1. Given that a person stands in an elevator while holding a box. If the mass of the box is 0.470 kg, but weighing the box with a scale in the elevator, it reads 3.25 N. Determine the magnitude and direction of the net force of the box.
A. 2.78 N, upward B. -2.78 N, downward C. 1.36 N, upward D. -1.36 N, downward

2. A 6.0 kg bird is about to take a flight. It stats from rest on the ground, but after a single step, it is completely airborne. After 1.5 s of horizontal flight, the bird has reached a speed of 9.0 m/s. What is the magnitude and direction of the force acting on the bird? A. 36 N, forward B. -36 N, backward C. 24 N, forward D. – 24 N, backward

3. Three forces acting on a particle are given by F_1 = (20i – 30j + 15k) N, F_2 = (15j – 10k) N, and F_3 = (-5k) N. Find the resultant (net) force and its magnitude of the forces. A. 20i + 45j – 5k, 15N
B. 3i – 15j + 15k, 21N C. 20i – 15j, 25 N D. 3i – 45k, 31N

4. Given that a 6 kg mass hanging from a rope is accelerated upward at 3 m/s². What is the tension in the rope? A. 18 N B. 76.8 N 176.4 N 29.4 N

5. Motion is ---------- A. change with time and distance B. momentum change with time C. position change with time D. All of the above.

6. The fundamental laws of mechanics was propounded and established by? A. Sir. Galilean B. Lorentz C. Albert Einstein D. Sir Isaac Newton

7. All of these are motion's type EXCEPT---- A. Projectile B. Rotational C. Relative D. Gravitational

8. Impulse is defined---------- and, measured in SI unit of _____ A. Product of force and time, and in kgms^{-1} B. Product of momentum and time, and in Ns C. Product of acceleration and velocity, and in Ns^{-1} D. Product of force and time, and in Ns

9. The dimensions for the momentum, surface tension and pressure are respectively
A. $ML^{-1}T^{-2}$, ML^2T^{-3} and MLT^{-2} B. MLT^{-1}, MT^{-2} and $ML^{-1}T^{-2}$ C. ML^2T^2, MLT^{-2} and MLT D. $ML^{-1}T^{-2}$, $ML^{-2}T^2$ and MLT

10. The dimension of the angular linear momentum is A. ML^2T^{-1} B. $M^{-1}L^{-1}T^{-1}$ C. MLT^{-1} D. MLT^{-2}

11. A force is given by $F = at + bt^2$, where t is the time. The dimensions of a and b are
A. MLT^{-4} and MLT B. MLT^{-3} and MLT^0 C. MLT^{-3} and MLT^{-4} D. MLT^{-3} and MLT^0

12. Find the angle between two vectors $2i - 6j + 3k$ and $-3i + 2j + 6k$. A. 30° B. 0°
C. 90° D. 45°

13. A 600N object is to be given an acceleration of 0.70 m/s². How large an unbalanced force must act on it? A. 53 N B. 50 N C. 43 N D. 40N

14. Calculate the mass of the Earth, assuming it to be a sphere of radius 6370 Km
A. 5.97×10^{24} kg B. 3.68×10^{24} kg C. 4.98×10^{24} kg D. 2.86×10^{24} kg

15. The Earth's radius is about 6370 Km. An Object has a mass of 20 Kg is taken to a height of 160 Km above the Earth's surface. What is the object mass at his height?
A. 25 kg B. 20 kg C. 30 kg D. 35 kg

16. The radius of the Earth is about 6370 km, while that of Mars is 3440 km. If an object weighs 200 N on the Earth, What would be the acceleration due to gravity, on Mars? The Mass of Mars is 0.11 of the Earth. A. 55N, 3. 4 m/s B. 45N, 4.0 m/s C. 65N, 4.2 m/s D. 75N, 3.7 m/s

17. A wheel of mass 2 kg having practically all the mass concentrated along the circumference of a circle of radius 20 cm is rotating on its axis with an angular velocity of 100 rad/s. The rotational kinetic energy of the wheel is? A. 4 J B. 70 J C. 400 J D. 800 J

18. A gas sample of argon, maintained at constant temperature, occupies a volume of 500 L at 4.00 atm. What is the new volume if the pressure were charged to 8 atm?
A. 500 L B. 250 L C. 125 L D. 62.5 L

19. Which of the following statements is **wrong** in consideration of molecular packing among three states of matter? A. Gas molecules are packed loosely B. Solid molecules are packed as closely together as possible C. Liquid molecules are in-between the gas and solid molecules. D. All of the above statements are correct.

20. In defining Charle's law the volume is directly proportional to, A. temperature B. pressure C. moles D. atoms

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA.
DEPARTMENT OF PHYSICAL SCIENCES.
GENERAL PHYSICS I – MID SEMESTER EXAMINATION, 2022/2023 ACADEMIC SESSION

Time Allowed – 20 minutes

Instructions: Shade the only correct answer to the boxes provided below. All workings must be done at the reverse side of your question paper and there is no sharing of CALCULATOR or any WRITING MATERIAL.

	1	2.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A																				
B																				
C																				
D																				

1. Given that a person stands in an elevator while holding a box. If the mass of the box is 0.470 kg, but weighing the box with a scale in the elevator, it reads 3.25 N. Determine the magnitude and direction of the net force of the box.
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OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY (OAUSTECH), OKITIPUPA, NIGERIA

SCHOOL OF SCIENCE

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND SEMESTER EXAMINATIONS, 2022/2023 ACADEMIC SESSION

BIO 112/102: GENERAL BIOLOGY II — TIME ALLOWED: 1 Hour

INSTRUCTION: Answer all and shade the correct option in box provided below

Name..... Matric.Numb..... Programme.....

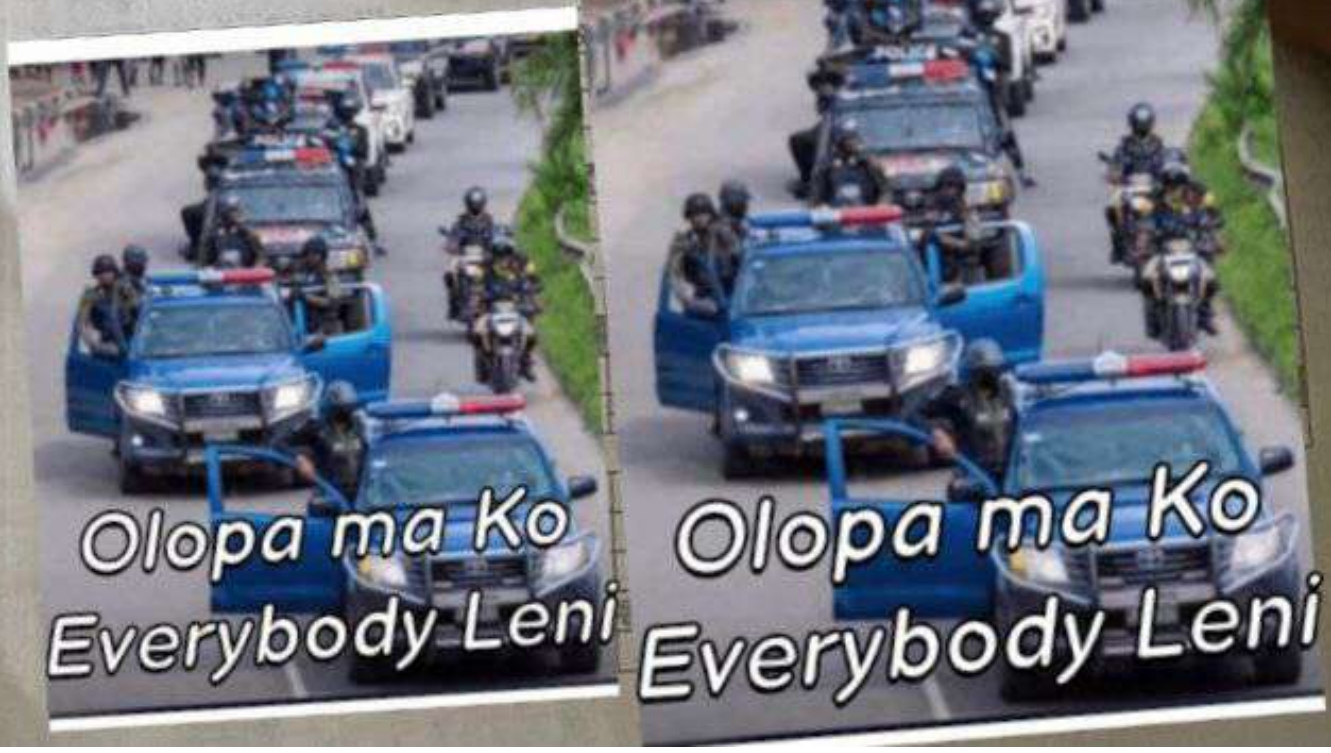
1. Platyhelminths are commonly called (A) Roundworms (B) Scaleworms (C) Flatworms (D) Flukes.
2. Which of these phyla is most tolerant of environmental extremes (A) Rotifera (B) Annelida (C) Platyhelminth (D) Pisces.
3. Organisms that can tolerate a wide range of environmental salinity are said to be (A) Stenohaline (B) Monohaline (C) Polyhaline (D) Euryhaline.
4. ..... is the most familiar oligochaeta (A) *Stylaria* (B) *Lumbricus terrestris* (C) *Ascaris lumbricoides* (D) *Aeolosoma.*
5. Which of the following does not represent the ecological adaptation of platyhelminths? (A) Suckers (B) Hooks (C) Lines (D) Soft skin.
6. ..... is the most common type of reproduction in rotifera (A) Parthenogenesis (B) Paedogenesis (C) Meiosis (D) Fragmentation.
7. ..... represents the class of Annelids that has two morphological forms (A) Hirudinida (B) Polychaeta (C) Monochaeta (D) Oligochaeta.
8. The multiplication of the larval form of an organism by asexual means is termed (A) Paedogenesis (B) Neoteny (C) Paedomorphosis (D) Metamorphosis.
9. Which of the following aquatic environments can Porifera be found? (a) Brackish water (b) Marine water (c) Fresh water (d) All of the above.
10. All adult sponges are free-swimmers (a) True (b) False (c) No of the above (d) All of the above.
11. The embryos of Porifera are sessile (a) True (b) False (c) True/False (d) None of the above.
12. Which of these is regarded as the most primitive metezoan (a) Amoeba (b) Protozoa (c) Scypha (d) Multicullular.
13. The flattened and overlapping cells that constitute the outer layer of a sponge are called (a) Pinacoderm (b) Pinacocytes (c) Membrane (d) All of the above.
14. -------- are eukaryotic microorganisms that are typically single-celled (a) Protist (b) Annelida (c) Porifera (d) None of the above.
15. --------- are regarded as ancestor of all multicellular eukaryotic organisms (a) Monera (b) Prokaryotic (c) Protist (d) Animal.
16. 8. Binary fission is the division of the parent body into two equal daughter individuals by --------- (a) Budding (b) Mitosis (c) Spore formation (d) all of the above.
17. ---------- is the type of protist asexual reproduction that have some sort of covering to withstand unfavourable conditions (a) Amoeba (b) Spore-formation (c) Budding (d) Euglena.
18. The type of protist sexual reproduction where large non-motile gametes are fertilized by small motile gametes are called--------- (a) Anisogamy (b) Conjugation (c) Oogamy (d) All of the above.
19. -------- is the temporary union of two individuals to exchange their haploid pronuclear to form a zygote nucleus (a) Unionist (b) Syngamy (c) Conjugation (d) Isogamy.
20. Sponges are exclusively filter and suspension feeders (a) True (b) False (c) all of the above (d) None.
21. -------- are highly vacuolated, flagellated cells that drive water through the canal system of a sponge (a) Porocytes (b) Choanocytes (c) Ostium (d) Ostia.
22. ---------- are responsible for phagocytosis and pinocytosis of small organic particles and protein molecules in Porifera (a) Pinacoderm (b) Pinacocytes (c) Choanocytes (d) Sponge.
23. A thin or massive gelatinous lay[illegible]en outer and inner layers of a sponge [illegible]ddle layer (b) Mesoderm (c) Mesohyl[illegible]
24. ---------- are large, highly motile [illegible] capable of differentiating and giving [illegible] of the other cell types (a)Pinacocytes [illegible] Archaeocytes (d) all of the above.
25. The type of cell found in sponges that play major [illegible] digestion and food transport is (a) Mycocytes [illegible] Pinocytes (c) Archaeocytes (d) None of the above.
26. The principal opening to the sponge body is exhalent and not a mouth (a) True (b) False (c) True/ False (d) None of the above.
27. Rotifers derive their name from their characteristic (A) Corona (B) Stylet (C) Shape (D) Lorica.
28. ..... is not a parasitic platyhelminth (A) Turbellaria (B) Monogenea (C) Trematoda (D) Cestoda
29. Which of these is not a trematode? (A) *Schistosoma* (B) *Fasciola* (C) *Clonorchis* (D) *Taenia.*
30. One of the following organisms is hermaphroditic but practices cross-fertilization during copulation (A) Leech (B) Fish (C) Snail (D) *Lumbricus.*
31. Annelids are sometimes called ..... (A) Glow worms (B) Ringworms (C) Bristle worms (D) Tapeworms.

32. A phylum without a single unique characteristic is said to exhibit (A) Polymorphism (B) Phylogenetic (C) Synapomorphy (D) Monomorphism.
33. The bodies of annelids are externally marked by circular rings called (A) Metameres (B) Annuli (C) Setae (D) Chitin.
34. What seems to correspond to the digestive sac of other metazoans is the body cavity of sponges called------ (a) Spongocoel (b) Atrium (c) All of the above (d) Osculum.
35. Leucosolenia is an example of ------ grade of sponge structure (a) Syconoid (b) Pinacoderm (c) Asconoid (d) Sycon.
36. Which of the following Turbellaria has a three-branched intestine? (A) Acoela (B) Tricladida (C) Polycladida (D) Tri-acoela.
37. One of the following is used in regeneration experiment (A) Dugesia (B) Leech (C) *Philodina* (D) Cyclostome.
38. The phylum Rotifera consist of all but one of the following classes (A) Seisonidea (B) Bdelloidea (C) Monogonoidea (D) Monogononta.
39. Flatworms were considered to have probably evolved during the ....., period (A) Proterozoic (B) Mesozoic (C) Paleozoic (D) Cenozoic.
40. The linear series of reproductive units in cestodes is known as (A) Scolex (B) Placenta (C) Hook (D) Proglottid.
41. The name 'chordate' comes from which of the following synapomorphies (a) Endostyle (b) Thyroid (c) Notochord (d) None of the above.
42. The type of locomotion commonly found in *Globigerina* is ----- (a) Pseudopodia (b) Pseudopod (c) Pseudopodium (d) Reticulopodia.
43. ------ is the complete fusion of two gametes to produce diploid zygote (a) Symbiosis (b) Symbiont (c) Syngamy (d) None of the above.
44. ------ is the type of locomotion found in Dinoflagellates (a) Ciliary locomotion (b) Wriggling locomotion (c) Flagellar Locomotion (d) All of the above.
45. ------ plays a significant role in chordate structure and movement (a) Coelom (b) Post-anal tail (c) Notochord (d) Fluid.
46. ------ is not an example of craniate (a) Tilapia (b) Salamander (c) Shark (d) None of the above.
47. ------- provide molecular means of reliably distinguishing chordates from all other metazoan (a) Cyclophilin-like protein (b) Mitochondrial inner membrane protease (c) All of the above (d) None of the above.
48. ----- is not an example of chordate (a) Toad (b) Frog (c) Sea squirts (d) None of the above.
49. The following phyla are broadly group as blastocoelomata except (a) Entoprocta (b) Gastrotricha (c) Platyhelminthes (d) Rotifera.
50. ----- is an example of cephalochordate (a) Jelly fish (b) Salps (c) Lancelets (d) Toad.

[redacted]

Matric.Number...[redacted]

Instruction: SHADE



OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF CHEMICAL SCIENCES
MID SEMESTER TEST 2022/2023 ACADEMIC SESSION

CHM 112: GENERAL CHEMISTRY II
Time Allowed: 25 Minutes Unit: 3
INSTRUCTION: ANSWER ALL QUESTIONS

Name:
Matric number:
Department:
Programme:

1. Bromine test is done to detect _____. (a)Carbohydrates (b)Unsaturation (c)Carbonyls (d) Amides
2. Aromatic alcohols can be identified by which test? (a)Dinitrophenyl Hydrazine test (b) Baeyer test (c)Natural ferric chloride test (d)Ring test
3.Which is not a test for detection of carbonyl compounds? (a) Dinitrophenylhydrazine (b)Mollsch test (c)Schiff test (d)Tollen test
4. Which one is not a test for detection of amine? (a)Diazotization test (b) Nitrous acid test (c) Lucas test (d)Carbylamine test
5. Which one is not a test for detection of carbohydrates? (a)Chloroform test (b)Molisch test (c)Iodine test (d)Charring with sulfuric acid
6. Which one is a test for detection of phenols? (a)Mollsch test (b)Ferric chloride test (c)Benedict test (d)Conc. H_2SO_4
7.Formation of oily drops by treating organic compound with soda lime indicates _____ (a)Carboxylic acids. (b)Phenols (c)Amides (d)Anilides
8. Alkynes cannot be produced from the following compound (a) ketones (b) alcohol (c) aldehydes (d) none of the above
9. The transformation into carboxylic acid of alkynes takes place with the help of -- (a) potassium reagent (b) potassium permangnate (c) potassium dichromate (d) potassium chloride
10. Which of the following alkynes is used for rocket fuel? (a) ethyne (b) propyne (c) Butyne (d) pentyne
11. Primary alcohol among the compound is---------- (a) $CH_3CH_2CH_2OH$ (b) CH_3CHOCH_3 (c) $CH_3CH_2CH_3O$ (d) CH_3OCH_3
12. Which of the following is the general formula for alcohol? (a) $CnH_{2n+1}OH$ (b) $CnH_{2+1}COOH$ (c) CnH_{2n-2} (d) CnH2n
13. The secondary amine among options (a) to (d) is ------- ------- (a) $CH_3CH_2NH_2$ (b) CH_3CH_2NH (c) $CH_3CH_2NH_2$ (d) $CH_3CH_2NCH_3$
14. What is the functional group of carboxylic acid (a) OH (b) COOH (c) CO (d) =
15. Alkali metals belongs to;------ (a) f-block (b)d-block (c) p-block (d) s-block
16. Ionization Energy of group I elements ------ down the group (a) increases (b) decreases (c) constant (d) none of the above
17. The hydride of Germanium is (a) Gerlanes (b)Silanes (c) Germanes(d) none of the above.
18.The electronic configuration of C is (a) $1s^2 2s^1 2p^2$ (b) $[Ne]3s^2 3p^2$ (c) $[Ar]3d^{10} 4s^1 4p^2$ (d) none of the above
19. d-block elements has ---------- oxidation state (a) +1 (b)+2 (c) variable (d) +3
20. The solubilities of the hydroxides of group II elements in water follow the order: (a)$Be(OH)_2 < Mg(OH)_2 < Ca(OH)_2$ (b) $Mg(OH)_2 < Be(OH)_2 < Ca(OH)_2$ (c) $Ca(OH)_2 < Mg(OH)_2 < Be(OH)_2$ (d) $Ca(OH)_2 < Be(OH)_2 < Mg(OH)_2$

Name:
Matric number:
Department:
Programme:

INSTRUCTION: TICK YOUR SHEET FOR THE CORRECT ANSWERS

	A	B	C	D		A	B	C
1					11			
2					12			
3					13			
4					14			
5					15			
6					16			
7					17			
8					18			
9					19			
10					20			

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF CHEMICAL SCIENCES (BIOCHEMISTRY PROGRAMME)
FIRST SEMESTER EXAMINATIONS 2019/2020 SESSION
BCH 201: General Biochemistry I Unit: 3

Time allowed: 2hrs

INSTRUCTION: Attempt All Questions in Section A and Any Four (4) from Section B

Section A

1. Which of the following is a trace element? a) carbon b) Oxygen c) Nitrogen d) Iodine
2. Which of the following is **not** an organic compound present in the cell?
   a) Carbohydrates b) Proteins c) Magnesium d) Lipids
3. The free energy change, ΔG
   a) Is directly proportional to the standard free energy change, ΔG
   b) Is equal to zero at equilibrium
   c) Can only be calculated when the reactants and products are present at 1mol/1 concentrations
   d) Is equal to $-RT \ln keq$
4. Under standard conditions
   a) The free energy change ΔG°, is equal to 0
   b) The standard free energy change ΔG, is equal to 0
   c) The free energy change, ΔG°, is equal to the standard free energy change, ΔG°
   d) Keq is equal to 1
5. Standard free energy (ΔG°) of hydrolysis of ATP to ADP + Pi is
   (a) –49.3 KJ/mol (b) –4.93 KJ/mol (c) –30.5 KJ/mol (d) –20.9 KJ/mol
6. Rudolf Virchow believed that cells come from pre-existing cells.
7. Prokaryote type of cell lacks definite nucleus
8. Eukaryotic cells store genetic information in the Nucleus
9. Tissue is the group of similar cells carrying out similar functions
10. Buffers consist of weak acid and Conjugate base
11. Solution with pH of 8 can be regarded as .....
12. Calculate the pH of a solution with $[H^+]$ of 10^{-5}M is
13. State the major objective of biochemistry
14. List 3 organs used to study biochemical processes
15. Mitochondrion is the sole organelle for energy production in prokaryotic cell. Untrue/ Unfalse?
16. Separation of tissue homogenate using centrifuge form an upper layer called Supernathal
17. What is the major function of the nucleus? _____.
18. Water is described as the universal solvent
19. Water has a crystal structure which is hexagonal
20. A substance is to be amphoteric when act like acid or base

32. All of the following are isomers of stereoisomers except, (a) Enantiomers (b) Diastereomers (c) Constitutional isomers (d) Cis-trans isomers

33. An expression of this kind $v = k[A]^x[B]^y[C]...^n$ in chemical kinetics is called (a) Rate constant (b) Reaction order (c) Arrhenius model (d) Rate law

32. Elementary reactions involves all of the following steps except (a) Unimolecular step (b) Bimolecular step (c) Termolecular step (d) Polymolecular step

33. Molecules that are superimposable on their mirror image is called (a) Achiral (b) Chiral (c) Ciral (d) None of the above

34. Identify the correct unit of rate constant for typical second order reaction (a) $mol^{-1}dm^3s^{-1}$ (b) mol $dm^{-3}s^{-1}$ (c) $(mol\ dm^{-3})^{-1}s^{-1}$ (d) $L\ mol^{-1}s^{-1}$

35. The number of moles of each reactant and product appearing in a reaction equation is referred to as (a) Reaction coefficient (b) Molarity (c) Stoichiometric coefficient (d) Normality

36. Dextrorotatory and laevorotatory are examples of (a) Optical activity (b) Molecular activity (c) Racemic activity (d) None of the above

37. An asymmetrically substituted carbon atom is a called (a) Actural centre (b) Stereogenic centre (c) Chiral centre (d) None of the above

38. What is the other name for acyclic compounds? (a) Aliphatic (b) Aromatic (c) heterocyclic (d) Alicyclic

39. The successive members of a homologous series differ by an unit of (a) $-CH_2$ (b) CH_2CH_2 (c) $-CH_2$ (d) $-CH_2CH_3$

40. Which of these is not an aliphatic compound? (a) Acetic acid (b) Acetaldehyde (c) Ethane (d) Tetrahydrofuran

41. Pick out the option that is not a functional group from the following (a) Hydroxyl group (b) Benzene group (c) Aldehyde group (d) Carboxylic acid group

42. Carbon and hydrogen are detected by heating the compound with which of the following? (a) Copper (II)oxide (b) Iron(II)oxide (c) Iron(III)oxide (d) Copper(I)oxide

43. Which compound gets precipitated in the detection of carbon and hydrogen? (a) Copper (b) Carbon dioxide (c) Calcium carbonate (d) Copper sulphate

44. Identify the element that cannot be detected by Lassaigne's test. (a) Nitrogen (b) Fluorine (c) Sulfur (d) Phosphorous

45. What is Lassaigne's test extract called? (a) Fusion (b) Sodium fusion (c) Lassaigne (d) Sodium

45. In the test for nitrogen, the sodium fusion extract is acidified with which of the following? (a) Dilute sulphuric acid (b) Dilute hydrochloric acid (c) Concentrated hydrochloric acid (d) Concentrated trioxonitric acid

47. What is the colour of the precipitate obtained in the test for sulphur? (a) Violet (b) Black (c) Violet (d) Blue

48. An X colour precipitate, which is Y in ammonium hydroxide indicates the presence of chlorine. Identify X and Y. (a) X = yellowish, Y = soluble (b) X = yellow, Y = insoluble (c) X = white, Y = insoluble (d) X = white, Y = soluble

49. Which is the oxidising agent used in the test for phosphorous? (a) Hydrogen Peroxide (b) Potassium nitrate (c) Sodium peroxide (d) Nitric acid

50. Which is the most suitable carrier gas in gas chromatography? (a) Helium (b) Nitrogen (c) Oxygen (d) Carbon dioxide

51. The general formula for alcohol is (a) $C_nH_{2n+1}OH$ (b)$C_nH_{2n+2}OH$ (c)$C_nH_{2n}OH$ (d) C_nHOH

52. Which of the following represents tertiary alcohol? (a) R_3COH (b)RCH_2OH (c)R_2CHOH (d)CH_3CH_2OH

53.Which of the following is not a precursor of preparing alcohol? (a) Alkenes (b)Ester (c)Carbonyl compound (d)PCB

54. ..... is the product of the reaction between an alkanol and an alkanoic acid. (a) Carboxylic acid (b) Fatty acid (c) Alkanoates (d) Alkanones

55. Oxidation of aldehydes yield ..... (a) alkanols (b) alkanoates (c) Alkanes (d) Alkanoic acids

56. As we move across the period, the electronegativity (a) decreases (b) increases (c) remains same (d) becomes zero

57. Elements which have properties of both metals and non-metals are called ..... (a) amorphous (b) crystalline (c) metalloids (d) metals.

58. Reduction of alkanones results in ..... (a) 1° alcohols (b) 2° alcohols (c) 3° alcohols (d) alkanoic acids

59. Halogens react with metals to form ..... (a) Halides (b)Oxides (c) Halogens (d) Alkyl halides

60. If a substance breaks easily, it is said to be ..... (a) magnetic (b) conductive (c) brittle (d) ductile

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY

(OAUSTECH), OKITIPUPA

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND SEMESTER EXAMINATION 2022/2023 ACADEMIC SESSION

COURSE TITLE: MICROBIAL ECOLOGY
COURSE CODE: MCB 204 TIME ALLOWED: 2 HOURS

INSTRUCTIONS: Answer Any THREE (3) questions.

1. Briefly explain the following terms
(A) Commensalism (B) Mutualism (C) Symbiosis (D) Parasitism (E) Ecology (F) Infection
(G) Pathogen (H) Disease (I) Community

2. (A) With a well labelled annotated diagram, describe the energy conversion process in a habitat.
(B) What are the factors leading to antibiotic resistance in man?
(C) Explain briefly how pathogens leave human bodies

3. In a tabular form, describe the various types of microbial interactions in an ecosystem under the following headings

(i) Type of interactions (ii) Nature of Interaction (iii) Beneficial or Harmful (iv) Example & Explanation

Type of Interaction	Nature of Interaction	Beneficial or Harmful	Example and explanations of the interaction

4. Highlight the direct modes of transmission of pathogens in man.

5. Using schematic flow, explain the feeding methods in an ecosystem.

Table A.5 Chi-squared distribution:* upper α critical coefficients, $\chi^2_{df,\alpha}$, where $\alpha = P(\chi^2_{df} > \chi^2_{df,\alpha})$

df	α									
	0.999	0.99	0.975	0.95	0.90	0.10	0.05	0.025	0.01	0.001
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	10.83
2	0.002	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	13.82
3	0.024	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.34	16.27
4	0.091	0.297	0.484	0.711	1.064	7.779	9.488	11.14	13.28	18.47
5	0.210	0.554	0.831	1.145	1.610	9.236	11.07	12.83	15.09	20.52
6	0.381	0.872	1.237	1.635	2.204	10.64	12.59	14.45	16.81	22.46
7	0.598	1.239	1.690	2.167	2.833	12.02	14.07	16.01	18.48	24.32
8	0.857	1.646	2.180	2.733	3.490	13.36	15.51	17.53	20.09	26.12
9	1.152	2.088	2.700	3.325	4.168	14.68	16.92	19.02	21.67	27.88
10	1.479	2.558	3.247	3.940	4.865	15.99	18.31	20.48	23.21	29.59
11	1.834	3.053	3.816	4.575	5.578	17.28	19.68	21.92	24.72	31.26
12	2.214	3.571	4.404	5.226	6.304	18.55	21.03	23.34	26.22	32.91
13	2.617	4.107	5.009	5.892	7.042	19.81	22.36	24.74	27.69	34.53
14	3.041	4.660	5.629	6.571	7.790	21.06	23.68	26.12	29.14	36.12
15	3.483	5.229	6.262	7.261	8.547	22.31	25.00	27.49	30.58	37.70
16	3.942	5.812	6.908	7.962	9.312	23.54	26.30	28.85	32.00	39.25
17	4.416	6.408	7.564	8.672	10.09	24.77	27.59	30.19	33.41	40.79
18	4.905	7.015	8.231	9.390	10.86	25.99	28.87	31.53	34.81	42.31
19	5.407	7.633	8.907	10.12	11.65	27.20	30.14	32.85	36.19	43.82
20	5.921	8.260	9.591	10.85	12.44	28.41	31.41	34.17	37.57	45.31
21	6.447	8.897	10.28	11.59	13.24	29.62	32.67	35.48	38.93	46.80
22	6.983	9.542	10.98	12.34	14.04	30.81	33.92	36.78	40.29	48.27
23	7.529	10.20	11.69	13.09	14.85	32.01	35.17	38.08	41.64	49.73
24	8.085	10.86	12.40	13.85	15.66	33.20	36.42	39.36	42.98	51.18
25	8.649	11.52	13.12	14.61	16.47	34.38	37.65	40.65	44.31	52.62
26	9.222	12.20	13.84	15.38	17.29	35.56	38.89	41.92	45.64	54.05
27	9.803	12.88	14.57	16.15	18.11	36.74	40.11	43.19	46.96	55.48
28	10.39	13.56	15.31	16.93	18.94	37.92	41.34	44.46	48.28	56.89
29	10.99	14.26	16.05	17.71	19.77	39.09	42.56	45.72	49.59	58.30
30	11.59	14.95	16.79	18.49	20.60	40.26	43.77	46.98	50.89	59.70
35	14.69	18.51	20.57	22.47	24.80	46.06	49.80	53.20	57.34	66.62
40	17.92	22.16	24.43	26.51	29.05	51.81	55.76	59.34	63.69	73.40
45	21.25	25.90	28.37	30.61	33.35	57.51	61.66	65.41	69.96	80.08
50	24.67	29.71	32.36	34.76	37.69	63.17	67.50	71.42	76.15	86.66
55	28.17	33.57	36.40	38.96	42.06	68.80	73.31	77.38	82.29	93.17
60	31.74	37.48	40.48	43.19	46.46	74.40	79.08	83.30	88.38	99.61
70	39.04	45.44	48.76	51.74	55.33	85.53	90.53	95.02	100.4	112.3
80	46.52	53.54	57.15	60.39	64.28	96.58	101.9	106.6	112.3	124.8
90	54.16	61.75	65.65	69.13	73.29	107.6	113.1	118.1	124.1	137.2
100	61.92	70.06	74.22	77.93	82.36	118.5	124.3	129.6	135.8	149.4
120	77.76	86.92	91.57	95.70	100.6	140.2	146.6	152.2	159.0	173.6

*Values were generated using the SAS statement "chi2 = cinv(1-alpha,df);"

11	12	13	14	15	16	17	18	19	20

1. All these amino acids possess chiral carbon except (a) glycine (b) cysteine (c) proline (d) alanine
2. Chemical compounds that have identical chemical formulae but differ in properties and the arrangement of atoms in the molecule are (a) Isomers (b) Epimers (c) Aldoses (d) Ketones
3. Fatty acids with double bonds at multiple sites are a) monounsaturated (b) polyunsaturated (c) multi unsaturated (d) saturated
4. Hypoxanthine is a typical example of --- (a) pyrimidines (b) purines (c) acid (d) water
5. A nucleoside contains a sugar and ----- (a) acid (b) nitrogen base (c) ribose (d) oxygen
6. A ..... is an atom that has four different groups bonded to it in such a manner that it has a non-superimposable mirror image (a) Chiral center (b) Loop (c) Aldehydes (d) Galactose
7. Purine consist of a six membered ring and ------ membered nitrogen containing ring (a) five (b) six (c) ten (d) four
8. One of the following is a feature of protein primary structure (a) pleated sheet b) linear c) 3D structure d) contain electrostatic interaction

Glycosidic bond (b)
(d) Phosphodiester
10. Oleic acid belongs
omega-3 (b) Omeg
10
11. Glycolipids are
presence of a)
nucleic acid (d)
12. All but one is s
(b) Palmitic ac
13. Which of thes
acids a) -OH
14. The main st
following ex
15. The followi
radical (b)
16. The empir
is (a) C_n
$C_{2n}HO_n$
17. The add
of a nuc
purines
18. Adeno
(a) nu
19. .....
Gly
Glu
20. M
ex
c

9. **Oligosaccharides** consist of short chains of monosaccharide units, or residues, joined by (a) Glycosidic bond (b) Peptide bond (c) Ester bond (d) Phosphodiester bond.
10. Oleic acid belongs to what class of fatty acids a) omega-3 (b) Omega-6 (c) Omega-9 (d) Omega-10
11. Glycolipids are characterized by unique presence of a) carbohydrate (b) protein (c) nucleic acid (d) -COOH
12. All but one is saturated fatty acids a) Lauric acid (b) Palmitic acid (c) Stearic acid (d) Oleic acid
13. Which of these is the functional group of fatty acids a) -OH (b) -CHO (c) -CO (d) -COOH
14. The main structure of amino acid contains the following except (a) NH_2 b) R-group c) OH d) H
15. The following are functions of protein except (a) radical (b) transport (c) storage (d) protection
16. The empirical formula for CARBOHYDRATES is (a) $C_nH_nO_n$ (b) $(CH_2O)_n$ (c) $(C_nHO)_n$ (D) $C_{2n}HO_n$
17. The addition of a phosphates to a sugar portion of a nucleoside results in a----- (a) nucleotide (b) purines (c) pyrimidines (d) base
18. Adenosine monophosphate is an example of a (a) nucleoside (b) nucleotide (c) uracil (d) liquid
19. ..... is an example of aldotriose (a) Glyceraldehyde (b) Dihydroxyacetone (c) Glucose (D) Fructose
20. Most amino acids possess the following features except ONE a) L-configuration b) chiral carbon c) naturally occurring d) identical alkyl group

27. The bond that joins nucleotides together is (a) Peptide bond (b) Ester bond (c) Glycosidic (d) phosphodiester bond
28. Presence of ..... is the difference between nucleoside and nucleotide (a) Phosphate group (b) Methyl group (c) Carbonyl group (d) Pyrimidine base
29. How many types of RNA exist? (a) 5 (b) 6 (c) 3 (d) 4
30. The PARENT nitrogenous bases in nucleic acid are (a) adenine and guanine (b) purine and pyrimidine (c) cytosine and uracil (d) purine, cytosine and pyrimidine

Matric number:

Name: **Dept:**

Shade appropriate box(es)

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1					7					13					19					25				
2					8					14					20					26				
3					9					15					21					27				
4					10					16					22					28				
5					11					17					23					29				
6					12					18					24					30				

Section B

Answer any three (3) questions

1 (a). Define the following: (i) Enantiomers (ii) Asymmetric carbon (iii) Anomeric carbon (iv) Epimers (4 marks)

(b). Draw the structure of the following oligosaccharides:

i. β-D-galactopyranosyl-(1→4)-β-D-glucopyranose (1 mark)
ii. α-D-glucopyranosyl β-D-fructofuranoside (1 mark)
iii. α-D-glucopyranosyl α-D-glucopyranoside (1 mark)

(c) Draw and name the straight chain structure of any 3 ketohexose sugar (3 mark)

2. Give the structure of amino acids with non-polar aliphatic side chain (10 marks)

3(a). Using schematic diagram, explain phosphodiester bond (3 marks)

(b). List the roles of nucleotides in cellular metabolism (2 marks)

(c). Write short notes on characteristic component of nucleotides (3 marks)

(d). Draw the structure of cytosine and thymine (2 marks)

4(a). List five classes of lipids (5 marks)

(b). Mention five function of lipids (5 marks)

Epimers are monosaccharides or Compounds that only differ in other Carbon group.

MCB 1191009

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF CHEMICAL SCIENCES
BIOCHEMISTRY PROGRAMME
BCH 202: GENERAL BIOCHEMISTRY II
SECOND SEMESTER, 2022/ 2023 SESSION UNITS-2

SECTION A 2 hours
Answer all questions

1. The different types of amino acids differ from each other in their (a) amino end (b) proton (c) alkyl group (d) carboxyl end
2. Protein structure that defines the linear sequence of amino acid in a protein is called (a) quaternary (b) secondary (c) tertiary (d) primary
3. Peptides containing amino acids below 20 are referred to as (a) polypeptides (b) oligopeptides (c) hexapeptides (d) dipeptide
4. One of the following best describe the protein that aid in trafficking of ions and molecules across the cell (a) protective protein (b) enzyme (c) transport protein (d) structural protein
5. Which of the following is a polar uncharged amino acid (a) alanine (b) threonine (c) isoleucine (d) aspartate
6. All the following are properties of protein except (a) storage protein (b) molecular weight (c) denaturation (d) solubility
7. Which of the following is a basic amino acid (a) alanine (b) arginine (c) isoleucine (d) threonine
8. Water insoluble proteins are also referred to as (a) fatty protein (b) fibrous protein (c) protective protein (d) globular protein
9. Lipids are naturally occurring molecules from plants or animals that are soluble in---------- a. non polar organic solvents b. polar solvents c. water d. grease
10. -------- are composed of mono-, di-, and tri-substituted glycerol a. water b. glycerol lipids c. phospholipids d. fatty acids
11. Glycerophospholipids, usually referred to as-------- a. Phospholipids b. Fatty acids c. Sphingolipids d. Sphingoid
12. ---------- are an important component of membrane lipids. A. Sterols b. Spingomyelins c. Terpene d. Alcohols
13. Lipids are ------- in nature a. Amphiphilic b. Soluble c Insoluble d. Acidic
14. Micelles are spherical..... structure a. amphiphilic b. hard c. soft d. green
15. Waxes are grouped into ..... pattern waxes. A. 3 b. 4 c. 7 d. 8
16. Prostaglandins are group of physiological active lipids called ..... a. Eicosanoids b. polar c. non polar d. insoluble
17. The empirical formula of most carbohydrates is ..... (a) CH_2O (b) $(CH_2O)_n$ (c) $(CHO)_n$ d) $(C_2HO)_n$
18. All the following are examples of 5-carbon monosaccharides except ..... (a) D-Erythrose (b) D-Ribose (c) D-Arabinose (d) D-Lyxose
19. A carbohydrate with 3 chiral carbons will have how many stereoisomers? (a) 2 (b) 6 (c) 8 (d) 10
20. The characteristic linkage that joins two or more monosaccharide subunits is called ..... (a) Hydrogen bond (b) Peptide bond (c) Phosphodiester bond (d) O-glycosidic bond.
21. ..... are polyhydroxy aldehydes or ketones, or substances that yield such compounds on hydrolysis. (a) Fatty acids (b) Amino acids (c) Carbohydrates (d) Nucleic acids.
22. The most abundant monosaccharide in nature is ..... (a) Sucrose (b) Dextrose (c) Arabinose (d) Ribose
23. ..... is an example of heteropolysaccharide present in the extracellular matrix of the animal tissue. (a) Glycosaminoglycans (b) Peptidoglycans (c) Cellulose (d) Chitin
24. Nucleotides have ..... characteristic components (a) 2 (b) 3 (c) 4 (d) 5
25. The pentose sugar in DNA is (a) Deoxyribose (b) Deoxyribulose (c) Ribose (d) Xylulose
26. The pyrimidine base that is present in both DNA and RNA (a) Cytosine (b) Thymine (c) Uracil (d) Adenine

20. Which of the nucleic acids is double stranded? (a) DNA (b) RNA (c) Nucleotide (d) Nucleoside
21. The smallest monosaccharide having furanose ring structure is (a) A. Erythrose (b) Ribose (c) Glucose (d) Fructose
22. Which of the following is an epimeric pair? (a) Glucose and fructose (b) Glucose and galactose (c) Galactose and mannose (d) Lactose and maltose
23. α-Glycosidic bond is present in (a) Lactose (b) Maltose (c) Sucrose (d) All of these
24. Lipids are naturally occurring molecules from plants or animals that are soluble in-- ---------. (a) non polar organic solvents (b) polar solvents (c) water (d) Grease
25. --------- are composed of mono-, di-, and tri-substituted glycerol (a) water (b) glycerol lipids (c) phospholipids (d) fatty acids
26. Glycerophospholipids, usually referred to as-------- (a) Phospholipids (b) Fatty acids (c) Sphingolipids (d) Sphingoid
27. Peptides containing amino acids > 50 are referred to as (a) Dipeptides (b) Oligopeptides (c) Pentapeptides (d) Polypeptides
28. All common amino acids differ from each other in their (a) amino end (b) proton (c) alkyl group (d) carboxy end
29. Protein structure that defines the linear sequence of amino acid in a protein is called (a) Quaternary (b) Secondary (c) Tertiary (d) Primary
30. The simplest monosaccharide is ------- (a) glucose (b) fructose (c) glyceraldehyde (d) Starch

and Dihydroxyaceto

SECTION B (Theory): Answer any six (6) questions.

1. Mention five classes of lipids 5 mks
2. (a) Describe the glycosidation (glycoside formation) reaction of carbohydrates 3 mks
   (b) Draw the structure of alpha-glucose and beta-glucose 2 mks
3. Draw the structure of O-α-D-Glucopyranosyl-(1→6)-α-D-glucopyranose, what is the common name of this disaccharide? 5 mks
4. Draw the structures of Stearic and Linoleic Acid 5 mks
5. (a) With respect to their solubility nature, differentiate between fibrous and globular protein 2 mks
   (b) List the properties of protein 3 mks
6. Using a schematic diagram, explain the phosphodiester bond 5 mks
7. (a) Highlight the difference between nucleoside ad nucleotide 3 mks
   (b) Write two examples of pyrimidine found in RNA 2 mks

Cytosine & Uracil.

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCES

DEPARTMENT OF CHEMICAL SCIENCES, BIOCHEMISTRY PROGRAMME
SECOND SEMESTER EXAMINATIONS 2020/2021 ACADEMIC SESSION
BCH 202: GENERAL BIOCHEMISTRY II UNIT: 3
Time allowed: 2½ Hours

INSTRUCTION: Answer all questions in section A and any six (6) in section B

Section A: Answer all

1. ---------- differentiates nucleotide from nucleoside (a) Purine (b) Pyrimidine (c) Phosphate group (d) Pentose sugars
2. The hydrogen bond that pairs Adenine and Thymine together in DNA are ---------- in number(s) (a) 2 (b) 3 (c) 1 (d) 5
3. Reducing sugars undergo oxidation with Benediet's reagent to become ------- (a) hydroxyl group (b) carboxylic acid (c) water (d) oxygen
4. Lipids are ---------- in nature a. Amphiphilic b. Soluble c Insoluble d. Acidic
5. One of the following best describes the protein that aids in the trafficking of ions and molecules across the cell (a) protective protein (b) enzyme (c) transport protein (d) structural protein
6. Branching occurs in glycogen approximately after every A. Five glucose units B. Ten glucose units C. Fifteen glucose units D. Twenty glucose units
7. Number of stereoisomers of glucose is A. 4 B. 8 C. 16 D. None of these
8. The process by which genetic materials are transmitted from DNA to RNA is called (a) Central dogma (b) Translation (c) Transcription (d) Replication
9. Glycerophospholipids are usually referred to as -------- a. Phospholipids b. Fatty acids c. Sphingolipids d. Sphingoid
10. Which of the following is a ~~polar uncharged amino acid~~ (a) alanine (b) threonine (c) isoleucine (d) asparate
11. Which of the following is an aldotriose? (a) glucose (b) fructose (c) glyceraldehyde (d) aldehyde group
12. A chiral center in a carbohydrate structure is where (a) carbon is attached to hydrogen (b) carbon is attached to hydrogen and oxygen (c) carbon has a double bond (d) carbon is attached to four different substituents
13. The bond that joins two monosaccharides to form a disaccharide is called ...(a) Hydrogen bond (b) Peptide bond (c) Phosphodiester bond (d) O-glycosidic bond
14. Fatty acids without double bonds between individual carbon atoms are called ..... while those with at least one double bond in the fatty acid chain are called ..... (a) Saturated and Unsaturated (b) Single and Double (c) Monosaccharide and Disaccharide (d) Aldehydes and Ketones
15. The pentose sugar found in ribonucleotide is called ..... (a) D-ribose (b) D-ribulose (c) D-Arabinose (d) D-Xylose
16. Heterocyclic aromatic compounds in nucleic acids with two rings (a) Purine (b) Pyrimidine (c) Cytosine (d) Thymine
17. Mention the pyrimidines that are found in RNA (a) Adenine and Guanine (b) Cytosine and Uracil (c) Cytosine and Thymine (d) Uracil and Thymine
18. Name the pyrimidine that is specific for DNA (a) Adenine (b) Uracil (c) Cytosine (d) Thymine
19. The bond that joins two successive nucleotides together is called? (a) Glycosidic bond (b) Phosphodiester bond (c) Peptide bond (d) Ester bond

d. List and explain product life cycle.

e. List 5 Advantages of Entrepreneurship.

5a. Define creativity

b. List and explain 4 sources of innovation.

c. List 5 guidelines to a proposed business plan.

d. Define Franchising

e. Differentiate between Business men and Entrepreneur?

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY

FIRST SEMESTER EXAMINATION 2019/2020 SESSION

COURSE TITTLE: INTRODUCTION TO ENTREPRENEURIAL SKILL

CODE: GST 331

TIME: 2HOURS

INSTRUCTIONS:

Question 1 is compulsory for Candidates and any other 2

1a. List and explain 4 processes of Creativity.

b. List and explain 4 types of innovation.

c. List and explain 3 disadvantages of franchising.

d. briefly explain Maslow hierarchy of need theory.

e. Define Entrepreneurship.

2a. What is business plan?

b. List five forms of Business ownership.

c. List 5 sources of capital for Entrepreneur.

d. List and explain 4 Advantages of franchising.

e. What is Innovation?

3a. List 4 barriers to creativity and explain them.

b. State 3 importance of innovation and creativity to Entrepreneurs.

c. Define E-Marketing.

d. Define the terms: seller, buyer, customer and consumer.

e. Mention 5 Myths of Entrepreneurship and their Facts.

4a. List and explain 4 ways to generate creative idea.

b. List 4 Barriers to Innovation.

c. What is marketing?

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND SEMESTER EXAMINATIONS, 2022/2023 ACADEMIC SESSION

MCB 202 – INTRODUCTORY MICROBIOLOGY II **TIME ALLOWED:** 2 HOURS

Instruction: Answer **four (4)** questions in all with at least **One (1)** question from each section.

SECTION A

1a. What is microbial taxonomy?

1b. With the aid of diagram, name different forms of colony margin and colony elevation

2a. In a tabular form, explain the different types of algae

2b. Briefly describe the following: (i) Culture media (ii) Colony (iii) Ciliates (iv) Chemically defined medium

SECTION B

3a. Step-wisely outline with an equation, the expression of exponential growth of bacteria cell.

3b. An inoculation of 10^6 bacterial cells was introduced into a flask of culture medium and growth monitored. No change was seen for 18 minutes (the lag phase), then growth occurred rapidly. After a further 70 minutes, the population had increased to 4.11×10^7 cells. Using the formula derived in (3a.), determine the doubling time (T_d) of the culture.
Note: To obtain values of log2, multiply log10 values by 2.211

4a. Briefly discuss the following features of bacteria cell (i) ribosomes (ii) endospores (iii) cell wall

4b. Explain the following terminologies (i) monotrichous flagellum, (ii) amphitrichous flagellum, (iii) lophotrichous flagellum, and (iv) peritrichous flagellum

SECTION C

5a. Explain the term 'Sterilization'

5b. State the beneficial roles of microorganisms in (i) Agriculture (ii) Environmental Protection (iii) Food Production.

5c. List five (5) major groups of Chemicals Antimicrobial Agents that can be used as disinfectants.

6a. Define and explain the term 'disinfection'.

6b. List five (5) applied areas of research in microbiology and state what each area entails.

6c. List two fuels produced by microorganisms.

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA, NIGERIA
SCHOOL OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
SECOND SEMESTER EXAMINATIONS, 2022/2023 ACADEMIC SESSION

BIO 206: Statistics for Biological Sciences **Course unit: 3** **Time allowed: 2 Hours**

SECTION A: Answer two (2) questions only

1a. What is statistics (both in the singular and plural sense)?

b. A pharmaceutical company wishes to conduct a survey on 3,000 participants to assess the demand for a drug before it introduces a new product. Using Slovin's formula (at 95% and 99% confidence limits), what section (or sample) of the population is important to include in the survey.

c. What is the significance of statistics in our society today?

2a. It is important that a researcher should distinguish between **"primary and secondary data"** before collecting them. Explain the meaning of these terms, and discuss the dangers of using secondary data.

b. Differentiate between **response** and **explanatory** variable.

3a. Consider the following datasets: **Dataset 1:** 14, 12, 13
Dataset 2: 18, 12, 14

i. Which of these datasets is more precise?

ii. How can we ensure the reliability of our data?

b. In a study of colour preferences among 160 students in a biostatistics class, 60, 40, 35, and 25 students chose black, blue, yellow, and red colour, respectively. Using Chi-squared statistic (at 90% and 95% confidence limits), test whether the frequencies are due to chance or not.

SECTION B: Answer two (2) questions only; Question 4 is compulsory.

4a. List the types of measurement often encountered in statistics.

4b. The following scores (9, 11, 11, 11, 11, 13, 18, 20, 21, 21, 22, 23, 23, 23, 25, 26, 29, 30) were earned for continuous assessment (CA) by students in a biostatistics course. What type of measurement are the CA scores provided above? Justify your answer.

5a. Taken that each CA score in question 4b is a value of variable x, find the value of each of the following equations.

(i) $\sum x$ (ii) $\sum x^2$ (iii) $(\sum x)^2$ (iv) $\sum (x - 1)$ (v) $\sum (x^2 - x)$

5b. Use answers in question 5a to determine the following for the CA scores data.
(a) mean (b) population variance (c) sample standard deviation

6a. Develop a cumulative frequency distribution for the CA score data.

6b. Transform the CA score data into five (5) groups with cumulative frequency distribution.

mcb/OE/22/0371

ONDO STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY,
OKITIPUPA
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND SEMESTER EXAMINATION, 2022/2023 ACADEMIC SESSION.

MCB 208 – MYCOLOGY **TIME ALLOWED: 2 HRS**

Instruction: Answer Four (4) questions in all, Two (2) from each Section

SECTION A

1a. Use a well labeled and suitable diagram to describe sexual reproduction in the mold called *Rhizopus stolonifer*.

b. With the use of annotated diagram only, describe the following features of molds: (i). Septate hypha (ii). Haustorium (iii). Mycelium (iv). Coenocytic hypha

2a. Discuss comprehensively the various modes of asexual reproduction in fungi. Use diagram where necessary to complement your answers.

b. Mention four (4) ways of spore dispersal in fungi.

3a. Differentiate between filamentous fungi and non-filamentous fungi, hence give One (1) example of each.

b. Classify the following into large spores and small spores based on the size of the asexual spores produced. (i). Macroconidia (ii). Chlamydospores (iii). Microconidia (iv). Blastospores (v). Arthroconidia

SECTION B

4a. Explain the following:

i. Tinea ii. Mycotoxins

bi. With the aid of diagram only describe the chemical structures of four named mycotoxins.

ii. In which species of fungi are the toxins named in question (1a) above are found?

5. Describe the classes of the following fungi by "Domineering King Pharaoh Can Order Five Green Shirts":

i. *Rhizopus stolonifer*

ii. *Neurospora crassa*

6a. Briefly discuss Keratinophilic fungi.

b. Explain the clinical manifestations of the superficial mycoses.

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY

(OAUSTECH), OKITIPUPA

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND SEMESTER EXAMINATION 2020/2021 ACADEMIC SESSION

COURSE TITLE: GENERAL MICROBIOLOGY II

COURSE CODE: MCB 202 TIME ALLOWED: 2 HOURS

INSTRUCTIONS: Answer FOUR (4) questions in all with at least ONE question from each section.

SECTION A

1. (a) Write briefly on the following

   (i) Microscopy (ii) Resolution (iii) Resolving power (iv) Contrast (v) Magnification

   (b) List five (5) parts of compound light microscope and state their functions

2. Concisely highlight the steps in:

   (i) Gram staining

   (ii) Endospore staining

SECTION B

3. (a) Highlight the ways by which culture media can be classified and give one example of each.

   (b) Name and draw the types of colony margins and elevations.

4. (a) Write short notes on the following (i) Petri dish (ii) Chemically defined medium (iii) Pure culture technique (iv) Culture media (v) Phage typing.

   (b) (i) State the different that can be utilized bacterial enumeration

   (ii) State five methods of getting rid of microorganisms.

SECTION C

5(a) Describe the procedures for the establishment of microbiological purity.

(b) State the reasons for preserving cultures

(c) Outline at least four (4) methods of preservation of culture.

6(a) Briefly discuss the physical methods of sterilization

(b) List the characteristics of an ideal antimicrobial agent

SECTION B (Essay): Answer question 1 and any other four (4) questions

1a. State any 4 applications of biochemistry to plant
1b. List 3 organs used to study biochemical processes
1c. What was the contribution of Chargaff, Wilkins, Watson and Crick to the history of biochemistry
1d. State 3 scope of biochemistry that you know
1e. In the 20th century, what did Fredrick Hopkins and his associates developed? 5 mks
2. List and state the functions of 5 cell organelles 10 mks
3. a. Define the following (i) pH, (ii) Buffer
b. Calculate the pH of solution with $[H^+]$ of 1×10^{-7} M 10 mks
4. What is Biochemistry? Discuss 10 mks
5. Given the following data, calculate $\triangle G$ for this reaction and state whether it is spontaneous

$CH_3CH_2OH + H_2O \rightarrow CH_3COOH + H_2O$

$\triangle H = 495.2kJ$, $\triangle S = -136J/K$, $T = 298K$ 10 mks

6. Describe the law of mass action with appropriate equation and formula 10 mks

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY,
OKITIPUPA
SCHOOL OF SCIENCES

DEPARTMENT OF CHEMICAL SCIENCES, BIOCHEMISTRY PROGRAMME
FIRST SEMESTER EXAMINATION 2022/2023 ACADEMIC SESSION
BCH 201: GENERAL BIOCHEMISTRY I UNIT: 3
Time allowed: 2½ Hours

INSTRUCTION: Answer all questions in section A and any four (4) in section B

Section A: Answer all

1. Standard free energy (ΔG°) of hydrolysis of ATP to ADP + Pi is A. -49.3 kJ/mol B. -4.93 kJ/mol C. -30.5 kJ/mol D. -20.9 kJ/mol
2. Which of the following statement is correct about the free energy change, ΔG? A. is directly proportional to the standard free energy change B. is equal to zero at equilibrium C. Can only be calculated when the reactants and products are present at 1mol/l concentrations D. is equal to -RT in keq
3. Under standard conditions, ---------- A. The free energy change ΔG is equal to 0 B. The standard free energy change ΔG°, is equal to 0 C. The free energy change, ΔG, is equal to the standard free energy change, ΔG° D. keq is equal to 1
4. ------- allows the exchange of energy and matter A. system B. closed system C. open system D. surroundings
5. At equilibrium, free energy difference is A. 1 B. +1 C. -1 D. 0
6. The following are trace elements found in the cell except... A. Copper B. Iodine C. Ferum D. Nitrogen
7. The cellular element required for the formation of strong bone and teeth is... A. Mg B. Ca C. Fe D. Na
8. DNA replication and transcription occurs in which of these cell organelles? A. Nucleus B. Mitochondria C. Endoplasmic reticulum D. Golgi apparatus
9. Which of these cell organelles are also called microbodies? A. Nucleus B. Mitochondria C. Peroxisomes D. Golgi apparatus
10. A method of cell fractionation where organelles of different buoyant densities are separated on a density gradient is called... A. isopycnic centrifugation B. thin-layer chromatography C. SDS-PAGE electrophoresis D. dialysis
11. Acids are defined as ---------- A. proton acceptors B. proton donors C. neutron donors D. neutron protons
12. pH is defined as A. $-\log[H^+]$ B. $\log[H^+]$ C. $-\log[OH^-]$ D. $\log[OH^-]$
13. pH of a solution can be measured by A. pH meter B. litmus paper C. spectrophotometer D. a and b
14. Buffer systems consist of weak acid and ---------- A. base B. conjugate base C. proton donor D. alkali
15. For a precise neutral solution at 25 °C, the concentration of hydrogen ions is A. 1.0×10^{7} M B. 1.0×10^{7} M C. 1.0×10^{14} M D. 1.0×10^{-14} M

IKUOMOLA BLESSING TEMILOLA

MCB/2020/[redacted]

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA

SCHOOL OF SCIENCE

DEPARTMENT OF CHEMICAL SCIENCES

SECOND SEMESTER EXAMINATION

2020/2021 SESSION

CHM 102: GENERAL CHEMISTRY II

Time Allowed: 2Hrs Unit: 3

INSTRUCTION: ANSWER ALL QUESTIONS

1. Alkali [illegible] ——— block elements? (a) p- block (b) d- block (c) s- block (d) [illegible]-block
2. One of the following is a group containing alkaline earth metals (a) Mg, Ca, Sr, & Ba (b) Mg, Na, Sr, & Ba (c) Mg, K, Sr, & Ba (d) Mg, Li, Sr, & Ba
3. Group II elements has the oxidation state of——— (a) +1 (b) +2 (c) +3 (d) +4
4. The electronic configuration of Mg is ——— (a) [He] $3s^1$ (b) [Ne] $3s^2$ (c) [Ar] $3s^1$ (d) [Kr] $3s^2$
5. In group IV, ionization energy energy ——— down the group (a) increases (b) irregular (c) constant (d) decreases
6. The ionization energy of alkali metals ——— down the group (a) increases (b) decreases (c) [illegible] (d) constant
7. Alkaline earth elements are ——— elements a. group I b. group II c. group III d. group IV
8. Carbon and Silicon are non-metals while Ge is a ——— (a) metalloids (b) [illegible] (c) [illegible] (d) metalloids
9. The ionization energy of group IV elements ——— down the group (a) increases (b) decreases (c) irregular (d) constant
10. Catenation properties is exhibited by ——— (a) C (b) Si (c) Ge (d) Sn
11. Li react with nitrogen to form which of the nitrides ——— (a) Li_3N_2 (b) LiN_3 (c) Li_2N (d) Li_3N
12. The general formular Si_nH_{2n+2} represents group of compounds called ——— (a) Alkanes (b) Silanes (c) Germanes (d) Silanes
13. Transition elements are found in ——— of the periodic table (a) p - block (b) d- block (c) s-block (d) f-block
14. The d-block elements form ——— compounds (a) Colourless (b) coloured (c) white (d) none of the above
15. Two examples of Transition elements are ——— (a) Ni and [illegible] (b) Ni and [illegible] (c) Ni and Cu (d) Ni and C
16. Which of the following is not a reaction of alkanes? (a) Sulphonation reaction (b)Oxidation reaction (c)Polymerization reaction (d)substitution reaction
17. Which of the following is not a method of preparing alkene? (a)Dehydration reaction (b) Dehydro-halogenation reaction (c)Dehalogenation reaction (d)substitution reaction
18. The following reaction represents $CH_3CH_2OH \xrightarrow{H^+/150^{0C}} CH_2{=}CH_2 + H_2O$ (a) Dehydration reaction (b)Dehydro-halogenation reaction (c)Dehalogenation reaction (d)substitution reaction
19. Which of the following is a reaction of alkanes (a) Nitration reaction (b)Polymerization reaction (c)Addition reaction (d)Addition of a symmetrical reagent
20. Which of the following is not a reaction of alkenes? (a) Polymerization (b)Addition (c) Substitution (d) Ozonolysis
21. Which of the following analytical tools is not used to detect the presence of double bond in a molecule (a) UV (b)IR (c)NMR (d)GCP
22. Bromine in carbon tetrachloride decolorizes the following hydrocarbon excepts (a) Ethyne (b)Ethene (c) But-2-yne (d)Ethane
23. Which of the following is not a laboratory preparation of alkynes? (a) Calcium carbide and water (b)Elimination of halogen from α α β β - tetrahalides (c)Dehydrohalogenation of vicinal dihalides (d)[illegible]
24. Which of the following is not a chemical properties of alkynes? (a)Combustion (b)Addition (c)Polymerization (d)Double decomposition reaction
25. When terminal alkynes are passed into an ammoniacal solution of copper (I)chloride they give? (a) Red precipitate (b)White precipitate (c)Dark precipitate (d)black precipitate
26. The following reaction represents $3C_2H_2 \rightarrow C_6H_6$ (a) Addition reaction (b)polymerization reaction (c)Substitution reaction (d)Carbonization
27. When terminal alkynes are passed into silver nitrates solution they give (a) White precipitate (b) red precipitate (c) Blue precipitate (d) yellow precipitate
28. The sequence of steps in which a chemical process is broken down into is known as (a) Elementary (b) Molecular (c) Reaction (d) Kinetics
29. The sub-discipline of chemistry which involves the study of the relative spatial arrangement of atoms that form the structure of molecules and their manipulation is called (a) Enantiochemistry (b) Stereochemistry (c) Hydrochemistry (d) Petrochemistry.

30. Which of the following is not a chemical reaction? a. Shatteri ng glass with a baseball b. Corroding metal c. Fireworks exploding d. Lighting a match.

31. Give the number of protons in $^{31}_{15}X$. a. 15 b. 16 c. 31 d. 46

32. In the spectrum of hydrogen, which of these lines is not found in the infrared reg on a. Paschen b. Brackett c. Pfund d. Lyman

33. The equation: $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$ represents a ..... reaction a. neutralization b. precipitation c. combustion d. synthesis

34. The molecular mass of NaOH is a. 40 b. 64 c. 100 d. 58

35.....discovered the neutron. a. Dalton b. J. J. Thomson c. Faraday d. Chadwick

36. The formula for calculating the maximum number of electro ns that a shell can accommodate is.....a. 2n b. $2n^2$ c. $2n^3$ d. n

37. Which of the following is not correct? Stoichiometry is based on a. the law of conservation of mass b. the relative masses of atoms c. the amount of the mole d. sensitivity

38. A mole is the amount of a substance containing a. 6.02×10^{21} atoms b. 6.02×10^{25} atoms c. 6.02×10^{23} d. 6.02×10^{22} atoms

39. The expression mass/volume is a. molality b. density c. mole (d) molarity

40. The molar mass is also known as a. molecular weight b. density c. mole d. molarity

41. Which of the following is true about the compound SF_6? a. It is un-hybridised b. It is sp^3d^2 hybridized c. It is sp^3d hybridized d. sp

42. Given the following data: C = 66.7% H = 11.1%. Calculate the empirical formula of the compound (a). C_4H_6O (b). C_4H_4O (c). C_4H_9O (d). C_4H_8O

43. The hybridization of Boron atom in BCl_3 molecule is a. sp^3 b. sp c. sp^2 d. spd

44. How many grams of sodium nitrate, $NaNO_3$, must be used in order to prepare 0.5L of a 0.1M solution? a. 5.1g b.3.4g c.1.5g d.6.5g

45. Molarity is defined as a. No. of mole/kg of solvent b. No. of mole/litres of solvent c. No. of mole/kg of solute d. No. of mole/litres of solution

46. Molality is defined as a. No. of mole/kg of solvent b. No.of mole/litres of solvent c. No. of mole/kg of solute d. No. of mole/litres of solution

47. How many moles of hydrogen gas are in 27grams of hydrogen? a.13.5moles b.14.3moles c. 27moles d.15.3moles

48. How many carbon atoms are in 0.0022g ? a. 5.02×10^{21}C atoms b. 3.01×10^{19}C atoms c. 3.02×10^{22}C atoms d..2.02×10^{19}C atoms

49. The unit of rate constant for a first order reaction is determin ed as a. $mol^{-2}dm^2 s^{-1}$ b. $mol^{-1/2} dm^{3/2} s^{-1}$ c. s^{-1} d. $mol^{-1} dm^3 s^1$

50. An expression of this kind " $v = k [A]^a[B]^b[C]^c...$" in chemical kinetics is called a. Rate constant b. Reaction order c. Arrhenius model d. Rate law

51. All of the following are exam ples of thermodynamic processe s except a. Adiabatic process b. Thixiotropic process c. Isother mal process d. Isobaric process

52. A system which can exchang e heat but not mechanical work or matter is called a. Open system b. Closed system c. Thermally isolated system d. Mechanically isolated system

53. Calculate the ΔH value of the reaction: $HCl + NH_3 \rightarrow NH_4Cl$ (ΔH values for HCl is -92.30; NH_3 is -80.29; NH_4Cl is -314.4 all in unit of kJ/mol) a.141.8 kJ/mol b. 1411.8 kJ/mol c. 41.8 kJ/mol d. 41.81 kJ/mol

54. A reaction is said to be spont aneous when ΔG is a. positive b. zero c. negative d. Infinite

55. The amount of heat needed to increase the temperature of one mole of a substance by one degree is called a. Specific heat b. Heat capacity c. Specific heat capacity d. Molar heat capacity

56. Reaction whose rate is independent on reactant concentration is called a. First order b. Second order c. Zero order d. Third order

57. That specific portion of the universe that is being studied is called a. Surrounding b. Closed system c. Universe d. System

58. The number of moles of each reactant and product appearing in a reaction equation is referred to as a. Reaction coefficient b. Molarity c. Stoichiometric coefficient d. Normality

59. Which law states that the entropy of the universe increases? a. Second law of thermodynamics b. First law of thermodynamics c. Zeroth law of thermodynamics d. Third law of thermodynamics

60. The power a particular concentration of a reactant is raised to in a reaction is called a. Partial order b. Overall order c. Complex order d. Reaction order

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF CHEMICAL SCIENCES
FIRST SEMESTER EXAMINATION
2020/2021 ACADEMIC SESSION
CHM 101: GENERAL CHEMISTRY I
Time Allowed: 1 Hr Unit: 3
INSTRUCTION: ANSWER ALL QUESTIONS

Name: .....

Matric Number:

.....

Department.....

1. β^- radiations are simply a. protons b. neutrons c. electrons d. muons

2. In a nuclear process, the quantity conserved is a. mass-energy b. momentum c. mass only d. energy only

3. A specific combination of protons and neutrons in a nucleus is called a. nucleons b. nuclide c. neutrino d. nucleolus

4. In β^+ decay, the nucleon number is a. conserved b. not conserved c. unstable d. stable

5. Under conditions of fixed temperature and amount of gas, Boyle's law requires that
i. $p_1v_1 = p_2v_2$ ii. pv = constant iii. $p_1/p_2 = v_2/v_1$ a. i only b. ii only c. iii only d. i, ii, and iii

6. The density of chlorine gas at STP, in grams per liter, is approximately: a. 6.2 b. 3.2 c. 3.9 d. 4.5

7. What is the density of ammonia gas at 2.00 atm pressure and a temperature of 25.0°c? a. 0.720 g/l b. 0.980 g/l c. 1.39 g/l d. 16.6 g/l

8. What pressure (in Atm) would be exerted by a mixture of 1.4 g of nitrogen gas and 4.8 g of oxygen gas in a 200 ml container at 57°c? a 4.7 b. 34 c. 47 d. 27

9. A sample of hydrogen gas collected by displacement of water occupied 30.0 ml at 24°c on a day when the barometric pressure was 736 torr. what volume would the hydrogen occupy if it were dry and at stp? the vapor pressure of water at 24.0°c is 22.4 torr. a. 32.4 ml b. 21.6 ml c. 36.8 ml d. 25.9 ml

10. What is the molecular weight of a pure gaseous compound having a density of 4.95 g/L at -35 °C and 1020 torr?
a. 24 b. 11 c. 72 d.120

11. A 0.580g sample of a compound containing only carb on and hydrogen contains 0.480 g of carbon and 0.100 g of hydrogen. At STP, 33.6 mL of the gas has a mass of 0.087 g. What is the molecular (true) formula for the compound?
a. CH_3 b. C_2H_6 c. C_2H_5 d. C_4H_{10}

12. What is the shape of a V-T curve for ideal gas? a. Straight line b. Parabolic c. Hyperbolic d. Ellipse

13. POH is defined as--------
a. $-\log[OH^-]$ b. $-\log[H^+]$
c. $-\log[OH^+]$ d. $-\log[H^-]$

14. Reduction is-------- a. gains of electron b. loss of electron c. gains of neutron d. loss of neutron

15. pH is defined as .....
a. $-\log[OH^-]$ b. $-\log[H^+]$
c. $-\log[OH^+]$ d. $-\log[H^-]$

16. Arrhenius define an acid as a substance which dissociates in aqueous solution to produce ..... a. OH^- b. OH^+ c. H_3O^+ d. H_3O^-

17. Bronsted Lowry define an acid as ..... a. pair of electron donor b. pair of electron acceptor c. proton donor d. proton acceptor

18. The balanced form of this redox equation
$Ce^{4+}_{(aq)} \rightarrow Ce^{3+}_{(aq)}$ is.....
a. $Ce^{4+}_{aq} + e^- \rightarrow Ce^{3+}_{(aq)}$
b. $Ce^{4+}_{aq} \rightarrow Ce^{3+}_{(aq)} + e^-$
c. $Ce^{4+}_{aq} \rightarrow Ce^{3+} - e$
d. $Ce^{4+}_{aq} - e^- \rightarrow Ce^{3+}_{(aq)}$

19. An electrolytic cell is an electrochemical cell in which an electric current drives a non-spontaneous reaction.
a. $\Delta G < 0$ b. $\Delta G = 0$ c. $\Delta G = -1$ d. $\Delta G > 0$

20. Oxidation is defined as.....
a. loss of electron b. gains of electron c. loss of proton d. gains of proton

21. Calculate the pH of a solution containing hydrogen ion concentration $[H^+] = 10^{-6}$ moldm^{-3}
a. 10 b. 5 c. 6 d. 7

22. SHE is an acronym for .....
a. Standard Halogen electrode
b. Standard Hydrogen element
c. Standard Hydrogen electrode
d. Sodium Hydrogen electrode.

23. Standard Cell Potential E°_{cell} =
a. $E^\circ_{(anode)} + E^\circ_{(cathode)}$
b. $E^\circ_{(cathode)} \times E^\circ_{(anode)}$
c. $E^\circ_{(anode)} - E^\circ_{(cathode)}$
d. $E^\circ_{(cathode)} - E^\circ_{(anode)}$

24. If $E^\circ_{(cathode)} = 1.11V$ and $E^\circ_{(anode)} = -1.02$ calculate E°_{cell}?
a.2.13V b. 0.09V c.2.31V d.0.90V

25.....is a region in space where there is a high probability of finding an electron. a. Nucleus b. Orbital c. Photon d. Atom

26. ..... quantum number is used to distinguish between two electrons in an orbital.
a. Principal b. Magnetic c. Azimuthal d. Spin

27. ^3_1X is the representation for an isotope of ..... a. vanadium b. sodium c. hydrogen d. beryllium

28. Given the equation: $C_2H_{6\,(g)} + 7/2O_{2\,(g)} \rightarrow 2CO_{2\,(g)} + 3H_2O_{(g)}$; this is a ---------- reaction
a. decomposition b. combustion c. neutralization d. precipitation

29. Given the redox equation: $Fe_{(s)} + CuSO_{4\,(aq)} \rightarrow FeSO_{4\,(aq)} + Cu_{(s)}$
Which is the reducing agent?
a. Cu b. Fe c. $CuSO_4$ d. $FeSO_4$