

SSLC Online Quiz Show

General Guidelines

A. Registration

1. Each school is allowed to field in three (3) contestants and two (2) alternate Grade 12 participants. Each student participant must belong to the top 10% of the graduating class.
2. Grade 12 students may form a group of three (3) to five (5) members from any schools to join the competition.
3. Student participants should have their own scientific calculator.
4. For confirmation of participation, a confirmation email must be sent to felix_barqueros@southville.edu.ph.

B. Technical Requirements

1. Laptop or Desktop with webcam for the live-streaming via Zoom platform
Minimum OS requirement
 - Mac OS X with Mac OS 10.10 or higher
 - Windows 7 or higher

Minimum Hardware requirements:

- 2.5GHz Dual Core Intel Core i5 and higher desktop CPU (single screen)
- Dual Bank RAM for better performance
- Stable internet connection (10 MBps bandwidth or higher)
- Zoom account (which will be used by the participant)

2. Smartphone/Tablet (as buzzer)

Minimum OS

- Iphone iOS 8.0 or higher
- IpadOS 13 or higher
- Android 5.0x or higher
- Optional: Bluetooth speakers

C. Online Platforms

- Live streaming – ZOOM App
- Virtual Quiz show
 - quizshow.io (quiz show)
 - quiz.sh (Buzzer)

D. Composition of Team

- The team shall be composed of three Grade 12 students from any school recognized by the DepEd.
- Team must be duly approved and recommended by their respective School Principals/Directors
- The team should have a Team Leader
- A 4th and 5th member of the team shall act as an Alternate
- Contestants must strictly be in separate venues or in their own homes as to abide by the Social Distancing Implementation of CHED COVID 19 Advisory No. 7

E. Alternate Contestants

- Alternate contestants can replace any of the participants for any valid reasons before the start of the quiz show
- No replacement shall be allowed once the contest has started
- However, alternative contestant's participation from schools is optional

F. Coach

- A maximum of three faculty advisers or coaches must be assigned by respective schools to their team
- Coaches are not permitted in the same premises with the participants and shall join only the live streaming via ZOOM app of the Virtual quiz show

G. Quiz Show Scope

- A total of 30 multiple choice questions divided into three rounds of 10 questions each will be asked
- The first round will be composed of 10 easy questions followed by the next 10 average question and last 10 hard questions
- Questions and choices of possible answers will be read twice by the quiz master
- All questions will be flashed via the quizshow.io platform

H. Scope of Questions

- Questions shall be based on the following topics:

1. Chemistry

A. Atoms, Molecules and Ions

1. Give the history of the development of the structure of the atom
2. Compare and contrast atomic number, mass number and atomic mass
3. Name a compound from the chemical formula

B. Stoichiometry

1. Calculate compounds formula/ molar mass
2. Convert mass to moles and vice versa, and moles to number of particles and vice versa
3. Solve problems involving percent composition and empirical formula
4. Solve mass-mass or mole-mole stoichiometric problems.
5. Identify limiting reactant and calculate the theoretical yield and percent yield.

C. Chemical Reactions

1. Write balance chemical equations
2. Identify different types of reactions
3. Assign oxidation numbers to species and identify the oxidizing and reducing agents.

D. Electron Configuration and Periodicity

1. Apply the Aufbau principle, Hund's rule and Pauli Exclusion Principle
2. Represent electron configurations using different notations
3. Predict whether an element exhibit paramagnetism or diamagnetism
4. Describe the group trend and period trend for different properties (atomic radius, ionization energies, electron affinity, electronegativity, etc)

E. Chemical Bonding

1. Distinguish ionic, covalent and metallic bonding
2. Draw Lewis structures for molecules and polyatomic ions
3. Calculate formal charges

F. Molecular Geometry

1. Apply the concept of Valence Shell Electron Pair Repulsion (VSEPR) in predicting and describing the electron group geometry and molecular group geometry of compounds
2. Describe the polarity of a bond and the overall polarity of the molecule

G. Gasses

1. Solve problems involving gas laws
2. Solve gas mixture problems involving partial pressures and mole fractions
3. Work on Graham's Law Problems

H. Liquids and Solids

1. Describe, compare and contrast the types of intermolecular forces
2. Apply the concept of intermolecular forces to explain solubility

I. Mixtures and Solutions

1. Describe solutions in terms of various units of concentration
2. Solve problems related to different colligative properties of solutions (e.g. vapor pressure lowering, boiling point elevation, freezing point depression, osmotic pressure)
3. Differentiate colloids from solutions and identify various types of colloids

J. Acids and Bases

1. Differentiate Arrhenius, Bronsted-Lowry and Lewis Definition of acids and bases
2. Calculate pH and pOH
3. Describe and explain how buffers work

K. Organic compounds and Biomolecules

1. Identify the general classes of organic compounds

2. Earth Sciences

A. Earthquakes and faults

1. Explain how movements along faults generate earthquakes
2. Differentiate the epicenter of an earthquake from its focus
3. Differentiate the intensity of an earthquake from its magnitude
4. Explain how earthquake waves provide information about the interior of the Earth

B. Volcanoes

1. Describe the different types of volcanoes
2. Differentiate between active and inactive volcanoes
3. Explain the phenomenon of volcanic eruption

C. Plate tectonics

1. Know the characteristics, processes, and landforms along plate boundaries
2. Describe the internal structure of the Earth
3. Describe the possible mechanisms of plate movement

D. Meteorology

1. Interactions in the atmosphere
 - a. Discuss how energy from the Sun interacts with the layers of the atmosphere
 - b. Explain the occurrence of land and sea breezes, monsoons, and ITCZ

2. Seasons in the Philippines
 - a. Relate the tilt of the Earth to the length of daytime
 - b. Relate the latitude of an area to the amount of energy the area receives
 - c. Know the different weather patterns and seasons in the Philippines
 3. Typhoons
 - a. Explain how typhoons develop
 - b. Explain how landmasses and bodies of water affect typhoons
 4. Climates
 - a. Describe certain climatic phenomena that occur on a global level
- E. Astronomy
1. Solar system
 - a. Know the different motions of the Earth (rotation and revolution)
 - b. Know the characteristics of planets in the solar system
 - c. Describe the occurrence of eclipses
 - d. Compare and contrast comets, meteors and asteroids
 2. Constellations
 - a. Know the characteristics of stars
 - b. Know the relationship between the visible constellations in the sky and Earth's position

3. Biology

A. Cells

1. Studying Cells: Microscopy
 - a. Identify the different types of microscope
 - b. Identify the basic parts of a light microscope and describe the functions.
2. Cell structure and components
 - a. Distinguish between prokaryotic and eukaryotic cells
 - b. Describe the structure and functions of the various cellular components
 - c. Explain how substances are transported across a cell membrane
3. Cellular metabolism
 - a. Describe the process involved in cellular respiration and photosynthesis
 - b. Describe the functions of enzymes and co – enzymes
4. Cellular reproduction
 - a. Identify the different phases of the cell cycle and describe the sequence of events that occurs during each phase.
 - b. List the phases of mitosis and meiosis and describe the events characteristic to each phase
 - c. Distinguished between asexual and sexual reproduction.

B. Genes & heredity

1. Use Punnett square to predict genotypic and phenotypic expression of traits
2. Identify the relevant law of genetics in a particular situation
3. Explain the different patterns of non- Mendelian inheritance
4. Describe how genetic information is organized in genes on chromosomes.
5. Outlined the process of how protein is synthesized from the information stored in the DNA.

6. Identify various genetic mutations and their consequences.

C. Evolution

1. Explain the mechanism for the evolutionary change proposed by different naturalists.
2. Explain how fossil records, comparative anatomy and genetic information provide evidence for evolution.

D. Biodiversity

1. Distinguished among the three domains of life (eubacteria, archaea and eukaryo)
2. Classify organism using the hierarchical taxonomic system
3. Describe the characteristics, common features and structures of organism belonging to each of the five kingdoms (monera, protista, fungi, plantae and animalia).
4. Describe the structural components of viruses and the mechanism by which they reproduce and infect host cells.

E. Ecology

1. Differentiate biotic and abiotic components of ecosystem.
2. Describe the different ecological relationships found in an ecosystem.
3. Describe and differentiate the major terrestrial and aquatic biomes (tropical forest, desert, taiga, tundra, lakes , estuaries, etc.)
4. Analyze the process of cycling materials in the ecosystem (e.g. water cycle, nitrogen cycle)

F. Human anatomy & physiology

1. Identify and classify four types of tissue found in the body (epithelial, connective, muscle and nerve).
2. Describe the components and the function of the integumentary system.
3. Identify each bone in the skeletal system.
4. Classify the different types of joints found in the body (synarthroses, amphiarthroses and diarthroses).
5. Identify the different types of muscle tissue and their components.
6. Describe the contraction of muscle.
7. Name the major subdivisions of the nervous system and the functions of each.
8. Explain how a neuron transmits a nerve impulse.
9. Describe the structure of the spinal cord and the principal regions of the brain.
10. Classify hormones into their major chemical categories, identify the gland that secretes them, determine their effects in the body.
11. Classify the different types of blood cells and their functions.
12. Describe the parts of the heart and the stages of cardiac cycle.
13. Name the major blood circulatory routes.
14. List the major and accessory organs of the digestive tract and explain how they function.
15. Name the organs of the respiratory system and describe how each is involved in the process of breathing and gas exchange.
16. Define the functions of the urinary system and identify its parts.

4. Physics

A. Classical mechanics

1. Kinematics

- a. Apply vector notations and operations.

- b. Solve problems regarding motion in one or two dimensions.
 - 2. Newton's Laws of Motion
 - a. Analyze free-body diagrams and solve problems involving forces such as tensions, weight, normal force, friction and applied forces.
 - b. Use the concept of Newton's third law to identify force pairs and state the magnitude and direction of each.
 - 3. Work, energy, power
 - a. Calculate the work done by a constant force on an object that undergoes displacement.
 - b. Apply the work-energy theorem and law of conservation of energy to solve problems involving energy transformations.
 - c. Calculate the power required to maintain the motion of an object and the work that supplies the constant power.
 - 4. Linear momentum
 - a. Calculate total momentum of a systems of objects
 - b. Relate impulse to the change in linear momentum
 - c. Solve problems involving elastic and inelastic collisions between two bodies.
 - 5. Circular motion and rotation
 - a. Relate the radius of the circle and the rate of revolution to the magnitude of the centripetal acceleration.
 - b. Apply relations among the angular acceleration, angular velocity and angular displacement of an objects that rotates about Fixed axis
 - 6. Elasticity
 - a. Analyze situations in which a body is deformed by tensions, compressions, pressure or shear,
 - 7. Gravitation
 - a. Determine the force that one spherically symmetric mass exerts on another.
 - b. Apply Kepler's three laws of planetary motion to describe the motion of an object in elliptical orbit under the influence of gravitational forces.
- B. Fluid mechanics
- 1. Apply the relationship between pressure, force, and area and the relationship between pressure and depth
 - 2. Apply Archimedes 'principle to determine buoyant forces on an object immersed in a fluid.
- C. Thermodynamics
- 1. Thermal expansion
 - a. Analyze the changes in the dimensions of an object when heated or cooled.
 - b. Differentiate the three modes of heat transfer, conduction, convection and radiation.
 - 2. Laws of Thermodynamics
 - a. Identify the relevant law of thermodynamics in a given situation.
 - b. Determine whether entropy will increase, decrease or remain the same.
 - c. Calculate the efficiency of a heat engine.
- D. Electricity and Magnetism
- 1. Electrostatic

- a. Determine the resulting charge of objects undergoing conduction and induction.
 - b. Calculate the magnitude and the direction of the force between charges using Coulomb's law.
 - c. Describe and calculate the electric field and electric potential at the vicinity of a point charge.
2. Electric circuits
- a. Apply Ohm's law to direct – current circuits to solve for a single unknown current, voltage, or resistance.
 - b. Analyze DC circuits with multiple components in series or parallel connection.
3. Magnetism
- a. Calculate the magnitude and direction of the magnetic force in terms of the charge, velocity and magnetic field.
 - b. Apply Lenz's law in conceptual problems related to magnetic induction.
- E. Waves and Optics
1. Wave motion
- a. Distinguished transverse waves and longitudinal waves and mechanical waves and electromagnetic waves.
 - b. Apply the relation among wavelength, amplitude, frequency and velocity for a periodic wave.
 - c. Solve problems related to sound waves.
 - d. Identify the different regions of the electromagnetic spectrum
2. Optics
- a. Apply the laws of reflection and the law of refraction
 - b. Use the mirror and thin lens equation to solve problems involving image formation in mirrors and lenses respectively.
 - c. Apply concepts in color addition and subtraction.

I. Time Frame

- Participants are given 30 seconds to answer each question.
- Participants will utilize a designated cellphone or table to act as buzzer in choosing their answer

J. Scoring

- Individual scores are automatically shown at the end of each round. Team scores will be manually tallied at the end of each round.

Example: School A

Contestant 1 = 10

Contestant 2 = 8

Contestant 3 = 6

Total Score of the Team = 24

- In case of disconnection, the total accumulated points will be the team's final score for the said round. The group can still re-join for the succeeding rounds.
- A recap of scores will be announced by the quiz master at the end of each round

K. Determination of Winners

- The teams garnering the three highest overall scores shall be declared First, second and third places respectively

L. Protest, Challenge and Clarification

- In cases of clarification regarding the question and/or the answers, the coaches must immediately notify the Committee for the quiz question being challenged.
- Decision of the board of judges will be given after all the questions of that particular round is asked
- The decision of the board of judges is final

M. Tie breaker

- In case of a tie, additional questions will be asked until the tie is broken.