GRADE 7 SCIENCE FINAL EXAM
(SCIENCE IN ACTION Textbook Edition)

UNIT A - INTERACTIONS and ECOSYSTEMS

Section 1 – Relationships

1. An ecosystem thrives with biotic & abiotic parts. An example of an *abiotic* part of an ecosystem is ...
   A. lichen
   B. fungus
   C. minerals
   D. fern plants

2. Living things have basic needs. Throughout the first section in this unit the *needs of living things* were examined in depth. The four basic needs of living things are:
   A. food, clothing, oxygen, love
   B. oxygen, water, food, habitat
   C. water, oxygen, habitat, protection
   D. food, water, habitat, space

3. The relationship where both organisms help each other - such as the goby fish and the snapping shrimp is called ...
   A. partnerism
   B. parasitism
   C. mutualism
   D. commensalism

4. The beaver population in *Yoho National Park* has declined due to ...
   A. more hunting permits
   B. lower water flow
   C. fewer forest fires
   D. more Aspen trees

5. A clay liner and a system of pipes is used in a sanitary landfill to …
   A. prevent leakage
   B. recycle waste
   C. restore oxygen
   D. prevent disease

Section 2 – Energy Flow

6. Which of the following word equations describes *cellular respiration* ?
   A. Light energy + carbon dioxide + water $\rightarrow$ food + oxygen
   B. Food + oxygen $\rightarrow$ carbon dioxide + water + energy
   C. Light energy + oxygen + carbon dioxide $\rightarrow$ water + food
   D. Food + carbon dioxide + energy $\rightarrow$ water + oxygen

7. *Decomposers* – known as the clean-up crew - are the decomposers. Scavengers also get rid of the waste in an ecosystem. *Scavengers* differ from decomposers because they ...
   A. do not kill organisms for food
   B. do not eat dead organisms
   C. break down larger organisms
   D. only feed on living plants and animals
8. A plant uses most of the energy it gets from the Sun to support its life functions. The following percentage represents the amount of energy that a plant provides to a consumer, such as a herbivore.
   A. 5 %
   B. 10 %
   C. 15 %
   D. 20 %

9. **Food chains and food webs** are models in science, which visually show us the different relationships within an ecosystem. The primary difference between the food chain and the food web is...
   A. a food chain shows how energy is stored
   B. a food web shows how energy is used
   C. a food web is a complex system of food chains
   D. a food chain is a combination of different food webs

10. All living things need water to live. The water cycle has four main processes. The two processes that return water to the earth are ...
    A. evaporation and condensation
    B. condensation and precipitation
    C. transpiration and condensation
    D. evaporation and transpiration

**Section 3 – Change in Ecosystems**

11. When students studied their schoolyard to identify what human impact had on the numbers of organisms they recorded their data in a table. Two places where they likely studied were the ...
    A. climbing apparatus and parking lot
    B. climbing apparatus and the tarmac
    C. parking lot and the soccer field
    D. tarmac and the nature garden

12. The introduction of a new species to an area will likely negatively impact the native species in that area. Scientists call this introduction of new species ...
    A. bioinvasion
    B. biodiversity
    C. biohazardous
    D. biomagnification

13. The overabundance of European starlings causes problems in farmer’s fields and hazards at airports. This introduced species competes with other birds, such as bluebirds, woodpeckers and flycatchers for ...
    A. insecticides
    B. nesting sites
    C. migration patterns
    D. predation

14. The first living species to arrive in an area are usually alga and fungus. Together their mutual relationship is visible in their form they can be observed - lichen. Lichen grows on bare rock and is considered to be the ...
    A. invasive species
    B. primary species
    C. pioneer species
    D. climax species
Section 4 – Sustainability

15. DDT was found to negatively affect the population of Bald Eagles. When the DDT entered the water system it was in a concentration of 0.000003 ppm. When the Bald Eagles ate fish further up in the food chain, the DDT concentration had increase to 25 ppm. The DDT concentration had increased about ...
   A. 10,000 times
   B. 100,000 times
   C. 1,000,000 times
   D. 10,000,000 times

16. Scientist and researchers study the life cycles of insects so they can better control them ...
   A. and teach them tricks
   B. without using pesticides
   C. and lengthen their overall life span
   D. to use as food for other research animals

17. The case of the golden toad is one in which scientists and researchers have no idea about. What are they puzzled about?
   A. The change in colour
   B. The toad’s resistance to disease
   C. The disappearance since 1988
   D. The lack of webbed feet it has developed

18. To reduce our ecological footprint, we can ...
   A. consume more water and less food
   B. create more waste and recycle it
   C. use materials that require less energy to produce
   D. take longer more relaxing showers

This is a **Numerical Response** Question and is worth **2 marks**

**NR1-INTERACTIONS**

There are different kinds of **monitoring practices** that help us check the health of an ecosystem.

Match the numbered description with the type of monitoring it describes.

1. physical        2. environmental        3. chemical        4. biological

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Transfer the numbers (in the order you matched them) into the answer box (starting on the **left** and working across to the **right**), then, shade in the square with each number directly below it.
UNIT B - PLANTS for FOOD and FIBRE

Section 1 – Plant structures and Life Processes

19. The largest group of plants in the world is seed plants. The structure in seed plants that function to produce food for the plant is the ...
   A. flower  
   B. stem  
   C. seed  
   D. leaf

20. Moving water up a plant from the roots to the leaves occurs by a combination of different processes. The main process that draws water up from the plant roots is ...
   A. osmosis  
   B. capillary action  
   C. diffusion  
   D. transpiration

21. Osmosis is the diffusion of water particles when there is a difference in concentration. When the concentration of water in the soil is greater than the concentration of water in the roots of the plant, the water particles will move to the ...
   A. stem tissue  
   B. leaf cells  
   C. root hairs  
   D. stem tubes

22. Usually found in the very center of the flower, the female part of the flower is called the ...
   A. ovary  
   B. stoma  
   C. pollen  
   D. stigma

23. One of the nutrients that plants need to grow healthy and develop properly is nitrogen. If plants do not get enough nitrogen, their leaves will ...
   A. turn yellow  
   B. wilt and die  
   C. curl and turn brown  
   D. lose too much water

Section 2 – Plants play an essential role in the environment

24. Plants prevent the process that moves soil from place to place, because their roots hold the soil in place. This process is ...
   A. erosion  
   B. respiration  
   C. weathering  
   D. protection

25. All organisms are connected within an ecosystem. Plants are the most important because they make their own food and they are the ...
   A. carnivores  
   B. herbivores  
   C. consumers  
   D. producers
26. Plants are also used for fuel. Using plants for fuel is not very efficient. The reason for this is because ...
   A. it costs too much to convert the plant to fuel
   B. a large amount of energy is needed to grow the plant
   C. a lot of the energy is unable to be used
   D. it is not very economical to grow plants for fuel

27. Proper forestry practices can increase the diversity of species in the forest. This is possible because careful cutting can ...
   A. remove habitat
   B. reduce excess light
   C. increase light and air
   D. increase species numbers

Section 3 – Soil is an important resource that human activity can protect or degrade

28. Soil is a natural resource. The components of soil include organic matter and minerals. When soil contains partly decayed organic matter it is called ...
   A. clay
   B. sand
   C. humus
   D. vegetative

29. When earthworms are moving through the soil they eat it, grind it, digest it and mix it. Their mucus helps stick the particles together and their tunnels provide ...
   A. protection
   B. minerals
   C. moisture
   D. air

30. Farmers need to make money when growing crops. Most farmers only grow one type of crop in a particular area. This type of farming is called ...
   A. shelterbelts
   B. mini-cropping
   C. monoculture
   D. single-cropping

31. Many farming practices are used to save the soil from excess erosion. Planting trees or shrubs along the edges of field is one such practice. The purpose behind this is to ...
   A. provide travel corridors for water
   B. enhance crop rotation
   C. plant the seeds through the stubble
   D. reduce wind damage and trap snow

Section 4 – The ways that plants are grown are related to needs, technology and the environment

32. Spreading manure over cropland is a technique growers use to improve the yield of different crops. This action adds this nutrient to the soil ...
   A. salt
   B. calcium
   C. vegetation
   D. organic matter

33. The process which combines genetic material from one organism into another organism, to make a new organism is called genetic ...
   A. diversity
   B. addition
   C. engineering
   D. recreation
34. Dandelions are super weeds because they had no natural controls when they were introduced to North America from Europe. They were brought here to be used as a …
   A. flowering plant
   B. salad vegetable
   C. medicinal plant
   D. edible wildflower

35. When we don’t investigate all of the possible factors and outcomes for our actions in the environment, these might occur …
   A. bio-diversification
   B. bio-accumulation
   C. natural consequences
   D. unintended consequences

36. One of the effects of monoculture farming practices is that pests feeding on that crop have a large food supply. Monoculture is also a farming practice that actually lowers …
   A. cost of pesticides
   B. biodiversity
   C. crop yield
   D. natural predators

This is a **Numerical Response** Question and is worth **2 marks**

**NR2 – PLANTS**

There are many different kinds of **stems**.

Match the numbered description with the type of stem it describes.

1. grows horizontally on the ground (runner)
2. underground stems
3. fleshy horizontal stems
4. flattened stems

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<tbody>
<tr>
<td>corms</td>
<td>cacti</td>
<td>strawberry plant</td>
<td>cattails</td>
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*Transfer the numbers (in the order you matched them) into the answer box (starting on the left and working across to the right), then, shade in the square with each number directly below it.*
UNIT C – HEAT and TEMPERATURE

Section 1 – Human Needs for Heat Technologies

37. In early times, people observed that heat – because it seemed to flow from a hot place to a cold place – must be an invisible fluid that they called …
   A. temperature
   B. energy
   C. thermal
   D. caloric

38. The reappearance of central heating occurred in the late 1700s, as coal became the main fuel source. Central heating was originally developed around 100 B.C. by the …
   A. Americans
   B. Canadians
   C. Romans
   D. Greeks

39. Choose the technology that you would need so that you could heat a large room in your house, and maintain a constant comfortable temperature in that room.
   A. a gas furnace
   B. a wood-burning fireplace
   C. an electric fireplace
   D. a digital thermostat

Section 2 – Heat affects Matter in different ways

40. The Particle Model of Matter helps to explain ideas about Thermal Energy. This model includes each of the following points EXCEPT …
   A. all substances are made up of tiny particles that are too small to see
   B. the particles are always in motion
   C. the particles increase their energy output when they collide
   D. the particles have spaces between them

41. As more heat is transferred to a solid, the particles vibrate and some of the particles in the solid break loose. The solid begins to change state. This is an example of …
   A. heating a solid
   B. heating a liquid
   C. melting a solid
   D. freezing a liquid

42. The thermal energy of a substance is the …
   A. total kinetic energy of all the particles
   B. average kinetic energy of the particles
   C. kinetic energy of each particle separately
   D. measure of how hot or cold the substance is

43. When air is heated inside a balloon, the air makes the balloon rise. This happens because – compared to the air outside the balloon, the heated air is …
   A. less dense
   B. more dense
   C. warmer
   D. cooler
44. When thermal energy is added to a solid the volume of the solid will change. Steel beams bending or even breaking in a bridge, because of an extreme change in temperature are a result of thermal...
   A. conduction
   B. contraction
   C. expansion
   D. design

45. In a liquid the particles are moving quickly. When heat is added they have more energy, but this energy is transferred from particle to particle in a different way than in a solid. The reason for this is because of the ...
   A. speed of the particles
   B. space between the particles
   C. types of particles
   D. temperature of the particles

Section 3 – Understanding Heat and Temperature

46. Volcanoes, hot springs and geysers are examples of useful thermal energy sources. Thermal energy from inside the Earth's crust can be harnessed ...
   A. as an environmental pollutant
   B. as a clean alternative to using fossil fuels
   C. and is called geovolcanic energy
   D. and used to generate fossil fuel resources

47. Solar cells are arranged in panels, which are connected in a series, and then placed to capture and store the Sun's energy in low voltage batteries. The panels are connected in a series to form what is called a solar ...
   A. system
   B. field
   C. array
   D. site

48. When a fireplace becomes too hot, this device - a moveable plate, that controls the flow of air to the fire - can be adjusted ...
   A. cooler
   B. deflector
   C. airfoil
   D. damper

49. To determine where heat is lost in a building, contractors can ask a photographer to take this type of photo of the house.
   A. A thermogram
   B. A radiogram
   C. A thermal negative
   D. An infogram

50. **R-value** (insulating rating) is given to each material that is used in the construction of a building. The best insulating product would have a ...
   A. low R-value
   B. high R-value
   C. minimal R-value
   D. restricted R-value
Section 4 – Technologies that Use Heat – Benefits and Cost to Society and the Environment

51. The costs of treating lakes, that have been damaged by acid rain, have to be paid for by every citizen. This makes this type of cost ...
   A. personal
   B. economic
   C. environmental
   D. societal

52. An alternative for thermal energy that is inexpensive, practical and renewable, and does not require increased technological advances is wind power. This technology utilizes a windmill to generate electrical power that can then be converted into thermal energy. Unfortunately this alternative is not practical where there is no ...
   A. wind
   B. sunshine
   C. shelterbelt
   D. sloping terrain

53. The three main energy users are ...
   A. home, transportation, industry
   B. recreation, transportation, streetlights
   C. shopping, transportation, industry
   D. home, transportation, recreation

54. A dangerous by-product, from the use of fossil fuels (coal, natural gas and oil) enters the atmosphere when industries burn this fuel. A by-product can react with water in the air to form acid rain. The by-product is ...
   A. carbon dioxide
   B. sulfur dioxide
   C. carbon monoxide
   D. nitrogen monoxide

This is a Numerical Response Question and is worth 2 marks

NR3 – HEAT and TEMPERATURE

Match the change in state with the term that is used to describe it.

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<th>solid to liquid</th>
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___ fusion
___ evaporation
___ sublimation
___ solidification

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UNIT D - STRUCTURES and FORCES

Section 1 – Natural and Human-made Structures

55. All of the following structures can be classified as manufactured, EXCEPT a …
   A. jigsaw puzzle
   B. spoon
   C. feather
   D. fishing net

56. Inukshuk is a unique symbol of Inuit culture.

   To anyone who encounters these manufactured structures (which come in many different forms and shapes) the greeting they convey is one of joy and happiness.
   Their purpose is to …
   A. show danger
   B. guide travelers
   C. reward hunters
   D. identify hazards

57. Michael Kelly, a Prairie rancher, invented barbed wire to keep his livestock from wandering off. His idea came from a natural structure, a …
   A. cactus
   B. tumbleweed
   C. prickly pear
   D. thorny bush

58. Each manufactured structure can be paired with a natural structure it is based on.

   1 flippers                      4 honeycomb
   2 egg carton                   5 mushroom
   3 umbrella                     6 webbed feet

   Only one of the pairings below is correct. Which one is it?
   A. 6 - 1
   B. 3 - 4
   C. 2 - 5
   D. 6 - 3

59. Both of these structures are houses for people in very specific environments.

   One advantage of structures such as these is that they …
   A. are portable
   B. are fireproof
   C. keep out animals
   D. protect from the cold nights
Section 2 – External and Internal Forces Act on Structures

60. The actual effect of a force depends on three things: the magnitude, or size of the force; the direction of the force; and ...
   A. how the force is applied
   B. where the force is applied
   C. why the force is applied
   D. how long the force is applied

61. Identify which structure would have the greatest stability, because of its centre of gravity.
   A. High centre of gravity and a narrow base
   B. High centre of gravity and a wide base
   C. Low centre of gravity and a narrow base
   D. Low centre of gravity and a wide base

62. Symmetry is a balanced arrangement of mass that occurs on opposite sides of a line or plane, or around a centre or axis. The force of gravity acting on each side is the same. Which of the following illustrations is symmetrical?
   A. 
   B. 
   C. 
   D. 

63. When you put your hands on your desk and put all your weight on them - then try to move them forward your hand (much like a structure) resists movement forward because of ...
   A. static forces
   B. kinetic forces
   C. external forces
   D. frictional forces

64. To maintain structural stability in a hang-glider - to reduce internal forces, such as tension, compression and shear, on the component parts is to ...
   A. distribute the load evenly
   B. direct the forces along angled components
   C. shape the parts for the forces they are likely to face
   D. place lighter materials above heavier materials

Section 3 – Structural Strength and Stability

65. This palm tree is demonstrating this property ...
   A. brittleness
   B. ductility
   C. plasticity
   D. flexibility

66. A change of shape in a structure or a structural component, because the material is unable to resist the load acting on it is called ...
   A. deformation
   B. resistance
   C. ductility
   D. brittleness

67. Adhesives are used to bind materials together. A type of adhesive that hardens when it cools is ...
   A. thermosetting glue
   B. therapeutic glue
   C. solvent-based glue
   D. solvent-enriched glue
68. Moveable joints are used to secure materials together in a structure. All of the following joints are examples of moveable joints (allowing movement in a structure) EXCEPT ...
   A. a trailer hitch
   B. photocopier lid
   C. ball and socket joint (shoulder)
   D. Lego

Section 4 – Structures are designed, evaluated, and improved to meet human needs

69. During the Ice Storm in Quebec in 1998, ice crystals formed on many structures. Some of these structures failed because the formation of ice crystals on the structure added to the structure’s ...
   A. flexibility
   B. overall mass
   C. safety margin
   D. tensile strength

70. A firm foundation is necessary to support a structure. Solid ground is not always firm and stable. There are environmental and man-made conditions, which make the soil, loosen and become compact, which makes the soil relatively unstable. Three strategies are use to ensure a structure is built on a firm foundation. The three strategies include all of the following, EXCEPT ...
   A. find something solid
   B. make a soil layer
   C. spread the load
   D. utilize pressure and density

71. At birth a baby has 350 bones. As the baby grows, the total number of bones in the body is reduced to 206. Nature’s way of strengthening the body is to use the 144 ‘missing’ bones to reinforce the frame by this method …
   A. adhesive
   B. gluing
   C. fusion
   D. fastening

72. Hollow triangle tubes are used as the traditional shapes for a bicycle. This is because they provide the best …
   A. flexibility
   B. ductility
   C. strength
   D. plasticity

This is a Numerical Response Question and is worth 2 marks

NR4 – STRUCTURES and FORCES

Different nails are used for different purposes. Put the following nail types in order of their fastening ability. Most friction to least fiction

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UNIT E – PLANET EARTH

Section 1 – Earth’s surface undergoes gradual and sudden changes

73. It is likely that San Diego would be able to get early warnings of possible earthquakes in the area because of this attraction ...
   A. San Diego Zoo
   B. San Diego Observatory
   C. Pacific Climatology Center
   D. San Diego Emergency Center

74. The source of an earthquake can be determined by recording the interval time between the p waves and s waves. The first place that rocks break below the surface in an earthquake is called the ...
   A. focus
   B. fault line
   C. epicenter
   D. shadow zone

75. A device that geologists use to measure minute changes in the angle of the ground’s slope is called a …
   A. seismograph
   B. seismogram
   C. surveyor’s level
   D. magmascope

76. André tested the effects of water on the natural rock samples found in his schoolyard. He tested the rock samples with pure water (pH 6.8), rainwater (pH 4.5) and tap water (pH 6.7). The type of weathering he investigated was classified as ...
   A. chemical
   B. biological
   C. mechanical
   D. gravitational

77. Allison and Rachel were investigating the effects of landforms that have been created by the action of running water. They were told that the Alberta badlands are an example of this type of landform, called ...
   A. sediment
   B. fluvial
   C. bedrock
   D. striation

Section 2 – The Rock Cycle describes how rocks form and change over time

78. Specific patterns such as cubic, tetragonal, hexagonal, orthohombic, monoclinic and triclinic describe how minerals line up in a regular pattern creating smooth surfaces and sharp edges, making systems of ...
   A. mineral hardness
   B. crystal structure
   C. cleavage types
   D. synthetic models

79. The scale used to help identify different minerals, because each mineral will scratch all the minerals with a lower scale ranking than its own is named after a German scientist. The scale is called...
   A. Newton’s Force Scale
   B. Fahrenheit’s Scale
   C. Mohs Hardness Scale
   D. Richter’s Seismic Scale
80. Igneous rock can be classified by how it is formed. If it has formed beneath the surface, cooling slowly, it has larger grains and is called …
   A. interior
   B. intrusive
   C. exterior
   D. extrusive

81. Geologists identify mineral ores locations, which are hidden below the surface of the Earth, using different tools and technologies. Using sensitive instruments, such as a magnetometer, geologists are using this technique …
   A. remote sensing
   B. geophysical prospecting
   C. geochemical prospecting
   D. exploration

82. The rocks and minerals that cover the first 50 meters or so of the Earth’s surface include sand, gravel, stones, and boulders. This material is called …
   A. underburden
   B. overburden
   C. shield cover
   D. common rock cover

Section 3 – Landforms provide evidence of change

83. Glaciers once existed in the southern hemisphere. The evidence Wegener found to prove this were the …
   A. moraines found
   B. erratics found
   C. bedrock abrasions
   D. ice caves

84. Because rock is moving away from the mountain ranges found along the mid-Atlantic ridge, new rock is being formed. This sea-floor spreading indicates that rock nearest the continents is …
   A. older
   B. younger
   C. softer
   D. harder

85. Over 500 million years ago Alberta was tropical and the border with British Columbia was …
   A. a mountain range
   B. a shallow sea
   C. an underwater trench
   D. a fluvial landform

86. The downfold in the rock that is folded when pressure is placed on it is called …
   A. compression
   B. Fault block
   C. anticline
   D. syncline
Section 4 – The fossil record provides evidence of Earth’s changes over time

87. There is more than one way for living organisms to become fossilized. A cavity or track that was left behind by a living organism – providing evidence that it existed, is a type of fossil called a …
   A. cavity fossil
   B. evidence fossil
   C. trace fossil
   D. track fossil

88. Layers of sedimentary rock stay in their original position, with the newest layers on the top and the older layers on the bottom. These layers of rock are called …
   A. indexing
   B. parent rock
   C. rock strata
   D. superimposed

89. The general time periods that organize the history of the Earth are called …
   A. eras
   B. periods
   C. years
   D. centuries

90. Scientists have inferred that there might be some relationship between dinosaurs and birds from some of the Archaeopteryx fossils they discovered a few impressions of feathers
   A. wings
   B. feathers
   C. webbed feet
   D. hollow bones

This is a Numerical Response Question and is worth 2 marks

NR5 – PLANET EARTH

Which category of rock family belongs with which rock type described?

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_____ melted rock
_____ layered rock
_____ crystallized rock
_____ changed rock

Transfer the numbers (in the order you matched them) into the answer box
(starting on the left and working across to the right), then, shade in the square with each number directly below it.
GRADE 7 SCIENCE FINAL EXAM
(SCIENCE IN ACTION Textbook Edition)

ANSWER KEY

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