

**A**

**1 Which of the following is common for both mitotic and meiotic cell divisions?**

- A) It takes place in somatic cells.
- B) It involves separation of sister chromatids.
- C) It involves separation of homologous chromosomes.
- D) At the end of the division, four haploid cells are formed.
- E) Crossing-over takes place.

**2 Which of the following is true for photosynthesis?**

- A) It takes place in all the cells of a plant.
- B) Its light-independent reactions take place in the thylakoids.
- C) Its light-dependent reactions take place in the stroma of chloroplasts.
- D) Carbon dioxide is needed for the photophosphorylation reactions.
- E) ATP is produced during the light-dependent reactions.

**3 Which of the following does NOT increase the rate of transpiration in a plant?**

- A) Increased humidity.
- B) Increase in temperature.
- C) Increase in light intensity.
- D) Increase in air movements around the leaf.
- E) Windy weather.

**A**

**4 In peas, a pair of alleles controls the height of the plant. The allele for tall is dominant (T) over the allele for short(t).**

**In a cross, out of 4004 offspring obtained, 2998 were tall and 1006 were short. Which of the following crosses represents the genotypes of the parents used in this cross?**

- A) TT x Tt
- B) Tt x tt
- C) Tt x Tt
- D) TT x tt
- E) tt x tt

**5 Which of the following is NOT a function of placenta?**

- A) It separates fetal blood from maternal blood.
- B) It acts as a barrier preventing the passage of any harmful chemicals from maternal to fetal blood.
- C) It allows the passage of soluble food substances from maternal to fetal blood.
- D) It allows gaseous exchange between mother and fetus.
- E) It allows the passage of toxic metabolic waste from fetal to maternal blood.

A

6 Which of the following are true for erythrocytes?

- I. They lose their nuclei when they become mature cells.  
 II. They contain haemoglobin.  
 III. They are produced in the red bone marrow of short bones.  
 IV. A decrease in their number leads to leukemia.

- A) II and III  
 B) I and III  
 C) I, II, III  
 D) I and IV  
 E) I, II, IV

7 Which mineral's deficiency in a plant results in poor root growth and younger leaves turning purple?

- A) Potassium  
 B) Nitrate  
 C) Phosphate  
 D) Magnesium  
 E) Iron

8 Stacy can receive blood from John and Allison whose blood groups are O and AB respectively. Stacy cannot donate blood to David whose blood group is B. Which of the blood groups below is more likely to be the blood group of Stacy?

- A) A  
 B) AB  
 C) B  
 D) O  
 E) There is insufficient information to work out the answer.

A

9 What is the total number of water molecules needed to hydrolyse 200 molecules of lipid, 50 molecules of maltose and a molecule of protein made up of 500 amino acid molecules?

- A) 1150  
 B) 748  
 C) 750  
 D) 1149  
 E) 747

10 *Lactobacillus Bulgaricus* is the bacterium used in yogurt making. These bacteria ferment lactose in milk to lactic acid. Lactic acid causes physical and chemical changes in milk, such as coagulating the milk protein and turning the mixture acidic. During the process of yogurt making, milk is pasteurised at 85-95<sup>0</sup> C, homogenised and cooled down to 40<sup>0</sup> C before it is inoculated with a culture of *Lactobacillus Bulgaricus*. Why is it necessary to lower the temperature of milk before introducing the bacteria?

- A) At 40<sup>0</sup> C, bacteria produce an alkaline waste product which provides the optimum pH for the bacteria.  
 B) Fat globules in milk are not dispersed at high temperatures.  
 C) 40<sup>0</sup> C is the optimum temperature for the bacterial enzymes that ferment lactose to lactic acid.  
 D) Lactose in milk is denatured at high temperatures.  
 E) All of the above.

A

11 Which of the following is NOT true about DNA?

- A) It does not contain the base Uracil.
- B) It is the genetic material of all living organisms.
- C) Its basic units are nucleotides, each of which consists of a phosphate, a hexose sugar and a nitrogen-containing organic base.
- D) It consists of two strands which are connected to each other by weak hydrogen bonds.
- E) In a DNA strand, two nucleotides are connected to each other by phosphodiester bonds.

12 All living organisms are classified into five large groups called kingdoms. Which of the five kingdoms consist(s) of only heterotrophic organisms?

- A) Only Animals
- B) Fungi and Animals
- C) Only Protists
- D) Protists and Fungi
- E) Monera, Protista and Animals

13 Which of the following eye structures contains the photoreceptors?

- A) Eye lens
- B) Iris
- C) Pupil
- D) Sclera
- E) Retina

A

14 It is now possible to make genetically identical copies of animals by a process called cloning. The first and best-known example of this is the famous cloned sheep Dolly. Which of the following is/are NOT true about the process of cloning Dolly?

- I. Udder cells from the parent were removed and cultured.
- II. The unfertilised egg cell was taken from the parent.
- III. The egg nucleus was removed and transferred into the udder cell taken from the parent.
- IV. The embryo obtained was transferred into a foster (surrogate) mother.
- V. Dolly was genetically identical to the foster sheep.

- A) II, III, IV
- B) III, V
- C) Only V
- D) I, II, V
- E) Only III

15 Which of the following cell structures contain(s) DNA?

- A) Only lysosome
- B) Only mitochondrion
- C) Only ribosome
- D) Only nucleus
- E) Nucleus, mitochondrion and chloroplast

A

16 In cattle, a pair of alleles controls coat colour. The allele for black coat colour (B) is dominant over the allele for red coat colour (b). If a pure-bred black bull is crossed with a red cow, what will the genotypes and phenotypes of the offspring be?

<u>Genotype</u>	<u>Phenotype</u>
A) 1 Bb: 1bb	1 black: 1 red
B) All BB	All black
C) All heterozygous	All black
D) All heterozygous	All red
E) All bb	All red

17 Deficiency of which of the following substances in diet may lead to rickets?

- A) Vitamin C
- B) Vitamin A
- C) Vitamin D
- D) Calcium
- E) Both calcium and vitamin D

18 Which of the following is a disease of the respiratory (breathing) system?

- A) Xerophthalmia
- B) Haemophilia
- C) Diabetes
- D) Emphysema
- E) Kwashiorkor

A

19 In which part of a flower does meiosis take place?

- A) Only in the anther
- B) Only in the filament
- C) Both in anther and ovary
- D) Only in the ovary
- E) Both in filament and anther

20 Which of the following cells is expected to contain the largest number of lysosomes?

- A) Phagocytes
- B) Muscle cells
- C) Osteocytes
- D) Neurones
- E) Thrombocytes

21 Which of the following summarizes the correct sequence of events leading to evolution?

- A) Natural selection-Genetic variation-Adaptation-Mutation-Evolution
- B) Adaptation-Natural selection-Genetic variation-Mutation-Evolution
- C) Natural selection-Mutation-Genetic variation-Adaptation- Evolution
- D) Mutation-Genetic Variation-Natural selection-Adaptation-Evolution
- E) Mutation-Adaptation-Natural selection-Genetic variation-Evolution

**A**

**22 Plankton → Crustacean → Fish → Seal**

**Which organism (s) in the food chain has the largest biomass?**

- A) Crustacean
- B) Plankton
- C) Seal and Fish
- D) Seal
- E) Plankton and seal

**23 Which of the following gases is a 'green house gas'?**

- A) Sulphur dioxide
- B) Methane
- C) Carbon monoxide
- D) Oxygen
- E) Nitrogen oxides

**24 Biological detergents contain protease enzymes. These detergents are preferred to regular detergents as they have a number of advantages. Which of the following is NOT true about biological detergents?**

- A) Biological detergents remove stains at lower temperatures such as 30 or 40<sup>0</sup> C.
- B) In terms of energy consumption, these detergents are more economical.
- C) Protease enzymes in biological detergents break down protein stains.
- D) Stains such as blood and gravy are easily and completely removed.
- E) They can be used to wash any material including silk.

**A**

**25 Which of the following blood vessels brings oxygenated blood to the heart?**

- A) Inferior Vena Cava
- B) Aorta
- C) Superior Vena Cava
- D) Pulmonary Vein
- E) Pulmonary Artery

**26 When a coleoptile is illuminated from one side only:**

- A) Its shoot grows towards light, but its root grows away from light.
- B) Its shoot grows away from light, but its root grows towards light.
- C) Its shoot grows towards light, but the root is not usually affected by one-sided illumination.
- D) Both its shoot and root grow towards light.
- E) Both its shoot and root grow away from light.

**27 Which of the following is NOT true about biological catalysts?**

- A) They are effective even in small amounts.
- B) They can be used over and over many times.
- C) They are changed chemically by the end of the reaction.
- D) They speed up the rate of biochemical reactions.
- E) In order for a biological catalyst to work efficiently, the protein in its structure must have a quaternary structure.

**A**

**28 Which of the following is NOT a feature of an insect-pollinated flower?**

- A) Sticky stigma.
- B) Attractive, brightly coloured petals.
- C) Nectaries producing nectar.
- D) Large, inflated pollen grains.
- E) Stamens enclosed within the flower.

**29 A fermenter is any vessel that is used to grow microorganisms used for fermentation. An industrial fermenter is a large tank that can hold up to 200 000 dm<sup>3</sup> of a liquid culture. It enables the environmental conditions such as temperature, oxygen and carbon dioxide concentrations, pH and nutrient supply to be carefully controlled so that the microorganisms will yield their product most efficiently.**

**Which of the following is NOT true about the functioning of an industrial fermenter?**

- A) Stirring paddles mix up the contents so that the microorganisms get more exposure to the nutrients.
- B) In order to prevent the contents of the fermenter from overheating, the fermenter is surrounded by a water jacket through which cold water circulates.
- C) Before the fermenter is filled with nutrients and culture, it must be sterilised by using a disinfectant.
- D) The pH can be adjusted by just adding acid or alkali to keep it constant.
- E) Fermenters must be made of stainless steel or special alloys to prevent corrosion due to acidic waste products of microorganisms.

**A**

**30 Which of the following bacteria convert ammonium compounds in the soil into nitrates?**

- A) Nitrifying bacteria
- B) Denitrifying bacteria
- C) Nitrogen-fixing bacteria
- D) Saprotrophic bacteria
- E) Anaerobic bacteria

**31 Which of the following is/are always true for identical twins?**

- I. They both have the same blood group.**
- II. They are of the same height.**
- III. They weigh the same.**
- IV. They are of the same sex.**
- V. They have the same eye colour.**
- VI. They are equally intelligent.**

- A) Only IV
- B) I, II, III
- C) Only I
- D) II, III, VI
- E) I, IV, V

**32 Which of the following is NOT a part of a seed?**

- A) Cotyledon
- B) Style
- C) Plumule
- D) Radicle
- E) Testa

A

- 33 **I. They produce digestive enzymes.  
II. They obtain their energy from decaying organic matter.  
III.They convert inorganic substances into organic substances.  
IV. They play an important part in the recycling of substances in nature.**

**Which of the above statement(s) is/are true for saprotrophic organisms?**

- A) II, III and IV  
B) I, II and IV  
C) II and IV  
D) I and II  
E) I, II, III and IV

- 34 **Which of the following is a property of arteries?**

- A) They always carry oxygenated blood.  
B) They bring blood to the atria.  
C) They have a large lumen.  
D) They receive blood from the heart.  
E) They contain less elastic tissue than veins.

- 35 **Genetic engineers use bacterial plasmids to transfer human insulin gene to bacteria so that large amounts of insulin can be produced for diabetics. During the process of producing a transgenic bacterium, various enzymes are used. What is the name given to the enzymes that cut human or bacterial DNA at specific points?**

- A) DNA Ligase  
B) DNA Hydrolase  
C) DNA Polymerase  
D) Cyclin-dependent Kinase  
E) Restriction Endonuclease

A

- 36 **Which of the following is NOT true about the digestion of carbohydrates in human digestive system?**

- A) Carbohydrate digestion starts in the mouth.  
B) Maltose is broken down to glucose in the stomach.  
C) Carbohydrate digestion is completed in ileum.  
D) Starch digestion takes place in the mouth and in the small intestine.  
E) Enzyme amylase breaks down starch to maltose.

- 37 **Storage carbohydrate of animals is glycogen, not glucose. Which of the following explains this statement?**

- A) Cell membrane is freely permeable.  
B) A larger amount of energy is stored in the form of glycogen.  
C) Glycogen is a smaller molecule than glucose.  
D) Glycogen forms cell organelles.  
E) Glycogen cannot pass through the cell membrane.

- 38 **Which of the following is/are needed for the germination of a seed?**

- I. Water  
II. Light  
III. Oxygen  
IV. Chlorophyll  
V. Warm temperature  
VI. Carbon dioxide**

- A) I, II, VI  
B) I, III, V  
C) I, II, IV, V  
D) II, III, V  
E) I, II, III, IV, V, VI

A

- 39 I. Removing chlorophyll in boiling ethanol.  
II. Washing the leaf with cold water to soften it.  
III. Killing the leaf in boiling water.  
IV. Adding a few drops of iodine solution
- Steps followed in carrying out the test for starch on a plant leaf is given above in a random order. Which of the following is the correct order of steps that must be followed?

- A) I, III, IV, II  
B) IV, III, II, I  
C) III, I, II, IV  
D) I, II, III, IV  
E) II, I, IV III

40 A T C G T C A C T T A A  
T A G C A G T G A A T T

A part of a DNA molecule is shown above. How many Thymine nucleotides would be needed during the replication of this DNA molecule?

- A) 10  
B) 8  
C) 4  
D) 6  
E) 12

A

- 41 Choose the incorrect statement.

- A) Plain mirrors are used in periscopes.  
B) In a concave mirror the focal length is found behind the mirror.  
C) Light passing from an optically less dense medium to a more dense medium it is refracted away from the normal.  
D) If light enters different media at a perpendicular angle, no refraction occurs.  
E) All of the above

- 42 Choose the incorrect statement.

- A) Voltage of each component in a parallel circuit is equal to the voltage of the battery.  
B) Resistance can be calculated by dividing voltage with current.  
C) Voltmeter is always connect in series to a circuit  
D) Instrument used to measure potential difference is voltmeter.  
E) All of the above

- 43 Choose the incorrect statement below

- A) Pressure exerted by an object is measured in  $N/m^2$   
B) Pressure exerted by an object is directly proportional with its force  
C) An object with a smaller contact area exerts a greater pressure  
D) Pressure exerted by an object is measured with a dynamometer  
E) Objects with a sharper edge exert greater pressure

A

44 An 8 kg rectangular object has dimensions of 2m x 4m x 5m. What is the largest pressure that can be exerted by this object.

- A) 0.4 Pa
- B) 1 Pa
- C) 8 Pa
- D) 4 Pa
- E) 10 Pa

45 ..... lens spreads light rays entering it and is called a ..... lens.

- A) concave , divergent
- B) concave , convergent
- C) convex , divergent
- D) convex , convergent
- E) plain , divergent

46 I- scatter incoming light  
II- collect incoming light  
III- E nalde a wide area of vision  
IV- They are used on sharp corners  
V- Their focal point is found in front of the mirror  
Which of the statements above are true for convex mirror?

- A) I, III, IV, V
- B) II, III, IV
- C) II, III, V
- D) I, III, IV
- E) I, IV, V

A

47 If the angle between the incident ray and reflective surface is  $30^\circ$ , what is the angle of reflection?

- A)  $90^\circ$
- B)  $0^\circ$
- C)  $60^\circ$
- D)  $30^\circ$
- E)  $180^\circ$

48 Force is measured by using a

- A) scale
- B) dynamometer
- C) thermometer
- D) barometer
- E) manometer

49 An object is placed into 4 different liquids- A, B, C, D The objects sinks in liquids A and C, floats on the surface of liquid B and remains submerged in liquid D without sinking to the bottom.

According to the information given above which statement is incorred

- A) The liquid with the highest density is liquid B
- B) Liquid D has a greater density than liquid A
- C) Density of the object is greater than the density of liquid C
- D) Density of the object and liquid D are equal
- E) The object has a smaller density than liquid B

A

50 Which statement best describes the path of light when it passes from an optically less dense medium to an optically more dense medium at a perpendicular angle?

- A) It passes along the normal
- B) It refracts away from the normal
- C) It reflects back
- D) It refracts towards the normal
- E) It continues its normal path without any change

51 The only nonmetal that conducts electricity is

- A) Boron
- B) Iodine
- C) Carbon
- D) Phosphorus
- E) Neon

52 Which equation is not balanced?

- A)  $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$
- B)  $AgNO_3 + KCl \rightarrow AgCl + KNO_3$
- C)  $H_2O + CO_2 \rightarrow H_2CO_3$
- D)  $KOH + HCl \rightarrow KCl + H_2O$
- E)  $KClO_3 \rightarrow KCl + O_2$

A

53 W : 2,2  
X<sup>-2</sup> : 2,8  
Y : 2, 8, 6  
Z<sup>+2</sup> : 2,8

The electron configurations of W, X<sup>-2</sup>Y, and Z<sup>+2</sup> are given above. According to this information which compound can be formed?

- A) W<sub>2</sub>Z
- B) WZ
- C) XY
- D) WX
- E) Y<sub>2</sub>Z

54 The element ..... is used in marble and cement

- A) sodium
- B) neon
- C) calcium
- D) helium
- E) nickel

55 Which of the following is not found as a diatomic molecule?

- A) oxygen
- B) nitrogen
- C) iodine
- D) magnesium
- E) flourine

A

56 The ion  $X^{-2}$  has an electron configuration of 2,8.  
Choose the correct statement for  $X^{-2}$

- A) It is in group 8
- B) It has an atomic number of 10
- C) It is a metal
- D) It has gained 2 electrons
- E) It is unreactive

57 Which of the following statements is incorrect for ionic compounds.

- A) They are solid at room temperature.
- B) They conduct electricity when dissolved in water and in molten form.
- C) They have strong forces between them.
- D) They are often soluble in water.
- E) All of the above

58 Which statement is false for anions?

- A) They are nonmetals.
- B) They are negatively charged atoms.
- C) They are formed by losing electrons.
- D) They join with cations to form ionic compounds.
- E) None of the above

59 Which statement below is correct

- A) Ammonia solution is an example of an acid
- B) A pH of 2 indicates a strong base
- C) Acids turn blue litmus paper red
- D) Toothpaste is acidic
- E) Most acids are slippery

A

- 60 I. Stainless steel : nickel, chrome, iron  
II. Amalgam : mercury, silver  
III. Brass : copper, zinc  
IV. Bronze : copper, tin  
V. Solder : Lead, tin

The information given above shows metals found in various alloys. Which composition above is incorrect

- A) I
- B) III
- C) IV
- D) II
- E) V

TEST BİTTİ  
CEVAPLARINIZI KONTROL EDİNİZ