Surname	Initial(s)
Signature	

Paper Reference(s)

5006 5026

Edexcel GCSE

Science (5006)

Biology (5026)

B1b – Topics 3 and 4

Foundation and Higher Tier

Wednesday 5 March 2008 – Morning

Time: 20 minutes

Materials required for examination
Multiple Choice Answer Sheet
HB pencil, eraser and calculator

Items included with question papers
Nil

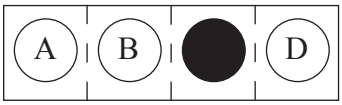
Instructions to Candidates

Use an HB pencil. Do not open this booklet until you are told to do so.
Mark your answers on the separate answer sheet.

Foundation tier candidates: answer questions 1 – 24.
Higher tier candidates: answer questions 17 – 40.
All candidates are to answer questions 17 – 24.

Before the test begins:
Check that the answer sheet is for the correct test and that it contains your candidate details.

How to answer the test:
For each question, choose the right answer, A, B, C or D and mark it in HB pencil on the answer sheet.
For example, the answer C would be marked as shown.



Mark only **one** answer for each question. If you change your mind about an answer, rub out the first mark **thoroughly**, then mark your new answer.

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Questions 1 to 16 must be answered by Foundation tier candidates only.
Higher tier candidates start at question 17.

Pam's cold

Pam had a cold. Her mum said she needed rest to recover as her cold could not be treated with antibiotics.

1. What type of microorganism causes the common cold?

A bacteria
B fungi
C protoctist
D virus

2. What part of the blood fights infection by ingesting microbes?

A red blood cells
B plasma
C platelets
D white cells

3. Pam's mum gave her paracetamol.
What type of drug is paracetamol?

A hallucinogen
B pain killer
C sedative
D stimulant

4. After a few days Pam was feeling better.
This was because her specific immune system

A recognised the antigens and produced antibodies
B recognised the antibodies and produced the antigens
C produced more mucus to trap the microbes
D caused an inflammatory response in the nose

Computer games and reaction times

A computer game site allows you to test your reaction time. This is done by pressing the mouse each time a dot changes colour on the screen. You repeat the test 5 times and then your average reaction time is calculated.
Harry and Sharon both completed the test. Their results are below.

test	Harry's reaction time (s)	Sharon's reaction time (s)
1	0.208	0.289
2	0.225	0.282
3	0.249	0.335
4	0.294	0.290
5	0.179	0.169
Average	?	0.273

5. What was Harry's average reaction time?

A 0.208 s
B 0.231 s
C 0.259 s
D 0.294 s

6. Why did Harry and Sharon each repeat the test 5 times and then calculate the average time?

A to increase their reaction times
B to waste more time
C to make the result more reliable
D to become more addicted

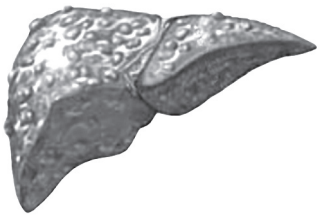
7. Their reaction time was faster when the dot which appeared on the screen was bigger.
Which test had the biggest dot on screen?

A test 1
B test 3
C test 4
D test 5

8. Which sense organ picks up the information from the screen for this test?

A eyes
B ears
C hand
D skin

Liver disease



9. The liver is the largest organ inside the body.
Which drug has a long-term harmful effect on the liver?

A alcohol
B amphetamines
C sedatives
D solvents

10. One painkiller, which can be bought over the counter, is harmful to the liver in large doses.
This painkiller is

A aspirin
B heroin
C cannabis
D paracetamol

11. Using some drugs increases the risk of viral infection.
Why is this the case?

A nicotine damages tissue which is more likely to become infected
B sharing needles can lead to viral infections being passed on more easily
C solvents can damage brain tissue and cause viral infections
D alcohol causes reaction times to increase

12. Caffeine is a drug found in many drinks.
Caffeine is classed as a

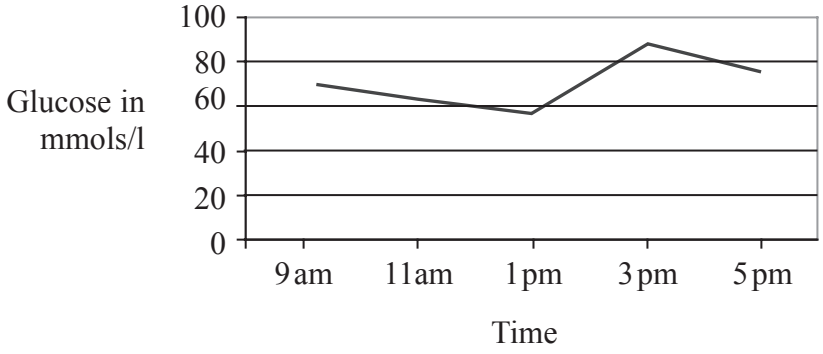
A painkiller
B depressant
C hallucinogen
D stimulant

Insulin and its effects

Gareth is a diabetic. His body does not produce enough insulin to control the glucose levels in his blood.

Use this graph to answer questions 13 and 14.

Gareth's Glucose levels



13. At which time is Gareth likely to have eaten a chocolate bar?

A 9 a.m.
B 1 p.m.
C 3 p.m.
D 5 p.m.

14. What was the maximum glucose concentration in Gareth's blood?

A 53 mmols/l
B 74 mmols/l
C 88 mmols/l
D 100 mmols/l

15. Which system transports glucose around the body?

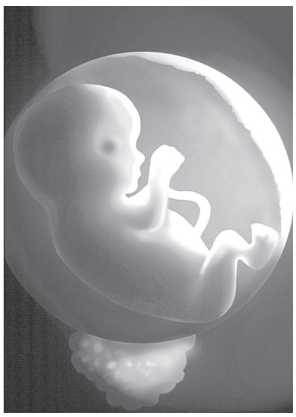
A circulatory system
B nervous system
C excretory system
D respiratory system

16. Insulin is

A an enzyme
B a hormone
C a neurotransmitter
D a nutrient

Higher tier candidates start at question 17 and answer questions 17 to 40.
Questions 17 to 24 must be answered by all candidates: Foundation tier and Higher tier.

Natasha's baby



Natasha is pregnant. Her baby gets all the nutrients and oxygen it needs from its mother through the umbilical cord. Natasha drinks alcohol and smokes cigarettes. Her doctor said she should give up alcohol and cigarettes because they could harm her baby.

17. When Natasha drinks alcohol her blood vessels become narrower.
This might affect Natasha's baby because

A the baby may not get enough blood from Natasha
B the baby may not get enough nutrients and oxygen
C the baby would be stimulated by the alcohol
D the baby would suffer hallucinations

18. Smoking may cause Natasha's baby to have a low birth weight.
This is because

A Natasha would eat more if she stopped smoking
B carbon monoxide bonds to red blood cells and reduces the oxygen supply
C Natasha's baby would be addicted to smoking
D tar prevents nutrients passing from Natasha to her baby

19. Breast milk contains antibodies. These will be passed to the baby during breast feeding.
The baby uses the antibodies to

A produce antigens
B grow faster
C sleep better
D fight early infections

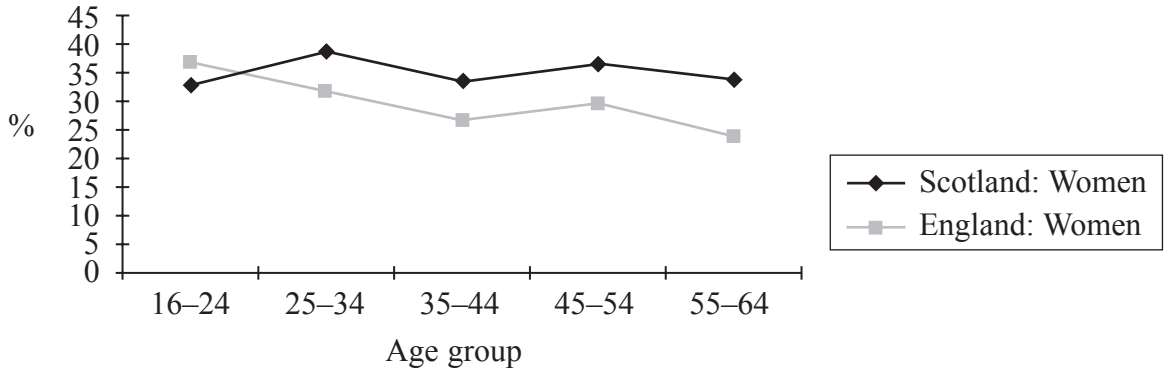
20. A viral infection could be passed from Natasha to her unborn baby by

A horizontal contact
B indirect contact
C vector borne contact
D vertical contact

Smoking trends in Scotland and England

The graph shows the percentage of women of different ages in Scotland and England who smoke cigarettes.

Use the graph below to answer questions 21 and 22.



21. Which describes the trends shown by the graph?

A Women in England and Scotland smoke less now than previously
B More 16–24 year old women smoke in England than in Scotland
C More 55–64 year old women smoke in England than in Scotland
D In England and Scotland most women smoke between the ages of 25–34

22. There are approximately 30 million women living in England.
How many women in England between the ages 55–64 smoke?

A 7.5 million
B 10.5 million
C 13.5 million
D 25.0 million

23. What organs of the body are most likely to be affected by smoking?

A liver and kidneys
B kidneys and lungs
C lungs and heart
D heart and liver

24. Nicotine patches and nicotine chewing gum are now on the market to help people give up smoking.
Why are these products less harmful to our health than smoking cigarettes?

A Nicotine is only given in small doses
B Nicotine is not a drug
C Other ingredients in tobacco are more harmful
D Other ingredients in tobacco are more addictive

TOTAL FOR FOUNDATION TIER PAPER: 24 MARKS

Foundation tier candidates do not answer any more questions after question 24.

Questions 25 to 40 must be answered by Higher tier candidates only.
Foundation tier candidates do not answer questions 25 to 40.

Can you tell if someone likes you?

It is said that if you like someone when you look at them your pupils will dilate. In fact this change in pupil size is a reaction to light. It is known as an involuntary response.

25. What is the name given to the change in the size of the pupil in response to light?

A pupil reflex
B pupil response
C iris response
D iris reflex

26. Which part of the eye is protected by this response?

A pupil
B iris
C retina
D optic nerve

27. Which sequence is correct for this response?

A stimulus – sensory neurone – brain – motor neurone – response
B stimulus – sensory neurone – relay neurone – motor neurone – response
C stimulus – motor neurone – brain – sensory neurone – response
D stimulus – motor neurone – relay neurone – sensory neurone – response

28. Accommodation is another involuntary response which occurs in the eye.
This causes

A the lens to change shape
B the retina to sense danger
C the iris to expand
D the radial muscles to contract

The nervous system - the good and the bad

The picture shows a part of a healthy nervous system where messages are passed from one neurone to another.

29. What is the name of the gap between the two neurones?

A axon
B dendron
C relay
D synapse

30. Signals are passed across this gap by

A enzymes
B osmosis
C neurotransmitters
D electrical impulses

31. A disorder sometimes causes communication between neurones to be disrupted. The result may be that muscle cells do not get clear signals from the neurones. This can cause jerky movements to occur in the sufferer.
The disorder is called

A grand mal epilepsy
B Parkinson's disease
C stroke
D tuberculosis

32. Many drugs affect the function of the brain.
Which is **not** a correct statement about the effect of drugs on brain function?

A Alcohol increases reaction time and solvents may damage neurones
B Alcohol slows reactions and solvents may damage the nervous system
C Sedatives decrease reaction time and alcohol may damage neurones
D Sedatives increase reaction time and solvents may damage neurones

Infertility

One in six couples in the UK is infertile. A possible cause is the use of chemicals in everyday life which act on the body in a similar way to oestrogen. These chemicals include PVC, detergents, paints and some cosmetics. These chemicals have been known to cause a complete sex change in some animals such as fish and alligators.

33. Which of the following may be an effect of oestrogen-type chemicals on male bodies?

A growth of testicles
B growth of breasts
C increase in fertility
D increased sperm count

34. Infertile couples may have IVF treatment to increase their chances of having a baby.
Which row of the table is correct for IVF?

	egg production stimulated by	**where fertilisation occurs**
A	hormones	*in vivo*
B	hormones	*in vitro*
C	enzymes	*in vivo*
D	enzymes	*in vitro*

35. Oestrogen is one of the hormones involved in regulating the menstrual cycle.
The other hormone(s) involved are

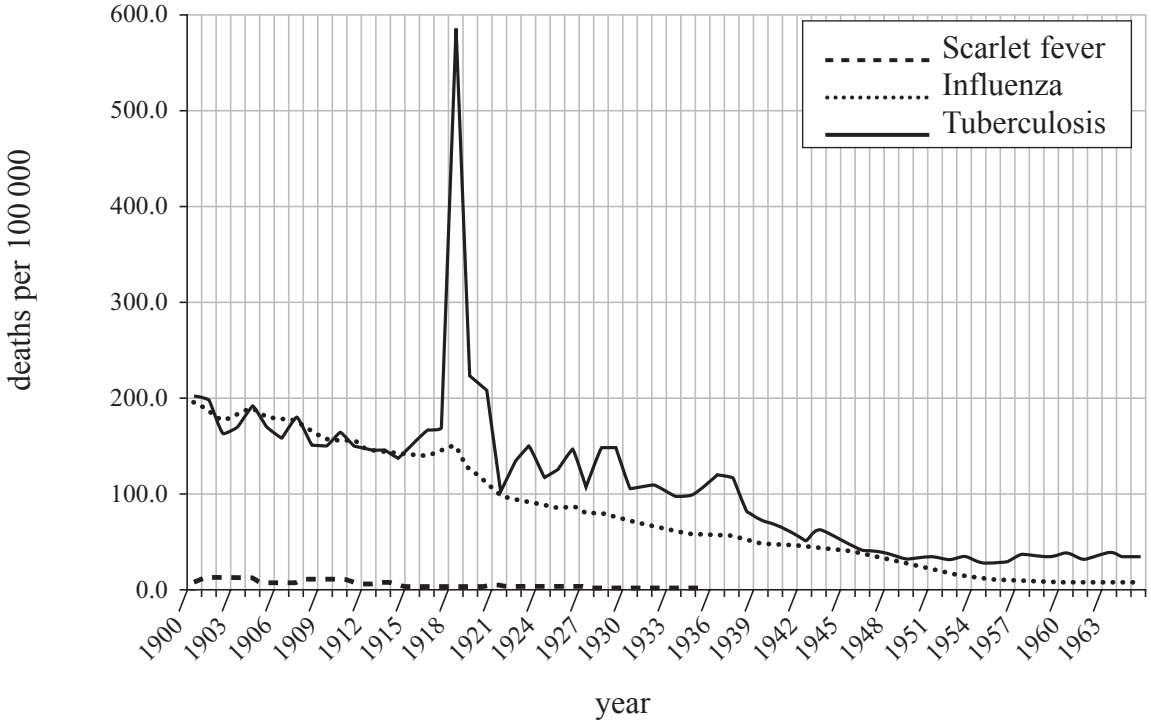
A progesterone only
B progesterone and LH only
C progesterone and FSH only
D progesterone, LH and FSH

36. Oestrogen and progesterone are used in the combined female contraceptive pill to prevent pregnancy.
The reason for this is because high levels of

A oestrogen increase ovulation and progesterone stops menstruation
B progesterone reduce ovulation and oestrogen promotes menstruation
C both hormones reduce ovulation and inhibit implantation
D both hormones increase menstruation and implantation

Tuberculosis (TB)

Use this graph to answer questions 37 and 38.



The graph shows the number of deaths per 100 000 people in the United States caused by three diseases.

37. Which statement about the graph is correct?

A The number of deaths per 100 000 people from scarlet fever in the United States has declined steadily since 1900

B There was a total of 200 deaths from TB in the United States in 1900

C Between 1915 and 1921 there was a significant rise in scarlet fever in the United States

D The number of deaths per 100 000 people from tuberculosis in the United States was greater in 1900 than in 1921

38. The population in the United States rose from 20 million in 1900 to 100 million in 1963. What was the number of deaths from influenza in 1900?

A 2 000

B 20 000

C 40 000

D 400 000

39. Immunisation has caused a decrease in the number of cases of TB in developed countries. What effect does immunisation have on the specific immune system?

A it stimulates the production of antibodies
B it stimulates the production of antigens
C it increases resistance to the TB virus
D it increases the mucus production in the respiratory system

40. These are three statements about tuberculosis.

- Cases of tuberculosis may increase due to the emergence of drug resistant bacteria.
- Cases of tuberculosis may increase due to increased world travel.
- Cases of tuberculosis may decrease due to DOTS (Directly Observed Treatment Short Course) using multi-antibiotics.

How many are true?

A none
B one only
C two only
D all three

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

END