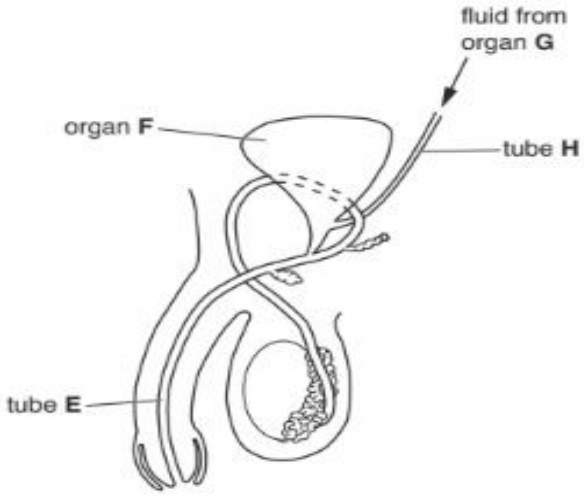
Reproduction in Humans P2 questions

(q) identify on diagrams of the male reproductive system and state the functions of the testes, scrotum,
sperm ducts, prostate gland, urethra and penis
(r) identify on diagrams of the female reproductive system and state the functions of the ovaries, oviducts,
uterus, cervix and vagina
(s) compare male and female gametes in terms of size, numbers and mobility
(t) describe the menstrual cycle, with reference to the alternation of menstruation and ovulation, the natural variation in its length and the fertile and infertile phases of the cycle
(u) explain the role of hormones in controlling the menstrual cycle (including FSH, LH, progesterone and
oestrogen)
(v) describe fertilisation and early development of the zygote simply in terms of the formation of a ball of
cells that becomes implanted in the wall of the uterus
(w) state the function of the amniotic sac and the amniotic fluid
(x) describe the function of the placenta and umbilical cord in relation to exchange of dissolved nutrients,
gases and excretory products (**no** structural details are required)
(y) describe the special dietary needs of pregnant women
(z) describe the advantages of breast milk compared with bottle milk
(aa) describe the following methods of birth control:
natural, chemical (spermicides), mechanical, hormonal and surgical
(bb) explain that syphilis is caused by a bacterium that is transmitted during sexual intercourse
(cc) describe the symptoms, signs, effects and treatment of syphilis
(*dd*) discuss the spread of human immunodeficiency virus (HIV) and methods by which it may be controlled

Reproduction in Humans P2 questions

0/N18/22/Q2

The diagram shows the human male reproductive organs and associated structures.



(a) **(i)** Identify each of the following:

tube **E** .....

organ **F** .....

organ **G** .....

tube **H** ..... [4]

(ii) State **one** difference between the fluids carried by tube **E** and tube **H**.

.....

.....[1]

(b) **(i)** State **one** way in which the fluid from organ **G** may be different in a person with diabetes compared to a person without diabetes.

.....

.....[1]

(ii) A person with diabetes may be treated with insulin produced by genetically modified bacteria.

Outline how such genetically modified bacteria may be produced and used to manufacture human insulin on a commercial scale.

.....

.....

.....

.....

.....

.....[4]

[Total: 10]

Reproduction in Humans P2 questions

0/N18/22/Q5

(a) Describe the role of each of the following hormones in the menstrual cycle:

FSH, ...

.....

.....

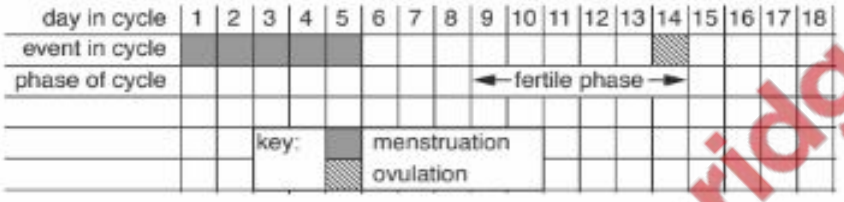
progesterone. .....

.....

.....

[4]

(b) The chart shows the timing and duration of events that take place during **part** of a menstrual cycle.



(i) Suggest why pregnancy may occur if sexual intercourse takes place several days before ovulation.

.....

.....

.....

.....[2]

(ii) Name the method of birth control that makes use of the information in a chart like this. Explain how this method of birth control is used to prevent pregnancy.

name of method .....

explanation .....

.....

.....

.....

[3]

(iii) Suggest why the method of birth control that you have named in **(b)(ii)** is considered to be unreliable.

.....

.....

.....[1]

[Total: 10]

Reproduction in Humans P2 questions

M/J18/21/Q2

The diagram shows a male human gamete.

(a) (i) State the name of the male human gamete.

.....

[1]

The diagram below shows the male reproductive system and associated organs.

(ii) Label with a letter **X** on the diagram where the male gametes are produced.

[1]

(iii) The nucleus of the male gamete is different from the nuclei of other types of cell found at location **X**.

State the cause of this difference and explain its importance in reproduction.

cause of difference .....

.....

.....

explanation .....

.....

.....

.....

.....

[3]

(b) Describe the differences in size and mobility between the male human gamete and the female human gamete.

.....

.....

.....

.....[2]

(c) Complete the paragraph by writing the most appropriate word in each of the spaces.

The fusion of a male human gamete and a female human gamete to form a ..... is called ..... . A ball of cells is then formed that becomes implanted in the wall of the ..... .

[3]

[Total: 10]

Reproduction in Humans P2 questions

M/J18/21/Q5

(a) (i) Describe the main characteristics of a virus.

.....

.....

.....

.....[3]

(ii) The human immunodeficiency virus (HIV) reproduces inside white blood cells and destroys them.

Use your knowledge of the functions of white blood cells to suggest why the virus is named the immunodeficiency virus.

.....

.....

.....[2]

(b) (i) HIV causes a disease called AIDS. The virus may be transmitted during sexual intercourse.

State two methods by which the spread of HIV by sexual intercourse may be controlled.

1 .....

.....

2 .....

.....[2]

(ii) HIV may be transmitted in other ways.

State two ways, other than during sexual intercourse, by which HIV may be transmitted.

1 .....

.....

2 .....

.....[2]

[Total: 9]

Reproduction in Humans P2 questions

0/N17/22/Q1

Fig. 1.1 shows stages in the development of human twins.

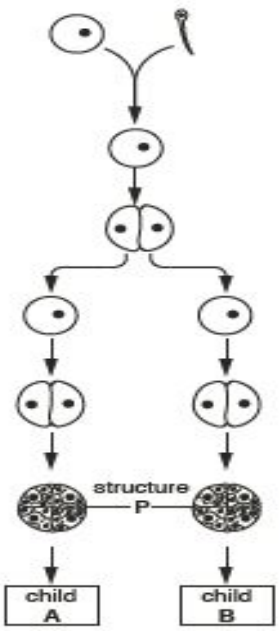


Fig. 1.1

(a) On Fig. 1.1, label and name each of the following:

- a gamete,
- a zygote. [2]

(b) Name the part of the female reproductive system that structure P enters.

.....[1]

(c) If the sex chromosome in the sperm is a Y chromosome, and in the ovum (egg) is an X chromosome, state the sex of child A and of child B. Explain your answer.

child A .....

child B .....

explanation .....

.....

.....

.....

.....

[4]

(d) Explain how a woman's body prevents further ova (eggs) from being released until the end of her pregnancy.

.....

.....

.....

.....

.....[4]

[Total: 11]

Reproduction in Humans P2 questions

O/N16/21/Q4(b)

(b) (i) Many mothers choose to feed their child breast milk rather than bottle milk.

Describe some advantages of breast milk compared with bottle milk.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(ii) Suggest **one** reason why a mother may choose to feed her child bottle milk.

.....

.....

..... [1]

[Total: 11]

Reproduction in Humans P2 questions

O/N16/21/Q6

Syphilis is an infectious disease.

(a) Describe how syphilis is transmitted.

.....

.....

.....

.....

.....

..... [3]

(b) Describe the symptoms, signs and effects of syphilis.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Describe the treatment of syphilis and suggest why it is **not** possible to treat the infection that leads to AIDS in the same way.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

Reproduction in Humans P2 questions

M/J16/22/Q2

2 Fig. 2.1 shows a fetus developing inside its mother.

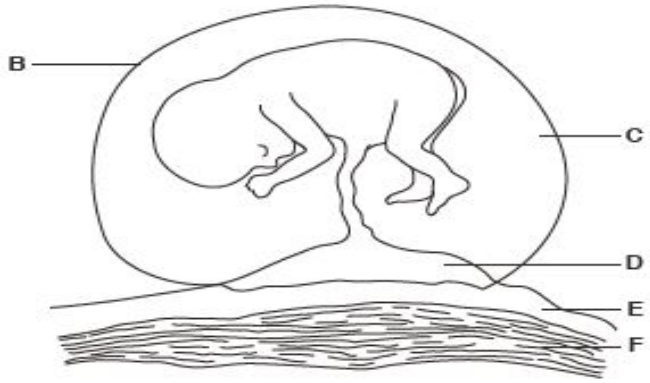


Fig. 2.1

(a) Complete Table 2.1, using letters from Fig. 2.1, to identify each of the following.

Table 2.1

	letter
a structure that contains urea released by the fetus	.....
a region that contains cells, almost all of which could be used for determining the sex of the fetus	.....
a structure that is used to expel the fetus at birth	.....
a temporary structure that would have been expelled during menstruation if pregnancy had not occurred	.....

[4]

(b) Every day, babies are born suffering from severe withdrawal symptoms as a result of their mothers taking drugs during pregnancy.

(i) Name a drug which the mother may have taken during pregnancy that might cause these withdrawal symptoms.

..... [1]

(ii) Suggest how drugs taken by the mother have been able to affect her developing fetus.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 9]

Reproduction in Humans P2 questions

O/N15/21/Q4

Fig. 4.1 shows changes in the thickness of the uterus lining and in the concentration of progesterone in the blood during the menstrual cycle.

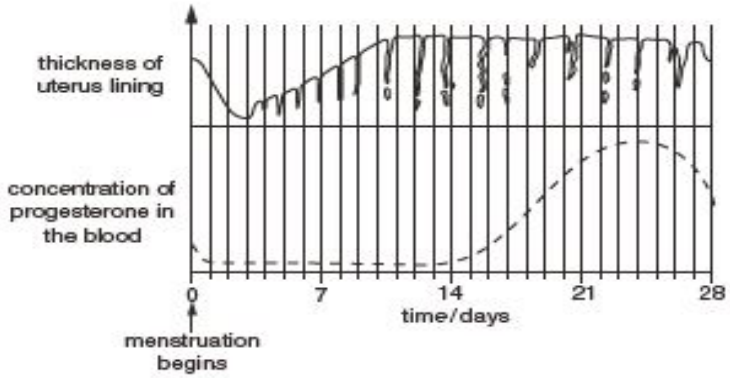


Fig. 4.1

(I) Use Fig. 4.1 to state the time at which each of the following occurs:

the uterus lining reachee maximum thickness

.....

the concentration of progesterone begins to increase.

..... [2]

(II) Draw a (ring) around the day from Fig. 4.1 on which ovulation is most likely to occur.

day 0 day 7 day 14 day 21 day 28

[1]

(III) Explain how it can be concluded from Fig. 4.1 that the person did **not** become pregnant during the 28 days shown, even though ovulation occurred.

.....

.....

.....

..... [2]

(b) The menstrual cycle is controlled by hormones. Name **two** hormones, **other than progesterone**, that control the menstrual cycle. State **one** role of each hormone.

name of hormone

.....

role in the menstrual cycle

.....

.....

name of hormone

.....

role in the menstrual cycle

.....

..... [4]

[Total: 9]

Reproduction in Humans P2 questions

M/J15/21/Q3

Fig. 3.1 shows a fetus developing in the uterus of a mother. The fluid labelled **C** contains cells from the fetus.

A long, hollow needle may be used to withdraw some of the fluid into a syringe. The DNA from the cells in this fluid can then be analysed to find the sex of the fetus and to detect mutations.

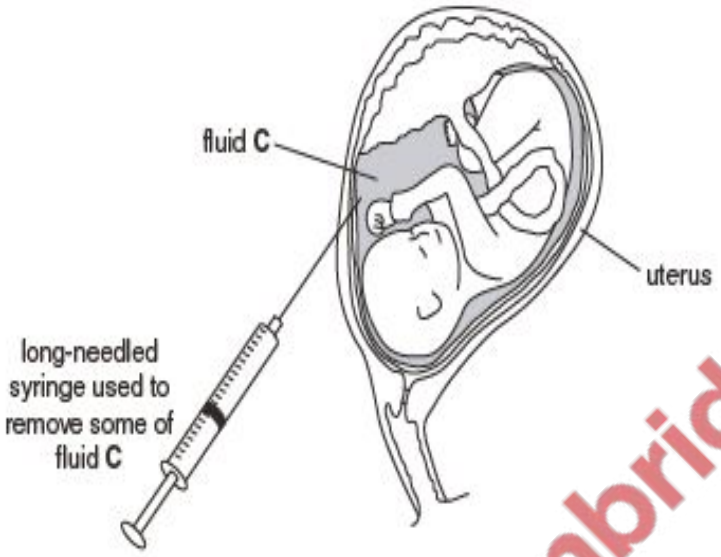


Fig. 3.1

(a) Name fluid **C** and state its function.

name of fluid .....

function .....

..... [2]

(b) **(i)** Label the placenta on Fig. 3.1 using a line and the letter **P**. [1]

(ii) State two functions of the placenta.

1 .....

.....

2 .....

..... [2]

Reproduction in Humans P2 questions

(c) Fig. 3.2 shows the chromosomes found in the nucleus of one cell of a developing fetus.

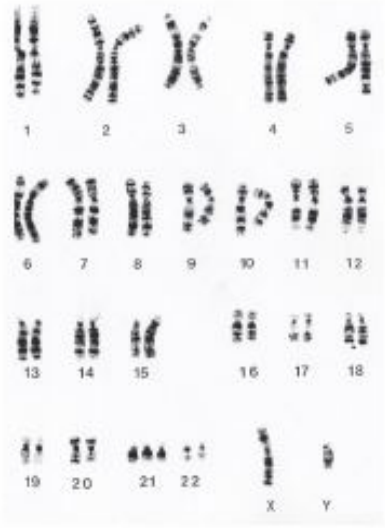


Fig. 3.2

State the sex of this fetus and explain your answer.

sex .....

explanation .....

..... [2]

(d) This fetus has a mutation.

(i) Describe the mutation shown in Fig. 3.2.

.....

.....

.....

..... [2]

(ii) Suggest the condition that this child could be born with as a result of this mutation.

..... [1]

[Total: 10]

Reproduction in Humans P2 questions

M/J15/22/Q9

Syphilis and HIV are both spread by sexual contact.

(a) Describe the cause and symptoms of syphilis.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

(b) State how syphilis is treated.

.....

..... [1]

(c) Discuss how the spread of HIV may be controlled.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

Reproduction in Humans P2 questions

0/N14/21/Q3

(a) At puberty, hormones are produced that are responsible for the development of secondary sexual characteristics.

(i) Name **one** secondary sexual characteristic in males.

..... [1]

(ii) Name the hormone responsible for the development of secondary sexual characteristics in males.

..... [1]

(iii) Name the organs that produce this hormone. ..... [1]

(b) Fig. 3.1 shows the concentrations in the blood of two hormones, **F** and **G**, involved in a woman's menstrual cycle.

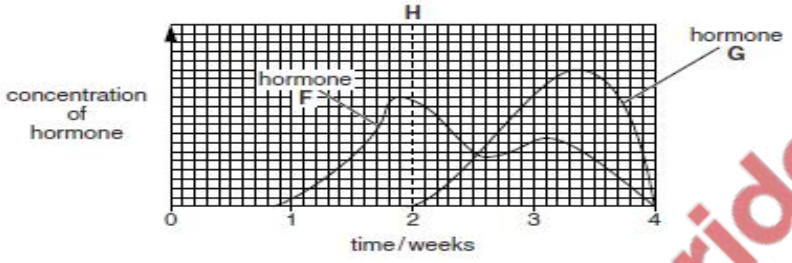


Fig. 3.1

(i) Name the hormones **F** and **G**.

F .....

G ..... [2]

(ii) State what occurs at time **H**. ..... [1]

(c) Fig. 3.2 shows the thickness of the same woman's uterus lining over a 4-week period.

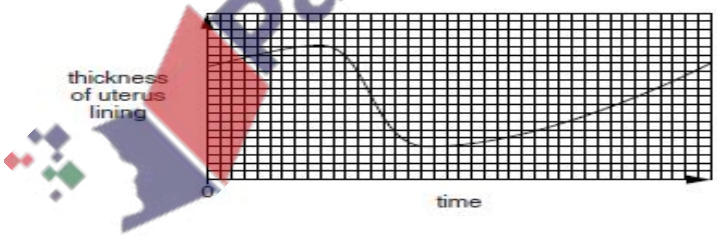


Fig. 3.2

The graph shown in Fig. 3.1 does not begin at the same time as the cycle shown in Fig. 3.2.

Indicate on Fig. 3.2, with a line labelled **J**, the stage shown by line **H** on Fig. 3.1, and explain your reason for choosing this point on the graph.

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

Reproduction in Humans P2 questions

M/J14/22/Q4

4 Fig. 4.1(a) shows the reproductive organs of a man and Fig. 4.1(b) shows the reproductive organs of a woman.

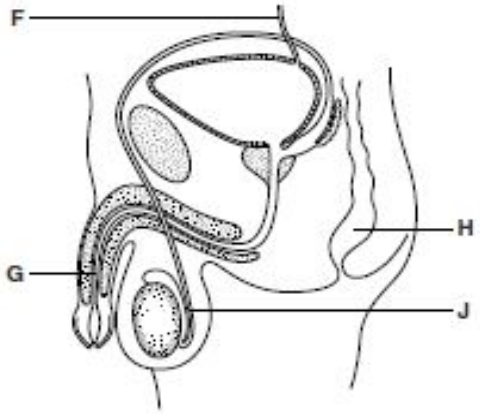


Fig 4.1(a)

Fig. 4.1(b)

(a) Complete Table 4.1, stating the names of the structures in Fig. 4.1(a) and indicating whether they carry urine and/or sperms using yes **or** no as appropriate.

Table 4.1

structure identified by letter	name of structure	carries urine (yes or no)	carries sperms (yes or no)
F			
G			
H			
J			

[4]

(b) Indicate by drawing a line across each of the relevant parts **in both Fig 4.1(a)** and **4.1(b)**, where a cut may be made in order to carry out a form of surgical contraception.

[2]

(c) In older men, the prostate gland tends to increase in size. Suggest an explanation for how this may affect urination.

.....

.....

.....

.....[2]

[Total : 8]

Reproduction in Humans P2 questions

O/N13/22/Q9(a)

(a) Describe the methods by which the spread of human immunodeficiency virus (HIV) may be controlled.

.....

.....

.....

.....

.....

.....

.....

..... [4]

Reproduction in Humans P2 questions

M/J13/21/Q6

(a) The menstrual cycle is controlled by several hormones including FSH and progesterone. Use your knowledge of the role of these hormones in the menstrual cycle to suggest explanations for each of the following.

(i) FSH is given during fertility treatment to women who experience problems becoming pregnant.

.....

.....

.....

.....

.....

.....

..... [3]

(ii) Progesterone is a component of the contraceptive pill.

.....

.....

.....

.....

.....

.....

..... [2]

(b) With reference to **named** substances, describe the functions of the placenta and the umbilical cord.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 10]

Reproduction in Humans P2 questions

M/J12/21/Q7

7 (a) (i) State **one similarity** and **one difference** in the functions of the urethra in a male and in a female adult person.

similarity .....

.....

difference .....

..... [2]

(ii) State the **differences** between male and female human gametes in terms of size, numbers and mobility.

.....

.....

.....

..... [3]

(b) Describe the **advantages** and **disadvantages** of surgical methods of birth control.

advantages .....

.....

.....

.....

.....

disadvantages .....

.....

.....

.....

.....

.....

..... [5]

[Total: 10]

Reproduction in Humans P2 questions

O/N11/21/Q7

7 **(a)** Describe how a fully-formed fetus in the uterus develops from the time of fertilisation.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[7]

(b) Describe the disadvantages of feeding a baby with bottle milk.

.....

.....

.....

.....

.....

.....[3]

[Total: 10]

Reproduction in Humans P2 questions

M/J11/21/Q3

3 Fig. 3.1 shows some stages in human reproduction.

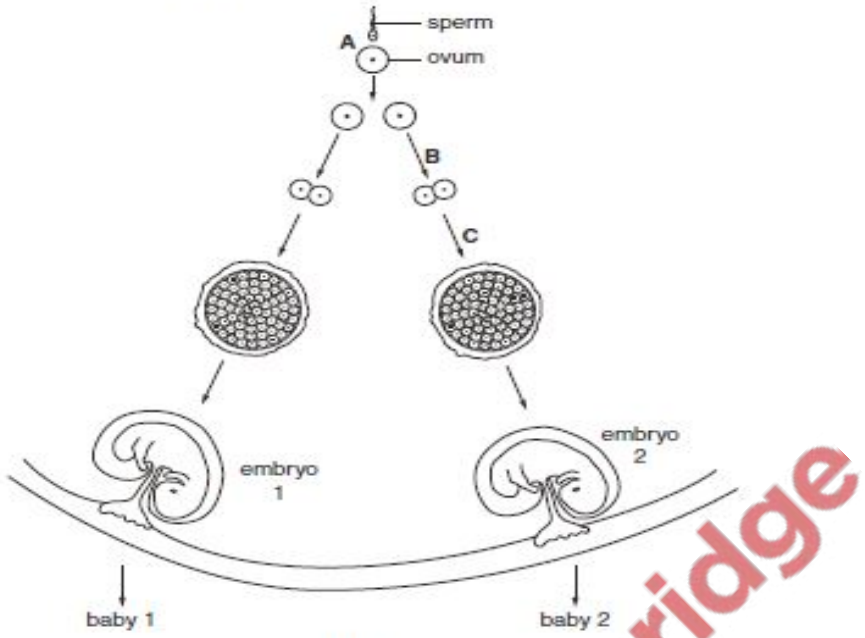


Fig. 3.1

(a) Name the process about to occur at **A** and state where in the reproductive system it normally occurs.

process .....

where it occurs .....[2]

(b) Name the type of cell division taking place at **B** and **C**.

.....[1]

The two embryos develop, are born and grow to become adults.

(c) Suggest two ways in which these two adults must be **similar** to each other, and explain your answers.

1. .....

2. .....

explanation

.....

.....[4]

(d) Suggest two ways in which they may **differ** from one another, and explain your answers.

1. .....

2. .....

explanation

.....

.....[4]

[Total: 11]

Reproduction in Humans P2 questions

Mark Scheme

Mark schemes will use these abbreviations:
; separates marking points
/ alternatives
() contents of brackets are not required but should be implied
R reject
A accept (for answers correctly cued by the question, or guidance for examiners)
Ig ignore (for incorrect but irrelevant responses)
AW alternative wording (where responses vary more than usual)
AVP alternative valid point (where a greater than usual variety of responses is expected)
ORA or reverse argument
underline actual word underlined must be used by candidate
+ statements on both sides of the + are needed for that mark

O/N18/22/Q2

2(a)(i) (E) urethra ;

(F) bladder ;

(G) kidney ;

(H) ureter ;

R gall (bladder)

2(a)(ii) semen / seminal fluid / sperm / gametes + carried by E / not carried by

H ; 1

2(b)(i) (contains) glucose ; 1

2(b)(ii) insulin gene ; from + human + DNA / chromosome / genome ; To + bacterial + DNA / chromosome / genome / plasmid ; fermenter ; reproduce / multiply / divide / mitosis / binary fission
Ig fermentation

O/N18/22/Q5

5(a) (FSH)

Reproduction in Humans P2 questions

follicle / egg / ovum + develops / matures / grows ; ovary ; oestrogen + production / release ; (progesterone) maintains AW uterus + lining / wall ; implantation / pregnancy ; stops LH/FSH + production / release ;

5(b)(i) fertile ;

sperm in

+ female / vagina / uterus / oviduct / fallopian tube ;sperm survive

+ several days / until ovulation AW / until day 14 ;

5(b)(ii) (name of method)

natural / rhythm / calendar ;

(explanation)

have intercourse outside fertile phase / avoid intercourse in fertile phase ;

no sperm present

+ at same time as egg / at ovulation / on day 14 ;

no fertilisation / no fusion of gametes ;

5(b)(iii) cycles / periods AW

+ irregular / vary in length ;

fertile phase / ovulation

+ on different days ;

data / chart / information + not be available ; sperm may survive for a long time AW

M/J18/21/Q2

2(a)(i) sperm **; 1**
2(a)(ii) testis correctly labelled with **X ; 1**
2(a)(iii) sperm cells / gamete **+** meiosis **OR** other cells **+** mitosis **;**
different allele combinations on chromosomes **;**
reference to (nucleus of sperm) haploid / half number **AW ;**
reference to restoration of diploid / full number **AW ;**
(upon) fertilisation / fusion of gametes **;**
3 Marks can be awarded under *cause of difference* or *explanation*
2(b) male / sperm **+** small(er) **;**
male / sperm **+** motile / mobile / can swim **AW ;**
2
2(c) zygote **;**
fertilisation **;**

Reproduction in Humans P2 questions

uterus / womb ;

M/J18/21/Q5

5(a)(i) very **AW** small ;
protein coat / capsid ;
no membrane **/** no cytoplasm / no nucleus / non-cellular **/** no organelles ;
nucleic acid / DNA / RNA ;
parasitic / (may be) pathogen(ic) / cause disease / non-living **AW** ;
unaffected by antibiotics ;
3
5(a)(ii) reference to immune / immunity (system or affected) ;
reference to reduced **AW +** antibody production ;
reference to reduced **AW +** phagocytic action ;
2
5(b)(i) barrier contraception / correct named contraceptive method e.g. condom ;
abstinence ;
only one partner **AW** ;
reference to use of anti-retroviral drugs ; **2 A** avoid unprotected sex
5(b)(ii) sharing **+** needles / sharp objects / toothbrushes ;
blood transfusion / contact ;
from mother to baby / across placenta / during birth / during breast-feeding ;

O/N17/22/Q1

1(a) gamete / egg / ovum / sperm correctly named and labelled ;
zygote correctly named and labelled ;
2
1(b) uterus / womb / endometrium ; **1**
1(c) *(child **A**)* male ;
*(child **B**)* male ;
(explanation)
1 zygote **+** X **+** Y ;
2 mitosis ;
3 identical **+** cells / twins ;
4 A boy / son for both
1(d) **1** yellow body / follicle / corpus luteum / ovary ;
2 placenta ;
3 progesterone ;
4 inhibited / less / no **+** FSH / LH **+** production / release ;
5 FSH / LH **+** pituitary ;
6 FSH **+** ovum / egg **+** maturation / development ;
7 LH **+** ovum / egg **+** release ;

O/N16/21/Q4(b)

4(b)(i) sterile / not contaminated / no additives ;
antibodies / hormones ;
no need to warm / at correct temperature ;
bonding between mother and child ;
better proportions of nutrients **AW** ;
does not cost money ;
supply / availability on demand ;
4
4(b)(ii) lack of awareness of the benefits ;

mother unable / chooses not

to breast-feed **;**
reference to advertising by bottle milk providers **;**
not available to do so (e.g. at work / child in care) **;**
infection / drug addiction / damaged nipples **;**
mother does not produce (enough) milk **;**

M/J16/22/Q2

2 (a) C / D / E ;
C / D ;
F ;
E ;
[4]
(b) (i) heroin / alcohol / nicotine / named
addictive drug ;
[1]
(ii) Ig reference to named drug /
substance (e.g. CO, tar)
mother's blood ;
diffusion ;
across or through placenta ;
fetus / baby / embryo + blood ;
umbilical cord / umbilical vein ;

O/N15/21/Q4

4 (a) (i) 11 / 12 day(s) ;
13 / 14 day(s) ;
[2]
A 11th or 12th day
(ii) day 14 ; [1]
(iii) progesterone (concentration) falls / not maintained ;
ref. figure day 24 – 28 ;
progesterone needed to maintain lining / pregnancy ;
[max. 2]
(b) FSH ;
development of follicle / maturation / release of egg / ovum ;
stimulates production of oestrogen ;
oestrogen ;
repairs / builds up / thickens / develops uterus lining ;
maturation of egg / ovum ;
inhibits production of FSH ;
stimulates production of LH ;
LH ;
ovulation / release of egg / ovum ;
[1]
[max. 1]
[1]
[max. 1]
[1]
[1]
[max. 4]
A oestradiol for oestrogen

Reproduction in Humans P2 questions

Throughout

M/J15/21/Q3

3 (a) amniotic ;
prevents physical harm / damage to
fetus ;
[2]
(b) (i) placenta correctly labelled ;
[1]
(ii) exchange / passage in correct direction
of
+ nutrients / named ;
+ gases / named ;
+ excretory products / named ;
+ antibodies ;
ref. prevent mixing of maternal and
fetal blood ;

(c) male ;
presence of Y (chromosome) ;
R gene
[2]
(d) (i) one extra chromosome / trisomy / three
not two / 47 not 46 ;
position / pair 21 ;
[2]
(ii) Down's syndrome ;

M/J15/22/Q9

9 (a) 1. bacterium / spirochaete /
Treponema ;
2. ulceration / chancre / sore + on
contact part of body ;
3. swollen lymph glands ;
4. rash / description ;
5. flu-like symptoms / examples ;
6. weight loss ;
7. hair loss ;
8. numbness / paralysis / loss of
coordination ;
9. stroke ;
10. dementia ;
11. blindness ;
12. deafness ;
13. heart disease ;

5. raised temperature / fever /
headache / sore throat
[max 6]
(b) antibiotic / named antibiotic ;

(c) 1. drugs (antiretrovirals / ARVs) can
contain the disease ;
2. stick to one partner / avoid casual
sex ;
3. abstinence ;
4. barrier contraception AW ;
5. screen blood ;
6. don't share / sterilise + needles /
razors / surgical equipment /
toothbrushes ;
7. HIV testing / contact tracing ;
8. education ;
4. Ig contraception unqual
[max 3]

O/N14/21/Q3

3 (a) (i) deeper voice / hair on face or named body part / stronger
muscles / sperm production / larger genitalia ;
[1]
A broadening of shoulders
(ii) testosterone ; [1]
(iii) testes ; [1] A testicles / gonads
(b) (i) F – oestrogen ;
G – progesterone ;
[2]
(ii) ovulation / release of egg or ovum ; [1]
(c) line drawn at 3 weeks ± 2 squares ;
uterus (lining) increasing in thickness ;
in preparation for receiving (fertilised) ovum / egg ;
ref. time + menstruation ;
[4]
A zygote / embryo
[Total: 10]

M/J14/22/Q4

4 (a)
structure
identified by
letter
name of
structure
carries urine
(yes or no)
carries
sperms (yes
or no)
F ureter yes no

Reproduction in Humans P2 questions

G urethra yes yes
H rectum no no
J vas
deferens /
sperm duct
no yes
[4]
1 mark per correct row ;
spelling of ureter and urethra must be correct
(b) line drawn across sperm duct ;
line drawn across oviduct ;
[2] R if more than one line drawn on each Fig.– unless
across same structure
R if more than one structure cut
Ig skin cuts
(c) closes / restricts AW the urethra ;
adverse effect on urination AW ;
[2]
Ig ref bladder
Ig refs to pain on urination

O/N13/22/Q9(a)

9 (a) screening blood;
being HIV tested / contact tracing;
avoidance of needle/syringe sharing;
needle exchange schemes / sterilising needles;
condoms / femidoms;
limited partners / no intercourse with prostitutes (who may have multiple partners);
abstinence;
ref. education (about how HIV is spread);
take drugs / follow treatment prescribed (to prevent spread within body); [max 4]

M/J13/21/Q6

6 (a) (i) (FSH) stimulates follicle to develop / egg to develop /
helps to increase numbers of eggs released;
(FSH) stimulates secretion / release of oestrogen;
oestrogen stimulates secretion / release of LH;
LH stimulates ovulation / release of egg;
[max 3]
(ii) (progesterone) prevents / inhibits secretion of FSH;
follicle does not develop / egg unable to mature
/ prevents ovulation A/W;
fertilisation / pregnancy does not occur;
[max 2]
(b) prevent mixing of maternal and fetal blood;

Reproduction in Humans P2 questions

allow exchange A/W of substances between maternal and fetal blood;
dissolved;
named nutrient;
named gas;
named excretory product;
antibodies / hormones;
[max 5]
Accept nitrogenous waste

M/J12/21/Q7

7 (a) (i) carries urine (R just urea) in male and female;
carries semen / sperms / gametes AW in male; [2]
(ii) ref. size comparison;
ref. qualified numbers comparison;
ref. mobility comparison; [3]
(b) (advantages)
only needs to be undergone once AW (e.g. less trouble);
high reliability / effectiveness AW; [2]
(disadvantages)
does not protect against sexually transmitted diseases;
ref. risks of surgery / anaesthetic;
not a temporary solution;
difficult / expensive to reverse;
need access to medical services AW; [4 max]

O/N11/21/Q7

7 (a) zygote;
division;
mitosis (A anywhere);
blastocyst or described;
implantation AW;
in uterus lining (R wall);
placenta;
membrane(s) or named/amnion/amniotic sac;
named food substance/minerals;
oxygen;
nitrogenous excretion/urea/CO_2;
diffusion;
development of organs/named organs/cells or tissues become specialised; [max 7]
(b) might not be sterile/A ref. possible contamination;
no antibodies;
needs warming/temperature ref.;
less satisfactory bonding;
can lead to obesity in later life AW/wrong proportions of nutrients;
expensive;
supplies may be limited; [max 3]

M/J11/21/Q3

(a) fertilisation;
oviduct / Fallopian tube; [2]
(b) mitosis; [1]

(c) any 2 genetic similarities
(e.g. sex/eye colour/blood groups/shape of ears/nose etc.)/same genes* once only/
R look alike/same age/same chromosomes;;
characters caused by genes only;
have both inherited identical/same genes* once only;
they both arise from the same zygote/one sperm + one egg; [max 4]
(d) any two environmentally affected characters (e.g. size/weight/hair colour)
R different traits unqualified/intelligence;;
ref. to environment/genes only partly responsible;
named relevant environmental factor e.g. amount of sun light/lack of food etc.; [4]