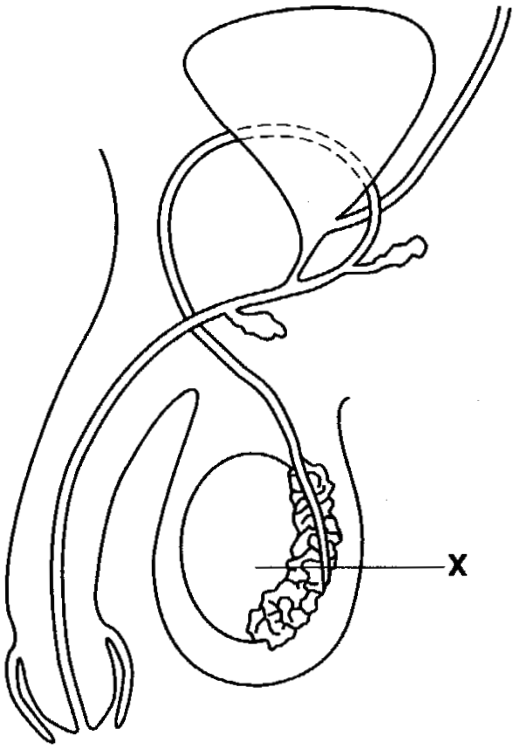


Fig. 1

(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]

(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.

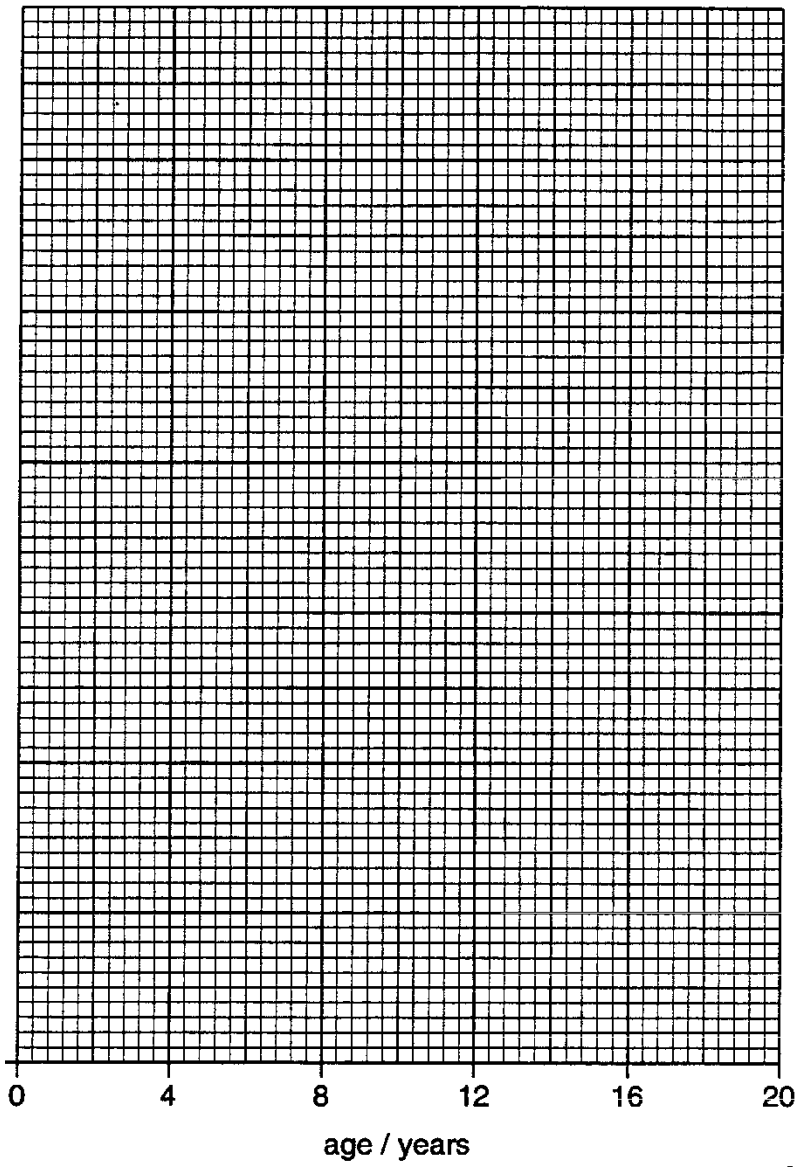
.....[1]

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

1. .....

2. .....[2]

[Total: 13]


0
4
8
12
16
20
age / years

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

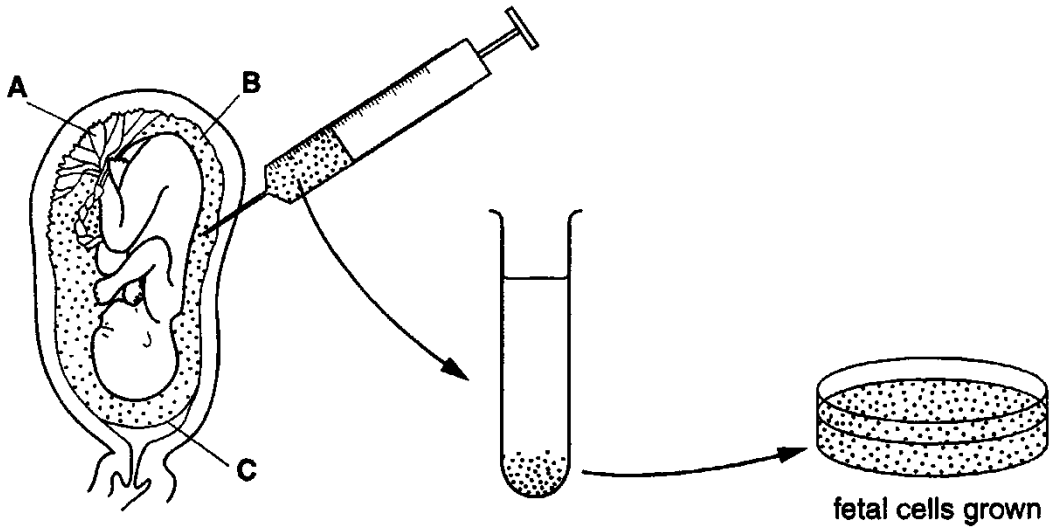


Fig. 2

(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 then 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