Section 952: SCIENCE CONTEST

(a) REPRESENTATION.

(1) *Individual Competition*. Each participant high school in the League may enter six contestants in the district meet Science Contest, all of whom may place.

(2) *Team Competition*. The individuals entered at district constitute the team. A team shall have a minimum of three contestants compete in order to participate in the team competition.

(b) ELIGIBILITY. Each contestant shall be eligible under Subchapter M.

(c) QUALIFICATION; SUBSTITUTES; ALTERNATES.

(1) *Individual Competition*. First, second and third place overall winners qualify for the next higher level of competition. Alternates are named for the overall winners. If an individual qualifier cannot compete at the next higher meet, the alternate shall be notified and allowed to compete.

(2) *Top Scorer*. The contestants with the top score in each of the three subject areas qualify for the next higher level of competition. One alternate is named for each of the three subject areas. If a top scorer qualifier cannot compete at the next higher meet, the alternate shall be notified and allowed to compete.

(3) *Team Competition*. Four members of the winning team will advance to the next higher level of competition. If a member of a school's team is unable to compete at the next higher level of competition, only one substitution may be made. The substitute shall give the contest director a letter certifying eligibility signed by a school administrator. (See Section 903 [b] [4].)

(d) PURPOSE. The purpose of the Science Contest is to challenge students in the basic fundamental principles of science, to promote learning in biology, chemistry, and physics, to foster a sense of enthusiasm about advanced topics and courses in the sciences and to help prepare students for the rigor of college level courses.

(e) NATURE OF THE CONTEST

(1) *Test Materials*. The tests and answer keys will be provided to the district meet director by the League office in a sealed envelope which shall not be opened until the contest preparation period. See (f) (4). Contest support materials will not be sealed and should be opened and inventoried upon arrival. Regional materials are not sealed.

(2) *Test Questions*. Tests will consist of 60 objective questions designed to test the comprehension of the fundamental principles in biology, chemistry and physics. The questions on the test will have a broad range in difficulty so that competitors at all levels of expertise will be challenged.

(3) *Length of Contest*. Since evaluation and reasoning are more important characteristics of the scientist than speed, the contestants shall be given two hours to complete the test. See (f) (12).

(4) *Calculators*. A simple scientific calculator with the following formulas is sufficient for the science contest: +, –, x, ÷, %, $\sqrt{}$, 10^x, log x, e^x, ln x, y^x, sin, $\sin^{-1}$, cos, $\cos^{-1}$, tan, $\tan^{-1}$ with scientific notation and degree/radian capability. The calculator shall be silent, hand-held and battery operated. The calculator cannot be a "computer," cannot have built-in or stored functionality that provides scientific information, and cannot have wireless communication capability (no smart phones). Graphing calculators that do not have built-in or stored functionality that provides additional scientific information are allowed. All memory shall be cleared. Calculators that accept memory cards or memory sticks are not permitted. Each student may bring one spare calculator.

(f) CONDUCTING THE CONTEST AND DETERMINING THE WINNERS. All science contests shall be conducted under the following regulations.

(1) *Personnel*.

(A) *Contest Director*. Contest directors shall be competent and unbiased, and may be coaches if necessary. They shall appoint and train the other contest personnel.

(B) *Monitor*. The contest director shall appoint one monitor, who may be a coach of contestants.

(C) *Graders*. The contest director shall arrange for competent graders, which shall include coaches of contestants, if the coaches so desire. The contest director shall designate one of the graders as head grader. Contestants and coaches not assisting as graders are not allowed in the grading room.

(2) *Contest Room*. The contest room shall be adequate in size and should be selected with quietness of location and excellence of lighting as prime factors. Classroom armchairs or desks with accompanying armless chairs are recommended.

(3) *Clock and Time Signals*. The time allotted for the test is two hours. At a position easily seen by all contestants, a clock should be provided to indicate the remaining time in the contest. No time warnings shall be given. If all contestants agree to its absence, the clock may be omitted.

(4) *Pre-Contest Review of Test Material*. Approximately 30 minutes before the actual contest begins, the contest director and monitor shall open the test packet to verify that there is an adequate number of tests and that there are no missing or misprinted pages on any test. Regional contest directors may check the tests at their convenience, as the envelopes are unsealed.

(5) *Numbering Contestants*. A contest roster listing contestants will be created from schools' online entries. The contest director shall number the test papers on the outside and keep notes on the contest roster of the name of each contestant to correspond to the numbers respectively assigned, so that at the close of the contest the papers can be readily identified.

(6) *Assembly and Roll Call*. At the designated contest time, assemble contestants, coaches, graders and other interested individuals. Call roll from the contest roster and replace any contestant who is not present with a certified substitute at district and the certified alternate at regional. The rules should be reviewed and questions on the rules should be answered. Students will be allowed to use calculators as described in (e) (4). The contest director shall solicit the help of coaches to make sure that all calculators are cleared of all programs and stored data before starting the contest.

(7) *Clearing the Room*. When the contest is about to begin, all individuals except contestants, the contest director and one monitor shall be dismissed from the contest room and kept out of the room throughout the actual contest. Other individuals may be stationed outside the contest room to discourage noise.

(8) *Scratch Paper*. Clean scratch paper shall be provided by the contest director for the contestants.

(9) *Reading of Rules*. The contestants shall be given the following last minute instructions.

(A) Indicate your answers in the appropriate blanks provided on the answer sheet.

(B) No oral time warning shall be given. If you desire to see the amount of remaining time in the contest, you may refer to the clock or to your own watch. Students shall not use a timing device which emits an audible signal.

(C) If you finish the test before the end of the allotted time, remain at your seat and retain your paper until told to do otherwise. You may use this time to check your answers.

(D) Keep your papers closed at all times except when told to do otherwise. This is particularly important while the test papers are being distributed and before the signal to begin the contest has been given.

(E) If you are in the process of actually writing an answer when the signal to stop is given, you may finish writing that answer.

(F) You may place as many notations as you desire anywhere on the test paper except on the answer sheet which is reserved for answers only. You may use additional scratch paper provided by the contest director.

(G) During the contest proper, no questions may be asked or answered.

(H) You will be allowed to use calculators approved by the contest director in accordance with the contest rules.

(I) Transferring information concerning this test to other contestants or coaches shall be ruled a violation of the Spring Meet Code and subject to penalties listed in Sections 27 and 29.

(10) *Distribution of Papers*. The personnel should distribute the test papers. After all tests have been distributed, indicate that the contest is about to begin and answer no additional questions.

(11) *Start Signal*. The signal starting the contest should be given in a manner that is well understood by all contestants.

(12) *Accept Completed Papers*. Thirty minutes after the start of the contest, announce that papers may be turned in, but those desiring additional time shall be given up to the maximum of two hours. Papers that are turned in after thirty minutes should be delivered to the head grader to begin grading.

(13) *Grading the Contest*. Adequate time for careful, accurate grading shall be taken. Accuracy shall not be sacrificed for speed. The League office will provide the graders with a key of the correct answers. Both the key and the instructions will be included in the contest envelope. The grading of all papers and the determination of the net scores shall be double checked to reduce the possibility of errors.

(A) *Grading Room*. Grading shall take place in a room designated by the contest director. Coaches working in concert make excellent graders and shall be included in the grading process, if they so desire. Contestants and coaches not assisting as graders are not allowed in the room.

(B) *Grading Personnel*. Graders should be asked to report to the grading room as soon as the contest begins. The head grader shall transport the answer keys and surplus tests to the grading room when the contest has started, supervise the checking of the answer key, and shall supervise the grading of the first papers until the contest director can get to the grading room.

(C) *Answer Key Errors*. In the case of an error on the answer key of an objectively-scored contest, graders should notify the UIL State Office of the nature of the error and/or contact the respective state contest director to seek clarification. Mistakes in the answer key should be corrected, and papers should be judged on correctness rather than on an incorrect answer given in the key.

(D) *Error Margin*. Numerical answers will be graded on accuracy as specified to the proper number of significant figures. Small variations in the last significant digit will be considered correct.

(E) *Scoring*. The papers of all contestants in the district, regional and state science contests shall be graded uniformly on the following basis: six points will be given for all correct answers; no points will be given or subtracted if unanswered; two points will be deducted for an incorrect answer.

(F) *Overall Winners*. In addition to grading the subject areas independently on the district, regional and state levels, the tests should be scored to determine the overall winners through sixth place (those contestants whose combined scores in the three subject areas are the highest). First place goes to the contestant making the highest net score; second place goes to the contestant making the next highest net score; third place to the next highest. These contestants will receive medals and will advance to the next higher competition.

(G) *Top Scorers*. On the district, regional and state levels, each of the three subject areas (biology, chemistry and physics) should be graded independently to determine the top contestants in each subject area. The contestant with the top score in each subject area should be recognized and presented a Certificate of Achievement provided in the contest packet by the League office. Contestants with the top score in each area qualify for the next higher competition and are eligible to compete equally with the overall winners. This includes individual and team honors. One alternate is named for each top scorer position. See Ties below.

(H) *Team Competition*. The sum of the three highest contestant scores determines the team score. Four members of the winning team will advance to the next higher level of competition. The fourth member of the winning team will be the participant who scored fourth highest among team members in the overall competition. In the event of a tie between or among team members for the fourth spot, all students involved in the tie will advance. In the event of a team tie, the team score to be reported is the sum of the top three scores from each school. After contestants' papers in the individual contest have been scored and ranked to determine the individual winners, top scorers, and all alternates to the next higher level, then all papers should be separated according to participating schools and team members. The team with the second highest total score will be declared the alternate team. Team members also qualify to compete for individual awards.

(I) *Ties*.

(i) *Overall Winners*. In the event of a tie, the formula for percent accuracy shall be used to break the tie. The formula is: percent accuracy equals number of problems correct divided by the number of problems attempted. The contestant with the highest percent accuracy shall be awarded the higher place. If the percent accuracy scores are the same, then a tie exists. Should there be a tie for first place, there is no second place. Should there be a tie for second place, there is no third, and etc. At the state meet, ties shall no be broken.

(ii) *Top Scorers*. In the event of a tie for the top score in biology, chemistry or physics, the formula for percent accuracy within the subject area shall be used to break the tie. The formula is: percent accuracy equals number of problems correct divided by the number of problems attempted. The contestant with the highest percent accuracy shall be awarded the higher place. If the percent accuracy scores are the same, then a tie exists. Should there be a tie for first place, there is no second place. Should there be a tie for second place, there is no third. At the state meet, ties shall not be broken.

(iii) *Team Competition*. In case two or more teams tie for first place, the highest overall net score of the fourth place member of the team will be used to break the tie. Should two or more contestants who are the fourth place member of their team have the same overall net score, then a tie will be declared and all involved in the tie shall advance. A team that does not contain a fourth

member forfeits the right to participate in the tiebreaker. At the state meet, a tie or ties for first place overall team shall not be broken.

(J) *Wild Card*. Each region's highest-scoring second place team may advance to the regional academic meet. In case two or more teams tie for the wild card berth, the highest overall net score of the fourth place member of the team will be used to break the tie. Should two or more contestants who are the fourth place member of the team have the same overall net score, then a tie will be declared, and all involved in the tie shall advance. A team that does not contain a fourth member forfeits the right to participate in the tie breaker. If neither team has a fourth member, neither shall advance. In order to be eligible as a wild card representative, district results shall be certified online no later than 5 p.m. on the Monday following the final district academic week. Failure to meet the deadline or to submit correct scores disqualifies the district from advancing teams as wild card representatives. The highest-scoring second place team from the regional meets may advance to the Academic State Meet.

(14) *Verification Period*. Prior to the announcement of official results, the contestants and coaches should be permitted to examine the contestant's answer sheet with a copy of the test and answer key for no more than 15 minutes. Papers are to be kept in the room. Except at State Meet, the names, contestant numbers, and scores of the contestants who appear to have placed first through sixth and of the top scorers should be announced and/or written on the board as unofficial results. Coaches and contestants may question tabulation during the verification period. Coaches or contestants not present for the verification period forfeit their opportunity to raise questions. If it is evident that an error has been made in tabulation, only the contest director is authorized to correct it.

(15) *Official Results*. Before official results are announced, the contest director should pick up all papers, tests and keys. The names and scores of the contestants winning the first six places, the names and scores of the top scorer in each of the three subject areas and the team members' names and the team score for the team champion shall be announced as official. Official results, once announced, shall be final.

(16) *Returning Papers*. If results are final and all test questions resolved, entries may be returned no sooner than the end of the contest on the Saturday of the respective district week. See the *Spring Meet Handbook* for procedures for returning district meet test papers to schools. If there are no unresolved questions, and if the meet is held on Saturday, the regional tests and answer sheets may be returned to the contestants the day of the regional meet.

(17) *Recording Scores*. The science contest roster and the list of winners shall be given to the meet director immediately following the announcement of official results. All contestant scores shall be entered online in the UIL Spring Meet Entry System.

(18) *Points*. Points are awarded through sixth place, to first and second place teams and to the top scorers in the three subject areas. See Section 902.

(g) RECOMMENDED READING LIST.

(1) Brown, T. L. and LeMay, H. E., Jr., *Chemistry: The Central Science*, Prentice Hall, Inc., 5400 West 4700 South, Box 18501, Salt Lake City, Utah 84118.

(2) Whitten, K.W., Davis, R.E., and Peck, M.L., *General Chemistry*, Saunders College Publishing, P.O. Box 36, Lavallette, New Jersey 08735.

(3) Gould, James L. and Keeton, William T., *Biological Science*, 6th edition, Norton, 500 Fifth Avenue, New York NY 10110 (1996).

(4) Campbell, Neil A., Reece, Jane B., and Mitchell, Lawrence G., *Biology*, 5th edition, The Benjamin Cummings Publishing Company, Inc., 2725 Sand Hill Road, Menlo Park, California, 94025 (1999).

(5) Hewitt, Paul G., *Conceptual Physics*, 9th ed. (or later) Pearson/Addison Wesley.

(6) Giancoli, Douglas C., *Physics*, *Principles with Applications*, 5th ed. (or later) Prentice Hall.

(7) Serway, R.A. and Jewitt, J.W. *Physics For Scientists & Engineers with Modern Physics*, 6th ed. (or later) Thompson/Brooks-Cole. [Calculus based]

(8) Feynman, R.P., Leighton, R.B., and Sands, M.L. *The Feynman Lectures on Physics*, Addison Wesley.

(h) SUPPLEMENTAL READING LIST.

(1) *Scientific American*, 415 Madison Avenue, New York, New York 10017. www.sciam.com.

(2) *Discover*, P.O. Box 420087, Palm Coast, Florida 32142. www.discover.com.

(3) *Science News*, Subscription Dept., 231 West Center St., Marion, Ohio 43305. (For new subscribers 1-800-247-2160.) www.sciencenews.org.