CISIA
Consorzio Interuniversitario
Sistemi Integrati per l'Accesso

SAMPLE TEST

English TOLC–F

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Edizioni CISIA

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BIOLOGY

1. The RNA is composed by:

   A. amino acids

   B. fatty acids

   C. nucleotides

   D. vitamines and carboxylic acids

   E. carbohydrates

2. Fatty acids are made up by:

   A. hexoses and pentoses

   B. hydrocarbon chains

   C. long amino acid chains

   D. triglycerides

   E. acetic acid and uric acid

3. Bacteria are:

   A. filamentous only

   B. algae

   C. eukaryotes

   D. unicellular

   E. multicellular

4. Two subsequent cycles of cell division not separated by a phase of DNA synthesis are termed:

   A. interphase

   B. anaphase

   C. meiosis

   D. mitosis

   E. double mitosis

5. The male reproductive organs in the flower are termed:

   A. sepals

   B. stomata

   C. pistils

   D. stamens

   E. petals

6. Mitochondria are important:

   A. in cellular respiration

   B. in protein synthesis

   C. in fagocytosis

   D. in cellular secretion

   E. in celllular digestion

7. If in a cell the ribosome function is selectively blocked, what is immediately stopped?

   A. Translation

   B. Transcription

   C. Glycolysis

   D. DNA replication

   E. Respiration

8. Consider a phospholipid made up by a head and two tails. Which of the following statements is not correct?

   A. The head contains a phosphate group

   B. The head contains a molecule of glycerol

   C. The head is always positively charged

   D. Tails are hydrophobic

   E. The head is hydrophilic

9. The advantage of sexual reproduction:

   A. is due to the fact that it has allowed the diffusion of plants on dry lands

   B. is due to the fact that it happens more frequently than asexual reproduction

   C. does not exist

   D. is due to the fact that it increases the genetic variability of organisms

   E. is less than that given by asexual reproduction

10. The process by which an inheritable change is made in a gene is termed:

   A. splicing

   B. mutation

   C. transduction

   D. alternative splicing

   E. nick translation

11. Which is the product of anaerobic glycolysis from a glucose molecule?

A. 3 molecules of lactic acid

B. 2 molecules of glycerol

C. 2 molecules of piruvic acid

D. One molecule of citric acid

E. 3 molecules of acetyl coenzyme A

12. The terminal section of the large intestine is:

A. descending colon

B. duodenum

C. rectum

D. cecum

E. pylorus

13. In the circulatory system there are, in order:

A. heart, vessels for distribution, exchange, and collection

B. heart, vessels for distribution, collection, and exchange

C. heart, vessels for exchange, distribution, and collection

D. vessels for distribution, heart, and vessels for collection

E. heart, vessels for collection, distribution, and exchange

14. Blood reaches the left atrium:

A. from aorta

B. with low oxygen

C. very rich in oxygen

D. from the inferior vena cava

E. rich in carbon dioxide

15. Steroid hormones:

A. are produced in the medulla of the adrenal gland and in the thyroid

B. are exclusively testosterone and progesterone

C. are produced in the pancreas

D. are produced exclusively in the gonads

E. are produced in the cortex of the adrenal gland, in the gonads and in the placenta

CHEMISTRY

16. Two electrons that share the same orbital have

A. different speeds

B. different principal quantum numbers

C. different masses

D. different angular quantum numbers

E. different spin quantum numbers

17. Which of the following solutions has the lowest value of pH?

A. HCl 0,01 M

B. NaOH 0,1 M

C. HCl 0,2 M

D. HCl 0,8 M

E. HCl 0,1 M

18. The ideal gas law is valid for

A. gases dissolved in water

B. small molecules

C. one mole of a gas

D. non–interacting point–like molecules

E. inert gases

19. In which of the following substances bonds are mainly due to electrostatic forces?

A. Sodium chloride

B. Hydrochloric acid

C. Sodium

D. Diamond

E. Br_2

20. The chemical properties of an atom are determined by

A. its atomic mass

B. its atomic number

C. its mass number

D. the number of its neutrons

E. its metallic properties

21. The molecular formula of hydrogen sulphide is

A. H_2S

B. HNO_3

C. H_2SO_3

D. H_2SO_4

E. HNO_2

22. What is meant by the term orbital?

A. The area (around the nucleus) where it is most likely to fiind an electron

B. The maximum distance from the nucleus of an electron in the highest energy orbit

C. A circle around the atom

D. The position of an electron

E. The orbit of the electron around the nucleus

23. The compound KH is called

A. kripton hydroxide

B. potassium hydrate

C. potassium hydride

D. potassium hydroxide

E. potassium hydronium

24. A millimole

A. a unit of measurement for mass

B. 1000 moles

C. is equivalent to 10^3 moles

D. is equivalent to 10^{-3} moles

E. 0,01 moles

25. Which of the following particles are transferred during redox reactions?

A. Neutrons

B. Electrons

C. Protons

D. Nucleons

E. Neutrinos

26. In the semi-reaction $Cu^{2+} + 2e^{-} \rightarrow Cu$, the copper

A. undergoes oxidation

B. undergoes reduction, because it gains two electrons

C. does not undergo reduction nor oxidation

D. loses two electrons

E. undergoes both oxidation and reduction at the same time

27. What does organic chemistry deal with?

A. Carbon compounds

B. The processes going on in animal organs

C. The relations between chemistry, animals and vegetals

D. The relations between chemistry and minerals

E. Nitrogen compounds

28. Which of the following substances is a strong acid?

A. Carbonic acid

B. Acetic acid

C. Oleic acid

D. Hydrochloric acid

E. Sodium hydroxide

29. Water molecules are

A. non–polar

B. none of the answers above is correct

C. polar

D. completely dissociated into ions

E. acid

30. In alkanes, the chemical bonds between carbon atoms are

A. some π–bonds, some other σ–bonds

B. all π–bonds

C. all σ–bonds

D. not enough information to answer

E. dative bonds

MATHEMATICS

31. The expression $4 \times 10^0 + 5 \times 10^1 + 3 \times 10^2 + 7 \times 10^3$ is equal to

A. 4.735

B. 7.354

C. 4.537

D. 4.530

E. 7.350

32. For which values of x is the inequality $x^2 > 36$ satisfied?

A. $x > -6$

B. $x < -6$ or $x > 6$

C. $x > 6$

D. $x > 36$

E. $-6 < x < 6$

33. The cosine of a 110° angle is

A. negative

B. greater than 1/2

C. greater than the sine of a 110° angle

D. positive

E. equal to the cosine of a 290° angle

34. Can the logarithm in base 10 of a real number be negative?

A. Yes, if the number is negative

B. No, never

C. Yes, if the number is smaller than 1/10

D. Yes, if the number is smaller than the base (10)

E. Yes, if the number is positive and smaller than 1

35. A quadrilateral can be inscribed in a circumference if and only if

A. its adjacent angles are complementary

B. the sum of its opposite angles is $120°$

C. its opposite angles are complementary

D. its adjacent angles are supplementary

E. its opposite angles are supplementary

36. A curve has equation $y^2 = x + 24$. Find the coordinates of the points of intersection between this curve and the straight line $x = 1$.

A. $(1,5/2)$ and $(1,-5/2)$

B. $(1,5/4)$ and $(1,-5/4)$

C. $(1,25)$ and $(1,-25)$

D. $(1,5)$ and $(1,-5)$

E. $(5,1)$ and $(-5,1)$

37. The arithmetic mean of the numbers 3, 4, 5, 6, 7 is

A. 3

B. 1

C. 5

D. 0

E. 2

PHYSICS

38. The prefix mega denotes a factor of

    A. 10^{9}

    B. 10^{-3}

    C. 10^{6}

    D. 10^{-6}

    E. 10^{-9}

39. Stevin’s law allows us to find

    A. the bend radius in a uniform circular motion

    B. the attractive force between two liquid bodies

    C. the centripetal acceleration in a parabolic motion

    D. the pressure exerted by a fluid column at a given depth

    E. the relative distance between two bodies in uniform accelerated motion

40. Newton’s third law of motion states that

A. if one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction on the first body.

B. the vector sum of forces on a body moving at constant velocity is zero

C. a body subject to a force gains an acceleration proportional to such force

D. weight is a conservative force

E. a body either remains at rest or continues to move at a constant velocity, unless acted upon by a force

41. 2 kg of water at 80° C are put into a calorimeter that contains 1 kg of water at 20° C. After some time, what equilibrium temperature is reached in the calorimeter?

A. 30° C

B. 33° C

C. 50° C

D. 20° C

E. 60° C

42. The voltage across the terminals of a 150 ohm resistor is 15 V. Thus the current flowing through the resistor is

A. 1 mA

B. 0,1 mA

C. 0,1 A

D. 10 A

E. 1 A

43. The Avogrado number is the number of molecules contained in

A. 1 mole

B. 1 mm^3

C. 1 m^3

D. 1 cm^3

E. 1 dm^3

44. Consider a body in uniform rectilinear motion. Then we can state that

A. its velocity is constant

B. the force applied to the body is constant

C. its acceleration is variable

D. its acceleration is constant and non–zero

E. its speed is zero

LOGIC

45. Find the next number in the following numerical sequence:

22 – 29 – 25 – 32 – 28 – ?

A. 32

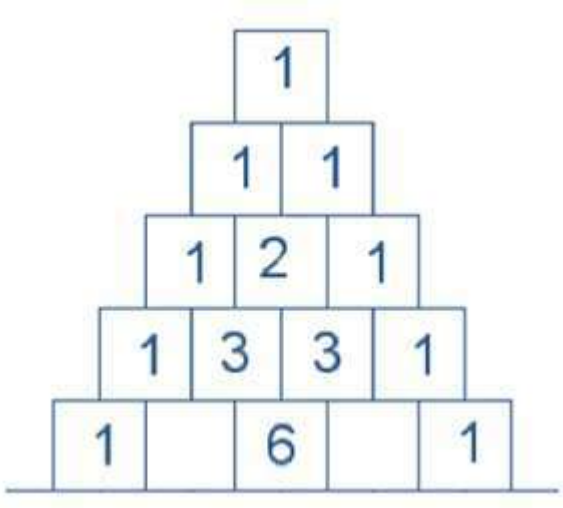
B. 35

C. 39

D. 38

E. 29

46. Which pair of numbers completes the following figure?



A. 4 and 4

B. 5 and 4

C. 4 and 6

D. 4 and 3

E. 5 and 5

47. Complete the following sequence using the English alphabet (i.e. J, K, W, X, Y are included):

V; Q; M; J; E; A; ?

A. V

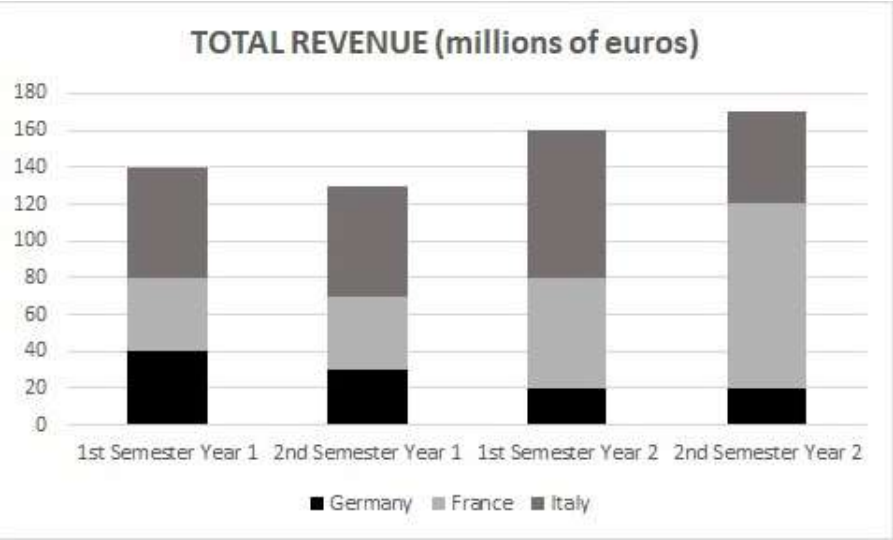
B. I

C. X

D. N

E. P

48. How much has been the total revenue in Italy and Germany (France excluded) in the second semester of the first year?



A. Around 130 million euros

B. Around 70 million euros

C. Around 40 million euros

D. Around 90 million euros

E. Around 60 million euros

49. Which of the following is a correct deductive reasoning?

A. If Anne went to the gym, and if all the other girls in the gym had brown hair, then Anne would also have brown hair.

B. Anne is 6 years old. Girls who are older than 6 are brown–haired. Therefore Anne does not have brown hair.

C. Anne is 6 years old. All 6–years–old girls are brown–haired. Therefore Anne has brown hair.

D. Anne is 6 years old. Girls who are older than 6 are not brown–haired. Therefore Anne has brown hair.

E. Anne goes to the gym. The majority of girls who go to the gym are brown–haired. Therefore Anne has brown hair.

50. Three chefs can peel one potato sack in 1, 2, and 4 hours respectively. How many hours will it take to peel 21 potato sacks, if they work together?

A. 12 hours

B. 10 hours

C. 7 hours

D. 3 hours

E. 6 hours

Question	Correct Answer
1	C
2	B
3	D
4	C
5	D
6	A
7	A
8	C
9	D
10	B
11	C
12	C
13	A
14	C
15	E
16	E
17	D
18	D
19	A
20	B
21	A
22	A
23	C
24	D
25	B
26	B
27	A
28	D

29	C
30	C
31	B
32	B
33	A
34	E
35	E
36	D
37	C
38	C
39	D
40	A
41	E
42	C
43	A
44	A
45	B
46	A
47	C
48	D
49	C
50	A

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