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SCIENCE

practice packet

Spring 2025 High School

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UIL SCIENCE PRACTICE PACKET
Spring 2025

Written by
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With a Masters in microbiology from U.T. Texas Health Science Center, Ken Davis brings over 25 years teaching experience to his writing. As an educator, his experience spans from elementary to college levels, including Advanced Placement and dual credit courses for high school. He has developed curriculum for all ages and has coached numerous UIL Science teams to District and Regional championships and has also taught students who have reached the State level.

We are a small company that listens! If you have any questions or if there is an area that you would like fully explored, let us hear from you. We hope you enjoy this product and stay in contact with us throughout your academic journey.
~ President Hexco Inc., Linda Tarrant

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For official UIL Constitution and Contest Rules for Science, please review the Section 952 document at: http://www.uiltexas.org/academics/science

GENERAL INSTRUCTIONS
Science

Do not open until told to do so.

- Ninety minutes should be ample time to complete this test, but contestants may take up to two hours. If you are in the process of writing an answer when time is called, you may finish writing your answer.

- Papers may not be turned in until at least 30 minutes has elapsed. If you finish in less than 30 minutes, remain in your seat and keep your paper until told to do otherwise. Use this time to check your answers.

- All answers must be written on the answer sheet provided.

- You may make notations anywhere on the test, but not on the answer sheet which is for answers only.

- You may use scratch paper provided by the contest director.

- All questions have ONE and only ONE correct (best) answer. There is a penalty for incorrect answers.

- If a question is skipped, no points are given or deducted.

- You should be provided with a sheet of the Periodic Table of the Elements and other scientific relationships; you may refer to this during the test.

- Silent hand-held calculators which do not need wall plugs are allowed. You may bring one spare calculator. Memory must be cleared in all calculators before testing. Other small hand-held devices are not allowed.

SCORING: All correctly answered questions receive 6 points; no points will be given or subtracted if unanswered; 2 points will be deducted for an incorrect answer.

Periodic Table of the Elements

1 IA																		18 8A
1 H 1.008	2 2A											13 3A	14 4A	15 5A	16 6A	17 7A		2 He 4.003
3 Li 6.941	4 Be 9.012											5 B 10.811	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998		10 Ne 20.180
11 Na 22.990	12 Mg 24.305	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 8B	10	11 1B	12 2B	13 Al 26.982	14 Si 28.086	15 P 30.974	16 S 32.066	17 Cl 35.453		18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.88	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.933	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.39	31 Ga 69.732	32 Ge 72.61	33 As 74.922	34 Se 78.09	35 Br 79.904		36 Kr 84.80
37 Rb 84.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.94	43 Tc 98.907	44 Ru 101.07	45 Rh 102.906	46 Pd 106.42	47 Ag 107.868	48 Cd 112.411	49 In 114.818	50 Sn 118.71	51 Sb 121.760	52 Te 127.6	53 I 126.904		54 Xe 131.29
55 Cs 132.905	56 Ba 137.327	57 La **138.91**	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.207	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.967	80 Hg 200.59	81 Tl 204.383	82 Pb 207.2	83 Bi 208.980	84 Po [208.982]	85 At 209.987		86 Rn 222.018
87 Fr 223.020	88 Ra 226.025	89 Ac [227]	104 Rf [261]	105 Db [262]	106 Sg [266]	107 Bh [264]	108 Hs [269]	109 Mt [268]	110 Ds [269]	111 Rg [272]	112 Cn [277]							

58 Ce 140.115	59 Pr 140.908	60 Nd 144.24	61 Pm 144.913	62 Sm 150.36	63 Eu 151.966	64 Gd 157.25	65 Tb 158.925	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.967
90 Th 232.038	91 Pa 231.036	92 U 238.029	93 Np 237.048	94 Pu 244.064	95 Am 243.061	96 Cm 247.070	97 Bk 247.070	98 Cf 251.080	99 Es [254]	100 Fm 257.095	101 Md 258.1	102 No 259.101	103 Lr [262]

9. The work of Gregor Mendel was made possible because the pea plants he studied or chose had, over many generations of self-pollinating, produced offspring with the same characteristics as the parent plant. These types of plants are also known as ____ plants.
   A. monoclonal
   B. true-breeding
   C. physiologically isolated
   D. recessive
   E. dominant

10. This famous experiment was an attempt to determine if DNA or protein was the molecule responsible for the storage of genetic information. Both bacteria and bacteriophage were used in this experiment.
   A. Pauli experiment
   B. Watson-Crick experiment
   C. Griffith experiment
   D. Hershey-Chase experiment
   E. McClintock experiment

11. Of the 64 triplet mRNA codons, how many code for amino acids?
   A. 60
   B. 62
   C. 61
   D. 64
   E. 63

12. These infectious agents are circular RNA molecules that only infect plants.
   A. viroids
   B. prions
   C. viruses
   D. phages
   E. none of these

13. A new species that forms due to geographic isolation from its parent population is known as ____ speciation.
   A. sympatric
   B. allopolyploidal
   C. hybridization
   D. allopatric
   E. punctuated

14. Conjugation in bacteria is dependent upon ____ .
   A. a bacteriophage
   B. DNA transfer via a sex pilus
   C. random uptake of foreign DNA by a bacterium when it is stressed
   D. whether the bacteria in question are Gram-positive or Gram-negative
   E. the presence of lipopolysaccharide layers on two adjoining bacteria

15. The disease malaria is caused by a protozoal parasite classified in the group of protozoans known as ____ .
   A. *Alveolates*
   B. *Stramenopiles*
   C. *Oocysts*
   D. *Euglenozoans*
   E. none of these

16. The ____ is the structure that produces microspores which develop into pollen grains that contain the male gametophytes in complex plants.
   A. anther
   B. stigma
   C. stamen
   D. style
   E. megasporangium

17. The ____ are the order of insects that have one pair of wings, are typically scavengers or parasites, and are represented by flies and mosquitos.
   A. *Hymenoptera*
   B. *Lepidoptera*
   C. *Diptera*
   D. *Orthoptera*
   E. *Homoptera*

8. During the Calvin cycle in complex plants what material is being assimilated?
   A. oxygen
   B. NAD+
   C. carbon in the form of CO_2
   D. NADPH
   E. ATP

9. Interphase, a portion of the cell cycle in humans, consists of ____ .
   I. G1 phase
   II. S phase
   III. G2 phase
   IV. mitosis
   V. cytokinesis
   A. I, II, III
   B. III, V
   C. I, III
   D. I, II, III, IV, V
   E. III, IV, V

10. During ____ sister chromatids separate and move to opposite poles within the cell.
    A. anaphase
    B. metaphase I
    C. metaphase II
    D. anaphase II
    E. telophase

11. Which of the following is a dominant inherited genetic disorder?
    A. Huntington's disease
    B. sickle-cell anemia
    C. cystic fibrosis
    D. hemophilia
    E. none of these

12. Which enzyme is responsible for unwinding the parental double helix in bacterial DNA replication?
    A. ligase
    B. helicase
    C. primase
    D. DNA polymerase I
    E. DNA polymerase II

13. These animal viruses carry their genetic code in an RNA format, making for a complicated replication cycle that goes against the central dogma of biology; DNA→RNA→Protein.
    A. pox viruses
    B. herpes viruses
    C. coronaviruses
    D. retroviruses
    E. none of these

14. We take advantage of this characteristic of DNA which allows us to "push it through" a gel during gel electrophoresis.
    A. DNA is double stranded.
    B. DNA is electrophobic
    C. DNA is negatively charged.
    D. DNA can be single stranded, making it easier to move through a gel.
    E. DNA is small enough to move through the pores in a nitrocellulose gel.

15. This scientist suggested the mechanism for how evolution occurred was the inheritance of acquired characteristics.
    A. Darwin
    B. Lyell
    C. Cuvier
    D. Hutton
    E. Lamarck

16. In binomial nomenclature what classifications is/are typically used in an organism's scientific name?
    I. domain
    II. genus
    III. kingdom
    IV. family
    V. species
    A. I, II, III, IV, V
    B. II, V
    C. II, IV, V
    D. V
    E. I, II, V