

SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS

UNIT 1

ASSIGNMENT 1

ANSWERS ONLY

QUESTION 1

SCIENCE

- is a branch of study dealing with facts systematically arranged and showing the operation of general law of mathematical science
- systematic knowledge of the physical or material world gained through observation and experimentation
- any of the branches of natural or physical Science
- systematized knowledge in general .
- knowledge of facts or principles, knowledge gained by systematic study.
- A particular branch of knowledge.
- Skills, especially reflecting a precise application of facts or principle, proficiency.

Technology

- Is a branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, and drawing upon such subjects as industrial Arts, engineering, applied science and pure science.
- The application of this knowledge of practical ends.
- The terminology of an art, science etc.; technical nomenclature.

Engineering

- Is the art or science of making practical application of the knowledge of pure science, as physics or chemistry, as the construction of engines, bridges, buildings, mines, ships, and chemical plants.
- The action, work, or profession of an engineer.
- Digital technology. The art or process of designing and programming computer system, computer engineering, software engineering.
- Skillful or artful contrivance or maneuvering.

Mathematics

- The systematic treatment of magnitude, relationship between figures, forms and relations between quantities expressed symbolically.
- Mathematical procedures, operations or properties.
- The science deals with collections, classification analysis, and interpretation of numerical facts or data, and that, by use of mathematical theories of probability, imposes order and regularity on aggregates of more or less disparate elements.
- The numerical facts or data themselves.

QUESTION 2

STEM education is an integrated approach to learning that combines the discipline of Science, Technology, Engineering and Mathematics. It emphasizes problem solving, critical thinking and hands on learning, often incorporating real world application and project base activities.

QUESTION 3

3.0 means integrating three subject

QUESTION 4

Building model boat is a popular and effective STEM activity, engaging student in design, engineering, and problem solving. Student can learn about buoyancy, hydrodynamic and other scientific principles while constructing and testing their designs. These activities often incorporate project – base learning and encourage higher – order thinking skills.

Concept of each STEM Subject involvement

Science

Student explore concepts like buoyancy, density, hydrodynamics, and the properties of materials.

Technology

They use tools and potentially digital design software to create their boat models.

Engineering

Student design, build and test their boat, iterating on their designs base on their observations.

Mathematics

They might use measurement, calculation and geometry in the design process.

QUESTION 5

Primarily because it fosters critical thinking, problem solving skills and prepares students for future careers in a technology driven world. STEM education also promotes creativity, collaboration and innovation while enhancing scientific literacy and preparing students to be adaptable to new challenges. STEM is important because it equips individuals with the skills and knowledge necessary to thrive in the 21st century and beyond. In addition, STEM present several challenges including a lack of resources and funding, inadequate teacher training and need for more cohesive and flexible curriculum.

QUESTION 6

AIMS AND GOALS

Curriculum aims and goals articulate and outcomes that will be achieved in the long – term and the medium – to – long term. They embed the development and educational aspiration of PNG and its citizen

OVERCHARGING CURRICULUM PRINCIPLES

Curriculum principles identify, describe and focus attention on the important concerns that must be addressed when developing the curriculum at all levels of schooling. They are based on significant social, economic, political, cultural, religious, philosophical, environmental and educational values and beliefs.

STEM RATIONALE, AIM AND GOALS, AND GUIDING PRINCIPLES

The majority of careers in the 21st Century is STEAM related. However, demand for STEAM graduates and experience workers far exceeds the supply of this cadre of workers. What is more although a slow paradigm shift is taking place, careers in STEAM field dominated by males and females are beginning to venture into these careers but at a very slow pace.

CORE CURRICULUM

A core set of common learning's have been integrated into the curriculum to provide all student an opportunity to acquire and master these before they are career, higher education, and citizenship ready the core curriculum include:

- Cognitive skills (critical and creative thinking);
- Reasoning, problem – solving (analysis, evaluation and synthesis);
- 21st century skills;
- STEAM Principles and skills;
- Spiritual values and virtues;
- Reading, Writing and communication skills ;
- Essential values and attitude.

These knowledge, skills, values, and attitudes have been integrated into the content standards and benchmarks. They will also be integrated into the performance standard.

Question 7

The 4Cs

- A) Critical thinking
- B) Creativity and innovation
- C) Communication
- D) Collaboration

These skills are important because in today's world, characterized by technological advancement and global interconnectedness, the 21st century skills are crucial for individuals to Succeed in the workforce, Navigate a complex world, Become lifelong learners and contribute to society.

END OF ASSIGNMENT 1

UNIT 1

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