READ THE FOLLOWING DIRECTIONS CAREFULLY

Each item in this test has four suggested answers lettered (A), (B), (C), (D). Read each item you are about to answer and decide which choice is best.

Sample Item

Abnormally high blood pressure is called

(A) hypotension
(B) distension
(C) hypertension
(D) hyperglycaemia

Sample Answer

The best answer to this item is “hypertension”, so answer space (C) has been shaded.
1. All living organisms carry out certain activities which make them different from inanimate objects.

Which one of the following lists shows three activities of all living organisms?

(A) Movement, decay, synthesis
(B) Respiration, nutrition, preservation
(C) Exercise, irritability, metabolism
(D) Reproduction, excretion, growth

5. Which of the following are functions of cartilage:

I. form a barrier between bones
II. lengthen the space between bones
III. reduce friction between bones
IV. prevent shock between bones

(A) I and II only
(B) I and IV only
(C) II and III only
(D) III and IV only

2. Which nutrients are classified as the macro-nutrients?

(A) Proteins, minerals, vitamins
(B) Carbohydrates, fats, proteins
(C) Vitamins, fibre, water
(D) Iron, Cod liver-Oil, milk

6. Which of the following are functions of the skin?

I. Produces sweat
II. Excretes sweat
III. Protects from injury
IV. Produces body temperature

(A) I and II only
(B) I and IV only
(C) II and III only
(D) III and IV only

3. The function of the lymphatic system in the human body is to

(A) carry the tissue fluid out of the body
(B) bring nutrients back to the body
(C) remove excess fluid and foreign material from the tissue spaces
(D) remove poisonous substances and other waste materials from the blood

7. When a voluntary action occurs all of the following take place EXCEPT

(A) a stimulus originates in the cerebrum
(B) an efferent nerve impulse is transmitted down the white matter of the spinal cord
(C) the impulse is sent via sensory nerves to the spinal cord
(D) impulse is taken via the motor neurone to the effector muscle

(A) semen is expelled into the vagina
(B) the sperms enter the oviduct
(C) the sperm fuses with the ovum
(D) implantation occurs

8. Fertilization occurs when
9. Which of the following symptoms occur during an asthmatic attack?
   (A) Shortness of breath, wheezing, bronchospasms
   (B) Wheezing, coughing, vomiting
   (C) Shock, coughing, shortness of breath
   (D) Chest pains, bronchospasms, partial expiration

10. Which of the following vectors causes dengue haemorrhagic fever?
    (A) Anopheles mosquito
    (B) Bats
    (C) Rats
    (D) Aedes aegypti mosquito

11. Which of the following shows the correct path for sperms to exit the body?
    (a) Testis → epididymis → vas deferens → urethra
    (b) Epididymis → testis → vas deferens → urethra
    (c) Vas deferens → epididymis → testis → urethra
    (d) Vas deferens → testis → epididymis → urethra

Item 12-14 refer to the following information.

The group below consists of four lettered headings followed by three numbered phrases. For each numbered phrase, select one heading which is most closely related to it. Each heading may be used once, more than once or not at all.

(A) Nucleus
(B) Ribosome
(C) Mitochondrion
(D) Cell membrane

12. Makes proteins for the cell
13. Controls the passage of materials into the cell
14. Controls the activities of the cell

15. The function of the bile is to
   (A) convert fats into fatty acids and glycerol
   (B) emulsify fats
   (C) digest fats
   (D) neutralise the contents of the stomach

Item 16 refers to the following diagram which shows a section through the heart.

16. Which chamber of the heart is the first to receive oxygenated blood?
    (A) P
    (B) Q
    (C) R
    (D) S

17. Which of the following statements are true of aerobic respiration?

I. Produces a large amount of energy
II. Carbon dioxide is always produced
III. Produces lactic acid

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II, and III
18. Which is NOT a function of the human skeleton?

(A) Protects the spinal cord
(B) Produces blood cells
(C) Produces vitamin D
(D) Assists in breathing

Item 19 refers to the information in the table below. Which row in the table correctly matches the disease with the causative agent?

<table>
<thead>
<tr>
<th>Gonorrhoea</th>
<th>AIDS</th>
<th>Syphilis</th>
<th>Herpes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Virus</td>
<td>Bacterium</td>
<td>Virus</td>
<td>Bacterium</td>
</tr>
<tr>
<td>(B) Bacterium</td>
<td>Virus</td>
<td>Bacterium</td>
<td>Virus</td>
</tr>
<tr>
<td>(C) Virus</td>
<td>Virus</td>
<td>Bacterium</td>
<td>Bacterium</td>
</tr>
<tr>
<td>(D) Bacterium</td>
<td>Bacterium</td>
<td>Virus</td>
<td>Virus</td>
</tr>
</tbody>
</table>

21. Which of the following actions occurs when a person feels cold?

(A) Blood vessels constrict
(B) Blood vessels dilate
(C) Hairs on the skin lie flat
(D) Blood vessels move closer to the skin

22. Which of the following best describes what happens during exhalation?

<table>
<thead>
<tr>
<th>Ribcage</th>
<th>Diaphragm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) moves up</td>
<td>flattens</td>
</tr>
<tr>
<td>(B) moves down</td>
<td>curves upward</td>
</tr>
<tr>
<td>(C) moves down and in</td>
<td>curves upward</td>
</tr>
<tr>
<td>(D) moves up and out</td>
<td>does not move</td>
</tr>
</tbody>
</table>
Items 22 – 24 refer to the diagram below. Match the parts of the thorax with the numbered phrases below. Each part may be used once, more than once or not at all.

22. Contains air sacs or alveoli
23. A muscular organ that moves to change the volume of the thorax
24. Is a pathway for air to enter the lungs

Items 26 – 28 refer to the diagram below. Match the parts of the eye with the numbered phrases below. Each part may be used once, more than once, or not at all.

26. Contains cells called rods and cones.
27. Changes thickness to facilitate production of images
28. Transmits impulses to the brain

29. Which of the following tasks is or are performed by the kidneys?
   I. Elimination of toxins
   II. Getting rid of all metabolic waste
   III. Maintaining blood composition
   (A) I only
   (B) III only
   (C) I and III only
   (D) I and II only

30. A food chain shows the
   (A) feeding relationships between animals
   (B) location of organisms in an ecosystem
   (C) feeding relationships among living organisms
   (D) dependence of animals on each other

31. The energy to drive a food chain comes from
   (A) the plant
   (B) carbon dioxide
   (C) chlorophyll
   (D) the sun
32. Which of the following processes occur during meiosis?
   I. Two cell divisions
   II. Production of four diploid cells
   III. Movement of chromosomes
   IV. Creation of spindle
   (A) I, II, and IV only
   (B) II, III, and IV only
   (C) I, III and IV only
   (D) II and III only

33. Which of the following must be done when preparing food?
   I. Sanitize all surfaces
   II. Use disposable paper towels instead of dish cloths and tea towels
   III. Avoid handling the food too much
   IV. Wash hands only when visibly dirty
   (A) I, II and IV only
   (B) I, II and III only
   (C) II, III, and IV only
   (D) I and II only

34. Anthony is vaccinated against a disease on Monday and the antibody concentration increases rapidly. However, there is a gradual decrease in antibody concentration over the next few days. What type of immunity does Anthony experience?
   (A) Active
   (B) Naturally acquired
   (C) Active artificial
   (D) Passive artificial

35. The blood vessel that takes blood from the heart to the lungs is called the
   (A) pulmonary vein
   (B) aorta
   (C) vena cava
   (D) pulmonary artery

36. Which teeth are used for cutting pieces of food?
   (A) Incisors
   (B) Canines
   (C) Premolars
   (D) Molars

37. Which structure is phagocytic in nature?

(A)  
(B)  
(C)  
(D)  

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Item 37 refers to the following diagrams which show structures found in the blood.

37. Which structure is phagocytic in nature?

(A)  
(B)  
(C)  
(D)  

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The diagram below which shows an experiment used to investigate the process of osmosis in potato tissue.

![Diagram of osmosis experiment]

38. Which diagram shows the results after twenty-four hours?

(A) ![Diagram A]
(B) ![Diagram B]
(C) ![Diagram C]
(D) ![Diagram D]

39. Table 1 shows the approximate percentages of three gases in inspired air. Which column in Table 2 shows the approximate composition of expired air?

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>TABLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inspired Air</strong></td>
<td><strong>(A)</strong></td>
</tr>
<tr>
<td>Co2</td>
<td>0.03</td>
</tr>
<tr>
<td>N2</td>
<td>79</td>
</tr>
<tr>
<td>O2</td>
<td>21</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td></td>
</tr>
<tr>
<td>Nitrogen</td>
<td></td>
</tr>
<tr>
<td>Oxygen</td>
<td></td>
</tr>
</tbody>
</table>

40. Which structure of the brain is responsible for the regulation of water content in the blood?

(A) Pituitary gland
(B) Hypothalamus
(C) Cerebrum
(D) Cerebellum
41. Which is the correct path of travel for an impulse from the receptor to the effector in a reflex action?

(A) Dendron - motor neurone - intermediate neurone - sensory neurone - axon
(B) Axon - motor neurone - intermediate neurone - sensory neurone - dendron
(C) Axon - sensory neurone - intermediate neurone - motor neurone - axon
(D) Dendron - sensory neurone - intermediate neurone - motor neurone - axon

Item 42 - 44 refer to the following diagram of the female reproductive system. Match the lettered parts to the numbered phrases below. Each part may be used once, more than once, or not at all.

42. Produces the female gametes

43. Where fertilization occurs

44. Facilitates the development of the foetus
45. Obesity may be caused by all of the following EXCEPT
   (A) protein
   (B) roughage
   (C) carbohydrate
   (D) milk

46. Which sequence best represents a simple carbon cycle?
   (A) Carbon dioxide → man → bacteria → soya beans → carbon dioxide
   (B) Carbon dioxide → bacteria → earthworms → green plants → carbon dioxide
   (C) Carbon dioxide → grass → sheep → man → carbon dioxide
   (D) Carbon dioxide → bacteria → soya beans → man → carbon dioxide

47. The function of nitrifying bacteria is to convert
   (A) nitrates to protein
   (B) nitrogen gas to nitrates
   (C) nitrites to nitrates
   (D) nitrogen gas to urea

48. An enzyme shows optimum activity at pH 2.5. In which part of the alimentary canal will this enzyme be most active?
   (A) Duodenum
   (B) Ileum
   (C) Mouth
   (D) Stomach

49. Zena cuts her finger while peeling an orange. Which of the following components of the blood will assist in reducing bleeding?
   (A) White blood cells
   (B) Blood platelets
   (C) Red blood cells
   (D) Haemoglobin

50. Tar is a component of cigarette smoke. What is the MOST LIKELY effect of tar in the body of a cigarette smoker?
   (A) A reduction of oxygen going to the blood
   (B) An increase in the absorption of oxygen
   (C) An reduction of carbon monoxide in the blood
   (D) An increase in the amount of carbon dioxide leaving the blood

51. Which of the following diseases may be described as chronic?
   (A) Typhoid
   (B) Diabetes
   (C) Cholera
   (D) Dengue

52. Which of the following items BEST represent materials which can be recycled?
   (A) Plastics, tin cans, fabric
   (B) Plastics, glass bottles, discarded food
   (C) Tin cans, plastics, paper
   (D) Paper, discarded food, tin cans

53. The trachea is lined with hair-like structures called
   (A) villi
   (B) cells
   (C) cilia
   (D) flagella

54. Which of the following is a definitive sign of malnutrition?
   (A) Albinism
   (B) Dwarfism
   (C) Overweight
   (D) Shiny hair
55. Which of the following results in coronary artery disease?
   (A) Cirrhosis
   (B) Atherosclerosis
   (C) Arthritis
   (D) Phagocytosis

58. Which of the following substances lowers blood sugar?
   (A) Glucagon
   (B) Glycogen
   (C) Insulin
   (D) Adrenalin

56. What are the two main types of the respiration?
   (A) Aerobic and anaerobic
   (B) Cellular and non-cellular
   (C) Lung and heart
   (D) Mitosis and meiosis

59. The long process of a nerve cell which conducts impulses towards a cell body is called
   (A) dendron
   (B) axon
   (C) dendrites
   (D) ganglia

60. Which of the following is an example of a cogenital defect?
   (A) birth mark
   (B) Down's syndrome
   (C) big head
   (D) nightblindness