3.5 Biology: Cells, Body Systems and Reproduction: 1-hour Pack

Total Marks

ISEB Common Entrance Biology (13+) · Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 What is the main job of red blood cells?

- [ ] A) exchanging substances between the blood and the body cells
- [ ] B) carrying dissolved nutrients, carbon dioxide and urea
- [ ] C) transporting oxygen around the body using haemoglobin
- [ ] D) carrying blood away from the heart at high pressure
- [ ] E) helping the blood to clot

---

2 Which part of a cell is responsible for controlling the cell's activities and holding the genetic material?

- [ ] A) permanent vacuole
- [ ] B) nucleus
- [ ] C) mitochondria
- [ ] D) chloroplasts
- [ ] E) cell wall

---

3 Which organ is mainly responsible for controlling and coordinating the body?

- [ ] A) brain
- [ ] B) pancreas
- [ ] C) oesophagus
- [ ] D) liver
- [ ] E) spleen

© Revision Library | revisionlibrary.co.uk

4 Which of these is NOT part of the digestive system?

- ☐ A) oesophagus
- ☐ B) brain
- ☐ C) stomach
- ☐ D) liver
- ☐ E) small intestine

---

5 Calculate the approximate number of days in a 36-week pregnancy.

(1)

---

6 George measures the resting pulse five times: 69, 63, 65, 71, 67 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 67 beats/min
- ☐ B) 6.7 beats/min
- ☐ C) 670 beats/min
- ☐ D) 83.75 beats/min
- ☐ E) 335 beats/min

---

7 What is the main job of the cell wall?

- ☐ A) making proteins
- ☐ B) controlling what enters and leaves the cell
- ☐ C) strengthening and supporting a plant cell
- ☐ D) carrying out photosynthesis
- ☐ E) releasing energy from food in respiration

---

8 What is the main job of the bladder?

- ☐ A) carrying air to the lungs
- ☐ B) pumping blood around the body
- ☐ C) absorbing water from undigested food
- ☐ D) digesting food and absorbing digested nutrients into the blood
- ☐ E) storing urine

© Revision Library | revisionlibrary.co.uk

9 Fingers can bend and straighten but not rotate significantly. What type of joint do they contain?

(1)

---

10 Aisha measures the resting pulse five times: 80, 79, 76, 73, 72 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 7.6 beats/min
- ☐ B) 76 beats/min
- ☐ C) 95 beats/min
- ☐ D) 380 beats/min
- ☐ E) 760 beats/min

---

11 Which part of a cell is responsible for hosting most of the cell's chemical reactions?

- ☐ A) mitochondria
- ☐ B) permanent vacuole
- ☐ C) cell membrane
- ☐ D) cytoplasm
- ☐ E) ribosomes

---

12 What is the main job of the heart?

- ☐ A) pumping blood around the body
- ☐ B) exchanging gases between the air and the blood
- ☐ C) digesting food and absorbing digested nutrients into the blood
- ☐ D) controlling and coordinating the body
- ☐ E) making bile and breaking down harmful substances

---

13 Which of these is NOT part of the digestive system?

- ☐ A) oesophagus
- ☐ B) large intestine
- ☐ C) alveoli
- ☐ D) small intestine
- ☐ E) liver

© Revision Library | revisionlibrary.co.uk

14 In some organisms, the reproductive cycle is 40 days long. If ovulation occurs at the midpoint of the cycle, state approximately when this happens.

(1)

15 George counts 7 breaths in 15 seconds while resting. Calculate the breathing rate in breaths per minute.

- ☐ A) 7 breaths/min
- ☐ B) 52 breaths/min
- ☐ C) 280 breaths/min
- ☐ D) 14 breaths/min
- ☐ E) 28 breaths/min

16 Which organ is mainly responsible for exchanging gases between the air and the blood?

- ☐ A) lungs
- ☐ B) pancreas
- ☐ C) appendix
- ☐ D) kidneys
- ☐ E) gall bladder

17 Which of these is NOT part of the respiratory system?

- ☐ A) bronchi
- ☐ B) lungs
- ☐ C) trachea (windpipe)
- ☐ D) alveoli
- ☐ E) nerves

18 The menstrual cycle lasts about 28 days. On which day does the uterine lining begin to shed?

(1)

© Revision Library | revisionlibrary.co.uk

19 Sam measures the resting pulse five times: 73, 76, 77, 79, 75 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 7.6 beats/min
- ☐ B) 380 beats/min
- ☐ C) 95 beats/min
- ☐ D) 76 beats/min
- ☐ E) 760 beats/min

---

20 What is the main job of the kidneys?

- ☐ A) controlling and coordinating the body
- ☐ B) digesting food and absorbing digested nutrients into the blood
- ☐ C) filtering the blood and making urine
- ☐ D) carrying food from the mouth to the stomach
- ☐ E) churning food and starting the digestion of protein

---

21 Which of these is NOT part of the respiratory system?

- ☐ A) lungs
- ☐ B) oesophagus
- ☐ C) diaphragm
- ☐ D) bronchi
- ☐ E) alveoli

---

22 Name the classification of the jaw joint, which moves mainly up and down.

.....

.....

.....

(1)

---

23 What is the main job of the lungs?

- ☐ A) carrying food from the mouth to the stomach
- ☐ B) making bile and breaking down harmful substances
- ☐ C) exchanging gases between the air and the blood
- ☐ D) filtering the blood and making urine
- ☐ E) storing bile

© Revision Library | revisionlibrary.co.uk

24 Which of these is part of the digestive system?

- [ ] A) diaphragm
- [ ] B) trachea (windpipe)
- [ ] C) kidneys
- [ ] D) liver
- [ ] E) heart

---

25 Which organelle is surrounded by a nuclear envelope and contains the cell's genetic material?

- [ ] A) Nucleus
- [ ] B) Ribosome
- [ ] C) Vacuole
- [ ] D) Chloroplast

---

26 A person's heart beats 80 times per minute and pumps 65 cm^3 of blood with each beat. Calculate the cardiac output (blood pumped per minute) in dm3 per minute. (1 dm3 = 1000 cm^3.)

- [ ] A) 312 dm3/min
- [ ] B) 5.2 dm3/min
- [ ] C) 52 dm3/min
- [ ] D) 5200 dm3/min
- [ ] E) 0.52 dm3/min

---

27 What is the main job of the trachea (windpipe)?

- [ ] A) digesting food and absorbing digested nutrients into the blood
- [ ] B) churning food and starting the digestion of protein
- [ ] C) making bile and breaking down harmful substances
- [ ] D) absorbing water from undigested food
- [ ] E) carrying air to the lungs

---

28 Which of these is part of the respiratory system?

- [ ] A) oesophagus
- [ ] B) ureters
- [ ] C) trachea (windpipe)
- [ ] D) spinal cord
- [ ] E) nerves

© Revision Library | revisionlibrary.co.uk

29 Three resting breathing rate measurements are recorded as 15, 17 and 16 breaths per minute. Calculate the mean.

(1)

---

30 A person's heart beats 75 times per minute and pumps 80 cm^3 of blood with each beat. Calculate the cardiac output (blood pumped per minute) in dm3 per minute. (1 dm3 = 1000 cm^3.)

- ☐ A) 6000 dm3/min
- ☐ B) 6 dm3/min
- ☐ C) 60 dm3/min
- ☐ D) 0.6 dm3/min
- ☐ E) 360 dm3/min

---

31 What is the main job of the large intestine?

- ☐ A) storing urine
- ☐ B) churning food and starting the digestion of protein
- ☐ C) pumping blood around the body
- ☐ D) absorbing water from undigested food
- ☐ E) carrying food from the mouth to the stomach

---

32 Which of these is part of the circulatory system?

- ☐ A) arteries
- ☐ B) oesophagus
- ☐ C) nerves
- ☐ D) bronchi
- ☐ E) bladder

---

33 A marsupial pregnancy lasts approximately 35 weeks. Assuming 1 month is approximately 4 weeks, calculate the length of this pregnancy in months.

(1)

© Revision Library | revisionlibrary.co.uk

34 Aisha measures the resting pulse five times: 65, 67, 69, 63, 61 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 81.25 beats/min
- ☐ B) 650 beats/min
- ☐ C) 325 beats/min
- ☐ D) 6.5 beats/min
- ☐ E) 65 beats/min

---

35 What is the main job of the gall bladder?

- ☐ A) storing bile
- ☐ B) carrying air to the lungs
- ☐ C) carrying food from the mouth to the stomach
- ☐ D) storing urine
- ☐ E) churning food and starting the digestion of protein

---

36 Which of these is NOT part of the circulatory system?

- ☐ A) capillaries
- ☐ B) arteries
- ☐ C) veins
- ☐ D) lungs
- ☐ E) heart

---

37 What type of joint is the elbow, which allows the arm to fold back and forth?

.....

.....

.....

(1)

---

38 What is the main job of the brain?

- ☐ A) carrying food from the mouth to the stomach
- ☐ B) controlling and coordinating the body
- ☐ C) exchanging gases between the air and the blood
- ☐ D) storing bile
- ☐ E) filtering the blood and making urine

© Revision Library | revisionlibrary.co.uk

39 George measures the resting pulse five times: 67, 71, 69, 70, 68 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- [ ] A) 69 beats/min
- [ ] B) 690 beats/min
- [ ] C) 57.5 beats/min
- [ ] D) 345 beats/min
- [ ] E) 86.25 beats/min

---

40 Which of these is part of the respiratory system?

- [ ] A) bladder
- [ ] B) small intestine
- [ ] C) heart
- [ ] D) large intestine
- [ ] E) diaphragm

---

41 State the day of the menstrual cycle when ovulation typically occurs.

.....

.....

(1)

---

42 A pupil's pulse is 64 beats per minute at rest and 112 beats per minute after exercise. Calculate the percentage increase in pulse rate.

- [ ] A) 48%
- [ ] B) 750%
- [ ] C) 0.75%
- [ ] D) 75%
- [ ] E) 175%

---

43 Which body system do the ureters belong to?

- [ ] A) the digestive system
- [ ] B) the excretory system
- [ ] C) the nervous system
- [ ] D) the respiratory system
- [ ] E) the circulatory system

© Revision Library | revisionlibrary.co.uk

44 A student records breathing rates of 17, 19 and 18 breaths per minute at rest. Calculate the mean resting breathing rate.

(1)

---

45 A person's heart beats 60 times per minute and pumps 75 cm^3 of blood with each beat. Calculate the cardiac output (blood pumped per minute) in dm3 per minute. (1 dm3 = 1000 cm^3.)

- ☐ A) 4500 dm3/min
- ☐ B) 45 dm3/min
- ☐ C) 4.5 dm3/min
- ☐ D) 270 dm3/min
- ☐ E) 0.8 dm3/min

---

46 Which of these is part of the respiratory system?

- ☐ A) lungs
- ☐ B) bladder
- ☐ C) small intestine
- ☐ D) nerves
- ☐ E) kidneys

---

47 Which part of a plant cell contains chlorophyll and carries out photosynthesis?

- ☐ A) Cell wall
- ☐ B) Mitochondrion
- ☐ C) Nucleus
- ☐ D) Chloroplast

---

48 Femi measures the resting pulse five times: 74, 71, 77, 73, 75 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 92.5 beats/min
- ☐ B) 7.4 beats/min
- ☐ C) 74 beats/min
- ☐ D) 740 beats/min
- ☐ E) 370 beats/min

© Revision Library | revisionlibrary.co.uk

49 Which of these is NOT part of the respiratory system?

- ☐ A) bronchi
- ☐ B) diaphragm
- ☐ C) alveoli
- ☐ D) lungs
- ☐ E) large intestine

---

50 Name the type of joint that allows movement in many directions, such as the hip.

.....

(1)

---

51 Ben measures the resting pulse five times: 80, 78, 76, 82, 74 beats per minute. Calculate the mean resting pulse rate in beats per minute.

- ☐ A) 780 beats/min
- ☐ B) 78 beats/min
- ☐ C) 97.5 beats/min
- ☐ D) 390 beats/min
- ☐ E) 65 beats/min

---

52 State the day of the menstrual cycle on which the egg is released from the ovary.

.....

.....

.....

.....

(1)

---

53 A person's heart beats 72 times per minute and pumps 75 cm^3 of blood with each beat. Calculate the cardiac output (blood pumped per minute) in dm3 per minute. (1 dm3 = 1000 cm^3.)

- ☐ A) 5400 dm3/min
- ☐ B) 54 dm3/min
- ☐ C) 5.4 dm3/min
- ☐ D) 324 dm3/min
- ☐ E) 0.96 dm3/min

© Revision Library | revisionlibrary.co.uk

54 Which of these is part of the digestive system?

- ☐ A) veins
- ☐ B) heart
- ☐ C) bronchi
- ☐ D) stomach
- ☐ E) kidneys

---

55 During wound healing, skin cells divide rapidly, doubling every 20 minutes. Which type of cell division is responsible?

(1)

---

56 Which body system do the kidneys belong to?

- ☐ A) the excretory system
- ☐ B) the digestive system
- ☐ C) the respiratory system
- ☐ D) the nervous system
- ☐ E) the circulatory system

---

57 A pupil's pulse is 64 beats per minute at rest and 128 beats per minute after exercise. Calculate the percentage increase in pulse rate.

- ☐ A) 1%
- ☐ B) 100%
- ☐ C) 64%
- ☐ D) 50%
- ☐ E) 200%

© Revision Library | revisionlibrary.co.uk

58 Human gestation (pregnancy) lasts approximately 40 weeks.

(a) Assuming 1 month is approximately 4 weeks, calculate the length of a typical human gestation in months. **(2)**

(b) Calculate the approximate number of days in a 40-week gestation. **(2)**

(c) Describe the role of the placenta during pregnancy. **(2)**

59 Which of these is part of the nervous system?

- ☐ A) small intestine
- ☐ B) alveoli
- ☐ C) oesophagus
- ☐ D) large intestine
- ☐ E) brain

© Revision Library | revisionlibrary.co.uk

Mark scheme · 3.5 Biology: Cells, Body Systems and Reproduction: 1-hour Pack

Question 1

C (transporting oxygen around the body using haemoglobin) **B1**

Answer: C) transporting oxygen around the body using haemoglobin

Question 2

B (nucleus) **B1**

Answer: B) nucleus

Question 3

A (brain) **B1**

Answer: A) brain

Question 4

B (brain) **B1**

Answer: B) brain

Question 5

252 days (oe) **B1**

Answer: 252 days

Question 6

A (67 beats/min) **B1**

Answer: A) 67 beats/min

Question 7

C (strengthening and supporting a plant cell) **B1**

Answer: C) strengthening and supporting a plant cell

Question 8

E (storing urine) **B1**

Answer: E) storing urine

Question 9

Hinge joint (oe) **B1**

Answer: Hinge joint

Question 10

B (76 beats/min) **B1**

Answer: B) 76 beats/min

Question 11

D (cytoplasm) **B1**

Answer: D) cytoplasm

Question 12

A (pumping blood around the body) **B1**

Answer: A) pumping blood around the body

Question 13

C (alveoli) **B1**

Answer: C) alveoli

Question 14

Approximately day 20 (oe) **B1**

Answer: Approximately day 20

Question 15

E (28 breaths/min) **B1**

Answer: E) 28 breaths/min

Question 16

A (lungs) **B1**

Answer: A) lungs

Question 17

E (nerves) **B1**

Answer: E) nerves

Question 18

Day 1 (oe) **B1**

Answer: Day 1

Question 19

D (76 beats/min) **B1**

Answer: D) 76 beats/min

Question 20

C (filtering the blood and making urine) **B1**

Answer: C) filtering the blood and making urine

Question 21

B (oesophagus) **B1**

Answer: B) oesophagus

Question 22

Hinge joint (oe) **B1**

Answer: Hinge joint

Question 23

C (exchanging gases between the air and the blood) **B1**

Answer: C) exchanging gases between the air and the blood

Question 24

D (liver) **B1**

Answer: D) liver

Question 25

A (Nucleus) cao **B1**

Answer: A) Nucleus

Question 26

B (5.2 dm3/min) **B1**

Answer: B) 5.2 dm3/min

Question 27

E (carrying air to the lungs) **B1**

Answer: E) carrying air to the lungs

© Revision Library | revisionlibrary.co.uk

Question 28

C (trachea (windpipe)) **B1**

Answer: C) trachea (windpipe)

Question 29

16 breaths per minute (oe) **B1**

Answer: 16 breaths per minute

Question 30

B (6 dm3/min) **B1**

Answer: B) 6 dm3/min

Question 31

D (absorbing water from undigested food) **B1**

Answer: D) absorbing water from undigested food

Question 32

A (arteries) **B1**

Answer: A) arteries

Question 33

8.75 months (or 8 months 3 weeks) (oe) **B1**

Answer: 8.75 months (or 8 months 3 weeks)

Question 34

E (65 beats/min) **B1**

Answer: E) 65 beats/min

Question 35

A (storing bile) **B1**

Answer: A) storing bile

Question 36

D (lungs) **B1**

Answer: D) lungs

Question 37

Hinge joint (oe) **B1**

Answer: Hinge joint

Question 38

B (controlling and coordinating the body) **B1**

Answer: B) controlling and coordinating the body

Question 39

A (69 beats/min) **B1**

Answer: A) 69 beats/min

Question 40

E (diaphragm) **B1**

Answer: E) diaphragm

Question 41

Day 14 (or around day 14) (oe) **B1**

Answer: Day 14 (or around day 14)

Question 42

D (75%) **B1**

Answer: D) 75%

Question 43

B (the excretory system) **B1**

Answer: B) the excretory system

Question 44

18 breaths per minute (oe) **B1**

Answer: 18 breaths per minute

Question 45

C (4.5 dm3/min) **B1**

Answer: C) 4.5 dm3/min

Question 46

A (lungs) **B1**

Answer: A) lungs

Question 47

D (Chloroplast) cao **B1**

Answer: D) Chloroplast

Question 48

C (74 beats/min) **B1**

Answer: C) 74 beats/min

Question 49

E (large intestine) **B1**

Answer: E) large intestine

Question 50

Ball and socket joint (oe) **B1**

Answer: Ball and socket joint

Question 51

B (78 beats/min) **B1**

Answer: B) 78 beats/min

Question 52

Day 14 (oe) **B1**

Answer: Day 14

Question 53

C (5.4 dm3/min) **B1**

Answer: C) 5.4 dm3/min

Question 54

D (stomach) **B1**

Answer: D) stomach

Question 55

Mitosis (oe) **B1**

Answer: Mitosis

Question 56

A (the excretory system) **B1**

Answer: A) the excretory system

Question 57

B (100%) **B1**

Answer: B) 100%

© Revision Library | revisionlibrary.co.uk

Question 58

(a) 40 / 4 **M1**

(a) 10 (months) cao **A1**

(a) Answer: 10 months

(b) 40 x 7 **M1**

(b) 280 (days) cao **A1**

(b) Answer: 280 days

(c) allows exchange of oxygen and nutrients from mother's blood to fetus's blood, and waste (e.g. carbon dioxide) from fetus to mother **B1**

(c) the mother's and fetus's blood do not mix; substances diffuse across the placenta **B1**

(c) Answer: The placenta allows oxygen and nutrients to pass from the mother's blood to the fetus's blood, and waste products such as carbon dioxide to pass the other way, by diffusion, without the two blood supplies mixing.

Question 59

E (brain) **B1**

Answer: E) brain

© Revision Library | revisionlibrary.co.uk