



ST. ANTHONY'S COLLEGE SHILLONG

ENTRANCE TEST FOR ADMISSION INTO UNDER GRADUATE PROFESSIONAL COURSES 2010

BIOTECHNOLOGY

DATE : THURSDAY, 6TH MAY, 2010
TIME : 9:30 AM – 11:00 AM
DURATION: 1 HOUR 30 MINUTES

INSTRUCTIONS

- This test has two parts. Part A and Part B.
- **Part A** has a total of **70** multiple choice questions. Question 1- 70 of Part A is to be answered on the Answer Sheet provided to you and must be returned back at the conclusion of this test.
- **Part B** has a total of **20** questions. These questions are to be answered on the question paper itself, in the space provided.
- For each question you may select only **ONE** answer. Selecting more than one option qualifies as a wrong answer. You can use a pen/pencil for answering the questions.
- Each correct answer in Part A and B carries a weightage of 1 mark while a wrong answer carries a penalty of – 0.25.
- Write the **Roll Number** given on your Admit Card in the answer sheet and question paper in the space provided.
- **Please preserve your Admit Card.** It will be required at the time of admission.
- The Admit Card numbers of those shortlisted for admission on the basis of this Entrance Test will be published on the College Notice Boards as well as on the College Web Site on Monday, 10th May, 2010.
- The final admission will be done on a first come, first served basis, after the marksheets of the Class XII examinations of the Meghalaya Board of School Education are available, provided the eligibility criteria as laid down in the prospectus are fulfilled. Shortlisted students from other boards and streams whose Class XII results are declared later will also be considered for admission provided they report not later than 2 days after the result declaration of their respective board examinations along with their marksheets (Original or Downloaded).

ADMIT CARD NO. _____

Invigilators Signature: _____

Part A

(1 mark will be awarded for every correct answer, 0.25 will deducted for every wrong answer)

Directions for Questions 1 to 70:

Choose the best answer in each of the following by marking it on the answer sheet given to you.

- The physical expression of a trait is called the:
a. Genotype b. Phenotype c. Allotype d. Isotype
- The chromosome that determines maleness in humans is:
a. w b. X c. Y d. Z
- The region of chromatin that usually undergoes transcription is:
a. nucleosomes b. heterchromatin
c. both euchromatin and heterochromatin d. euchromatin
- Mutation theory was proposed by:
a. Charles Robert Darwin b. Hugo de Vries
c. Baptiste de Lamarck d. August Weismann
- Analogous Structures are the result of:
a. Divergent Evolution b. Adaptive Radiation
c. Convergent Evolution d. Radical Evolution
- What force will change the velocity of a body of mass 1 kg from 20 m/s to 30 m/s in two seconds?
a. 10 N b. 5N c. 2 kg wt d. 25 N
- A passenger in a moving train tosses a coin. If the coin falls behind him, the train must be moving with:
a. an acceleration b. a deceleration
c. a uniform speed d. all of these
- Three resistances each of 4 Ω are connected to form a triangle. The resistance between the terminals is:
a. 12 Ω b. 2 Ω c. 6 Ω d. 8/3 Ω
- The radius of the earth is 4 times that of the moon and its mass is 80 times that of the moon. If acceleration due to gravity on the surface of the earth is 10 m/s^2 , that on the surface of the moon it will be:
a. 1 m/s^2 b. 2 m/s^2 c. 3 m/s^2 d. 4 m/s^2
- A kilowatt hour is the unit of:
a. power b. energy c. electric charge d. electric current
- The condition when each additional set of chromosomes is identical to the parent species is called:
a. Autopolyploidy b. Allopolyploidy
c. both (a) and (b) d. neither (a) nor (b)
- Organelles involved in extranuclear inheritance are:
a. mitochondria and chloroplast b. golgi bodies and endoplasmic reticulum
c. lysosomes and peroxisomes d. nucleus and ribosomes
- A chromosome in which the centromere is located near the end is said to be:
a. Telocentric b. Acrocentric
c. Submetacentric d. Metacentric
- The primary component of middle lamella consists of:
a. cellulose b. lignin c. pectin d. keratin
- Cytoskeleton is the name given to the distribution of:
a. microtubules and microfilaments b. microactin
c. microactin and microtubules d. microfilaments
- Oxygen consumed in biological oxidation reactions is excreted primarily as:
a. Water b. ATP c. Carbon dioxide d. Pyruvate
- In humans the main catabolic product of purines is:
a. Ammonia b. Uric acid c. Urea d. Hypoxanthine
- What is the molarity of 5% (w/v) Urea? Its molecular weight is 60:
a. 0.83 b. 1.2 c. 8.3 d. 0.12
- The most abundant species of RNA in a typical cell is:
a. Ribosomal RNA (rRNA) b. Transfer RNA (tRNA)
c. Messenger RNA (mRNA) d. none of these
- The place that an animal occupies in a biotic community which expresses its functional status is termed as:
a. Habitat b. Niche c. Tropic level d. Home

42. Maximum number of bonds between two atoms of a covalent bond can be:
 a. four b. two c. three d. one
43. Which of the following represents the first law of thermodynamics?
 a. $q = \Delta E - w$ b. $\Delta H = q + w$
 c. $\Delta E = \Delta H + P \Delta V$ d. $\Delta H = q - w$
44. The pH of a solution is 5.9. If the hydrogen ion concentration is decreased hundred times, the solution will be:
 a. more acidic b. neutral
 c. basic d. of the same acidity
45. When limestone is burnt in a kiln the resulting product is:
 a. Clinker b. Quick lime c. Lime mortar d. Plaster of Paris
46. Molecular formula of Glauber's salt is:
 a. $MgSO_4 \cdot 7H_2O$ b. $CuSO_4 \cdot 5H_2O$
 c. $FeSO_4 \cdot 7H_2O$ d. $Na_2SO_4 \cdot 10H_2O$
47. Which of the following exist as dimer?
 a. Hg^{2+} b. Cu^{2+} c. Hg^+ d. Fe^{2+}
48. The heat content of Y is greater than that of X, the reaction $X \rightarrow Y$ is:
 a. spontaneous b. exothermic
 c. endothermic d. instantaneous
49. The IUPAC name of compound having formula $(CH_3)_3C-CH=CH_2$ is:
 a. 3,3,3-trimethyl-1-propene b. 1,1,1-trimethyl-3-propene
 c. 3,3-dimethyl-1-butene d. 1,1-dimethyl-3-butene
50. Which of the following isomerisms is not exhibited by alkanes?
 a. Conformational b. Chain
 c. Position d. Geometrical
51. An example of derived lipid is:
 a. Fats b. Waxes c. Phospholipids d. Cholesterol
52. Acetylene reacts with water in the presence of Hg^{2+} and acidic medium to give:
 a. ethanol b. ethanal c. ethane d. propanol
53. The positron is nearly as heavy as:
 a. alpha particles b. protons c. electrons d. deuterons
54. In a chemical reaction equilibrium is said to have been established when the:
 a. concentration of reactants and products are equal
 b. opposing reactions cease
 c. rates of opposing reaction become equal
 d. temperature of opposing reactions are equal
55. Twelve grams of H_2SO_4 is dissolved in water to make 1200 ml solution. The concentration, in normality, is:
 a. 0.061 N b. 0.102 N c. 0.022 N d. 0.204 N
56. Silver is extracted from commercial lead by:
 a. Mond's process b. Parke's process c. Haber's process d. Clark's process
57. Bonds can form between atoms when:
 a. they acquire higher energy state b. they get their energy lowered
 c. they change their position d. none of these
58. The chlorination of methane is an example of:
 a. elimination process b. substitution reaction
 c. addition reaction d. oxidation reaction
59. The radioactive isotope of hydrogen is:
 a. hydrogen b. protium c. deuterium d. tritium
60. The lowest alkene which is capable of exhibiting geometrical isomerism is:
 a. 1-Butene b. 2-Pentene c. 2-Butene d. 2,3-Dimethylbutane
61. Tears contain an antibacterial enzyme called:
 a. ribozyme b. lysozyme c. ptyalin d. endonuclease

Part B

(1 mark will be awarded for every correct answer, 0.25 will be deducted for every wrong answer)

Direction for questions 1-20: *Fill in the blanks:*

1. _____ is known as cell drinking.
2. Chromatin fibres are made of repeating units called _____.
3. The increased accumulation of toxic substances in food pyramids is called _____.
4. _____ may be made by reacting magnesium with ethyl iodide.
5. The purest form of iron is _____.
6. The focal length of a convex lens is 30 cm and the size of the image is a quarter of the objective. The object is at a distance of _____.
7. _____ is the event that leads to genetic exchange between members of each homologous pair of chromosomes.
8. When a breeding experiment involves only one pair of contrasting traits it is called a _____ cross.
9. Genes that are present in one chromosome are said to be _____.
10. An obstruction of the bile duct causes _____.
11. The largest gland of the human body is _____.
12. Mucosal folds present inside the stomach are called _____.
13. When a blood clot is formed inside a blood vessel, the condition is called _____.
14. Sweat serves to eliminate mainly water and _____.
15. The largest part of the human brain _____.
16. Orbitals in atoms that have the same energy are called _____ orbitals.
17. An element having atomic number 34 belongs to the _____ block of the periodic table.
18. The ionization energy of Na^+ is _____ than that of Mg^+ .
19. Metals are good conductors of electricity due to the presence of _____.
20. An aqueous solution of N_4HCl is _____ in nature.
