

**THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF AGRICULTURE**

ENTRY TEST FOR NON-SCHOOL LEAVERS: 2017

BIOLOGY

TIME ALLOWED:- 3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. This is a closed book examination; notes, textbooks and recording devices such as mobile phones are not allowed in the room.
2. Answer all questions.
3. Each question carries 2 marks. Total marks = 100
4. All answers must be written in the answer book. No other materials will be accepted for marking
5. Total number of pages is 8 (including front page) and total number of questions is 50. Check that this is correct
6. You have 10 minutes to read through the paper. You must not begin writing during this time
7. Print your name and number clearly in the space below. Do it now

Complete the following Table now

Student Name	
Student number	
Examination Date	
Signature of Student	

Instructions: All questions are of the multiple choice type. Underline or draw a circle round the correct choice.

- 1) Which of the following statements about cells is likely to be wrong?
 - a. Living things are composed of cells
 - b. Eukaryotic cells have DNA but prokaryotic cells do not have DNA
 - c. The cell is the smallest unit of structure and function in all living things
 - d. New cells are produced by pre-existing cells
- 2) What is the name of the part of an eukaryotic cell that contains digestive enzymes, which break down complex molecules into simpler ones or destroy damaged or unwanted cells?
 - a. Lysosome
 - b. Golgi apparatus
 - c. Mitochondria
 - d. Nucleus
- 3) Which of the following forms of transport across the cell membrane cannot be regarded as a form of passive transport?
 - a. Diffusion
 - b. Osmosis
 - c. Absorption of mineral nutrients from the soil by roots
 - d. None of the above
- 4) Which of the following substances cannot be found in animal cells?
 - a. Cellulose
 - b. Hemicelluloses
 - c. Pectin
 - d. All of the above
- 5) The process by which a cell engulfs a large particle such as a virus by expansion of its cell membrane and surrounding it is called:
 - a) Receptor-mediated endocytosis
 - b) Phagocytosis
 - c) Active transport
 - d) None of the above
- 6) Which of the following is used to provide energy in animal cells?
 - a) Glucose
 - b) Starch
 - c) Glycogen
 - d) All of the above
- 7) During an experiment a student found the concentration of solutes in potato slice to be 0.2M. In which of these solutions will the weight of a potato slice be expected to increase?
 - a) 0.1M
 - b) 0.2M
 - c) 0.3M
 - d) None of the above

- 8) When placed in a hypertonic solution (such as sea water) the protoplasm of a plant cell shrinks. This condition is specifically known as
- Shrinkage
 - Osmosis
 - Plasmolysis
 - Wilting
- 9) Trophic response refers to plants response towards the direction of the stimuli. The plant response to natural light is called:
- Hydrotropism
 - Photoperiodism
 - Thigmotropism
 - Geotropism
 - none of the above
- 10) Plants that grow in saline water are called
- halophytes
 - hydrophytes
 - mesophytes
 - thallophyte
- 11) The chemical bond between amino acid molecules in a polypeptide are called
- Peptide bonds
 - Glycosidic bonds
 - Hydrogen bonds
 - Phosphodiester bonds
- 12) The base sequence of a transcribed mRNA is complementary to the base sequence of:
- The coding strand of the DNA
 - The template strand of the DNA
 - Amino acid sequence
 - None of the above
- 13) Which of the following enzyme is involved in the transcription of DNA?
- DNA polymerase
 - Helicase
 - RNA polymerase
 - DNA polymerase III
- 14) Mendel found that two alleles - one for shortness and the other for tallness - affected height of pea plants. When he crossed plants which were both homozygous tall he observed that in the progeny the ratio of tall to short plants (phenotypically) was:
- 1:0 respectively
 - 3:1 respectively
 - 1:1 respectively
 - 1:3 respectively

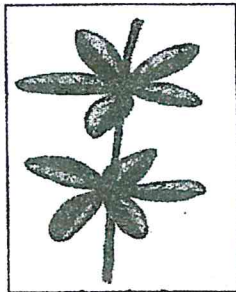
- 15) In which part of the cell does translation of mRNA happen?
- a) Golgi apparatus
 - b) Chromosomes
 - c) Nucleus
 - d) Cytoplasm
- 16) Which of the following codon is degenerate?
- a) Start codon
 - b) Stop codon
 - c) The middle codon
 - d) None of the above
- 17) Which of the following proteins is used to transport substances in the body?
- a) Hemoglobin
 - b) Collagen
 - c) Insulin
 - d) None of the above
- 18) The branch of biology which deals with classification is called what?
- a) Taxonomy
 - b) Binomial nomenclature
 - c) Genetics
 - d) Anatomy
- 19) Which of the following factors can be used to classify organisms?
- a) Morphology
 - b) Analysis of DNA and RNA
 - c) Lifestyle
 - d) All of the above
- 20) In which of the following taxa do we have more diverse groups of organisms?
- a) Genus
 - b) Family
 - c) Class
 - d) Order
- 21) The systematic name of the chimpanzee is *Pan troglodytes*. To which order does the chimpanzee belong?
- a) Great apes
 - b) Pan
 - c) troglodytes
 - d) None of the above

- 22) To which segment of the body of a cricket are the hind wings attached?
- a) Mesothorax
 - b) Metathorax
 - c) Prothorax
 - d) Hindthorax

Sickle cell is an autosomal recessive disease controlled by alleles A for normal and S for sickle cell. A woman with sickle cell disease has children with a man who is a carrier. Use this information to answer the next two questions (i.e. questions 23 and 24).

- 23) What are the genotypes of the parents?
- a) AA and AS
 - b) AA and SS
 - c) AS and SS
 - d) SS and SS
- 24) What is the probability that one of their children will be a carrier of the disease?
- a) 0
 - b) 0.25
 - c) 0.5
 - d) 0.75
- 25) From which part of the heart is blood pumped to the lungs?
- a) Right atrium
 - b) Left atrium
 - c) Right ventricle
 - d) Left ventricle
- 26) Which part of the heart is receives blood from the lungs?
- a) Right atrium
 - b) Left atrium
 - c) Right ventricle
 - d) Left ventricle
- 27) Which of the following is not a part of nucleotides?
- a) Amino acid
 - b) Nitrogenous base
 - c) Phosphate
 - d) Sugar
- 28) In which gland is the hormone called prolactin produced?
- a) Adrenal gland
 - b) Anterior pituitary
 - c) Parathyroid gland
 - d) Pancreas

- 29) In a leaf what is the name of the cells which contain chlorophyll?
a) Xylem
b) Phloem
c) Palisade parenchyma
d) Upper epidermis
- 30) What is the name of the process by which a single-celled organism splits into two new individuals
a) Binary fission
b) Regeneration
c) Mitosis
d) Meiosis
- 31) The final community, which remains stable after several stages of ecological succession is called:
a) The Sere community
b) The final community
c) Climax community
d) The ultimate community
- 32) What is the name of fruit that is formed from an ovary and other floral parts



- a) False fruit
b) True fruit
c) Pathenocarpic fruit
d) Schizocarpic
- 33) Which stage of respiration can take place even in the absence of oxygen
a) Krebs cycle
b) Glycolysis
c) Citric acid cycle
- 34) Which of the following statement is **not** true of red blood cells?
a) They can engulf and kill bacteria cells in the body
b) They are shaped like biconcave discs
c) They do not have a nucleus
d) They contain haemoglobin
- 35) Which of the following is not a modification of leaves?
a) Pneumatophores
b) Tendrils
c) Bracts
d) Spines

- 36) What type of leaf arrangement is shown in the figure below?
- a) Opposite
 - b) Alternate
 - c) Bipinnate
 - d) Whorled
- 37) The petals of a flower are collectively called:
- a) Calyx
 - b) Corolla
 - c) Androecium
 - d) Gynoecium
- 38) Which of the following is not an example of a mammal trying to maintain homeostasis?
- a) Sweating
 - b) Shivering
 - c) Dehydration
 - d) Goose bumps
- 39) Which of the following is the study of ecology of a single species?
- a) Autecology
 - b) Oncology
 - c) Symbiology
 - d) Synecology
- 40) What type of organism eats both plants and animals?
- a) Herbivore
 - b) Omnivore
 - c) Carnivore
 - d) Ruminant
- 41) Which of the following types of interactions will not promote co-evolution?
- a) Commensalism
 - b) Parasitism
 - c) Mutualism
 - d) Interspecific competition
- 42) The effect of interspecific competition on niches is to make them:
- a) Larger
 - b) Smaller
 - c) Change location
 - d) More triangular
- 43) Human population growth curve is
- a) S-shaped curve
 - b) J-shaped curve
 - c) Parabolic curve
 - d) Zigzag curve

- 44) Conservation of a species within its natural habitat is called:
- a) Exsitu conservation.
 - b) Insitu conservation.
 - c) Invivo conservation.
 - d) Exvivo conservation.
- 45) Hotspots are regions of high
- a) Diversity
 - b) Endemism
 - c) Rarity
 - d) Critically endangered species
- 46) The occurrence of pesticides like DDT in higher trophic levels is called:
- a) Biopolution
 - b) Bioremediation
 - c) Bioenhancement
 - d) Biomagnification
- 47) Pollutants which are introduced into the environment by human beings are called:
- a) Artificial pollutants
 - b) Anthropogenic pollutants
 - c) Qualitative pollutants
 - d) Quantitative pollutants
- 48) Algal bloom results from:
- a) Biomagnification
 - b) Eutrophication
 - c) Salination
 - d) Climate change
- 49) A higher biological oxygen demand (BOD) in water indicates:
- a) Absence of microbes
 - b) Low level of microbial presence
 - c) High level of microbial presence
 - d) Water is pure
- 50) Which of the following layers of the atmosphere is closest to the earth's surface?
- a) Troposphere
 - b) Ionosphere
 - c) Stratosphere
 - d) Mesosphere