01.08.2019

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Final Term Test – Grade 13 - July 2019

Index Number .....

BIOLOGY I

Time : 3 hours

Answer all questions.

1. Which is not a monosaccharide,
   1) Glucose 2) Maltose 3) RuBP 4) Ribose 5) Fructose
2. Select the correct monomer of the given polymers,
   1) Inuline – Fructose
   2) Hemicellulose – Glucosamine
   3) Chitin – Pentose
   4) Pectin – Glucose
   5) Glycogen – Galacturonic acid
3. A nucleotide that act as an oxidative agent,
   1) NADH 2) ATP 3) GTP 4) $NADP^+$ 5) ATP
4. False statement about cell membrane,
   1) Cholesterol molecules provide flexibility
   2) It is selectively permeable
   3) It is about 7 mm thick
   4) It is compared to the fluid mosaic model.
   5) Some proteins have short branching carbohydrates.
5. Correct statement about microscope.
   1) Visible light is passed back and forth through the specimen in light microscope.
   2) Electron beam is used in electron microscope.
   3) Resolution power of electron microscope is 0.2mm.
   4) Image is directly observed in electron microscopes.
   5) Dyes are used to stain the specimen in SEM.
6. Correct statement about flagella.
   1) Made of microtubes.
   2) Basal bodies has 9 + 2 arrangement.
   3) Covered by cytoskeleton.
   4) Consists of microbodies.
   5) It is a short cylindrical structure.
7. Which is not a significance of mitosis.
   1) Asexual reproduction.
   2) Growth and development.
   3) Maintains the genetic stability.
   4) Cell repair and replacement.

5) Produce new genetic variation.

8. Select the correct order of following steps in meiosis
   a) Haploid four daughter nuclei are formed.
   b) Kinetochore of each homologue attach to microtubules from one pole.
   c) Sister chromatids of each chromosome move toward opposite poles
   d) Homologues chromosomes arranged randomly at metaphase.

   1) a b c d
   2) d c b a
   3) b d c a
   4) d b c a
   5) b d a c

9. select the correct order of evolution of biodiversity.
   a) Development of multicellular Eukaryotes
   b) Accumulation of RNA into lipid bound vesicles and formed in to protocell
   c) Development of early photosynthetic organism.
   d) Origin of ancestors of arthropods and chordates.
   e) Evolution of sponges.

   1) b c a e d
   2) c b a e d
   3) c b e a d
   4) b c a d e
   5) b c d a e

10. Which is not a common feature of Basidiomycota
   1) Production of exogenous basidiospores
   2) Possess dikaryotic filaments
   3) Hyphae are aseptate.
   4) They are decomposers.
   5) They produce basidiocarp in sexual reproduction.

11. False statement about invertebrate's circulatory system.
   1) In echinoderms circulatory system is reduced and closed without a heart.
   2) Mollusca possess open circulatory system with haemocoel
   3) Platyhelminthes possess an open circulation with out a heart.
   4) Annelids possess close circulation with many hearts.
   5) Nematodes are absence of circulatory system

12. Correct statement about photosynthesis.
   1) Chlorophyll a is more effective for blue and red light.
   2) Excited carotenoids boost their electrons to a higher level and become positively charged.
   3) ATP and NADPH are produced in cyclic photophosphorylation.
   4) 1, 3 – bisphosphoglycerate oxidic to G3 P.
   5) Rubisco enzyme is prominently found in thylakoid membranes.

13. False statement about anaerobic respiration.
   1) Occurs in mature red blood cells.
   2) Final electron acceptor of alcoholic fermentation is acetaldehyde.
   3) CO_2 is produce during alcoholic fermentation.
   4) ATP is producing when acetaldehyde oxidized in to ethanol.
   5) Occurs in the absence of oxygen.

14. Which is not common to epithelial tissues?
   1) Ability to contract
   2) Covers free surfaces of the body
   3) Basal surfaces of cells attached to the basement mom
   4) Absence of blood vessels
   5) Apical surfaces of cells remain free

15. Incorrect statement about cells of ground tissue system of plant shoot.
    1) Parenchyma cells are dead cells at maturity.
    2) These cells are specialized for storage and photosynthesis.
    3) Collenchyma cells are generally elongated
    4) Sclerite cell wall is thickened by lignin.
    5) Parenchyma cells possess large central vacuole.
16. Correct statement about secondary growth in plants
    1) Occurs only in dicot plants.
    2) It increases the height of the plant.
    3) Xylem vessels achieve their conducting ability due to secondary growth.
    4) Periderm is the tissues that are interior to cork cambium.
    5) Periderm is impermeable to water and gases.
17. Select the correct deficiency symptoms in plants.
    1) Fe - roots stunted and excessively branched.
    2) Cu - Light purple colour through our young leaves.
    3) Mg - Crinkled leaves.
    4) Ca - Crinkling of young leaves.
    5) P - Chlorosis between veins.
18. Select the correct example given for the respiratory structures
    1) Body surface - Scorpions
    2) External gills - Aves
    3) Internal grills - Marien annelids
    4) Skin - Amphibia
    5) Book lungs - Some insects
19. Change that does not occur during ventilation of the lungs.
    1) Pressure gradient is created between the atmosphere and lungs.
    2) During inhalation external intercoastal muscles contract.
    3) Exhalation is a passive process.
    4) During inhalation ribcage move up and out.
    5) Volume of lungs increase an visceral pleural relaxes.
20. Select the blood group of the donor when O(-) recipient is transfused.
    1) AB(-) 3) O(-) 5) A(-)
    2) AB(+) 4) O(+)
21. Which is not a constituent in blood plasma
    1) Hemoglobin
    2) Respiratory gases
    3) Albumin
    4) Antibodies
    5) Fibrinogen
22. False statement about human blood tissue.
    1) Agglutinogen is found on the surface of Red blood cells.
    2) Platelets are derived from epithelial cells of spleen.
    3) P^H of human blood is around 7.4
    4) Leukocytes develop immune responses in an infection
    5) Erythrocytes are biconcave disk – like cells.
23. A substance that does not secreted in to tubular filtrate in urine formation
    1) H^+ 2) K^+ 3) Creatinine

4) Na^+ 5) Penicillin

24. Which is not a part of kidney tubule of human
    1) Browman's capsule
    2) Glomerulus
    3) Loop of Henle
    4) Distal convoluted tubule
    5) Proximal convoluted tubule

25. False statement about excretory structures in animals
    1) Sweat glands are coiled tubular glands.
    2) Nephron is the structural unit in human kidney
    3) Malpighian tubules open in to the digestive tract in mollusks
    4) Nephridia are multicellular tubular structures
    5) Salt glands occur in pairs

26. False statement about acquired immunity.
    1) It is against a broad range of pathogens
    2) Effector cells provide primary immune responses
    3) Antibodies can neutralize and inactivate specific toxins
    4) It is characterized by immunological memory
    5) Acquired immune responses are mediated by lymphocytes.

27. Which is not a sign of inflammatory responses
    1) Red ness
    2) Heat
    3) Swelling
    4) Production of helper T cells
    5) Pain

28. Select the false statement about fetal changes
    1) Heart begins to beat by the 4^{th} week.
    2) Fetus grows to about 30cm in length at the end of first trimester.
    3) Embryo is said to be fetus by the 8^{th} week.
    4) Fetal activity decreases at the end of third trimester.
    5) Rudiments of all major organ systems appear in the first trimester.

29. False statement about asexual reproduction
    1) Mutations leads to new genetic variation in gametogenesis.
    2) Rapid multiplication of organisms.
    3) Asexual reproduction is more advantageous in stable environments.
    4) Need only a single parent.
    5) Asexual reproduction relies on mitotic cell division.

30. Correct statement about the growth of zygote.
    1) Cleavage of zygote begins in the urates
    2) Cleavage of zygote take place about 6 hours after fertilization
    3) Morula gets nutrition by endometrial secretions
    4) Germ layers are formed before implantation.
    5) Amnion involve in formation of placenta.

31. Correct statement about sperm to genesis
    1) Spermatogenesis occurs in epididymis
    2) It starts at embryonic stage
    3) Primary spermatocytes are produced by meiotic division of spermatogonia.
    4) It takes 4 weeks to form mature sperm from spermatogonium

5) Once spermatogenesis process is done, sperms are release into the fluid – filled cavity.

32. False statement about micro – organism
    1) Mollicutes are prokaryotic organisms.
    2) Viruses get into the host cell; they multiply and cause infections.
    3) Unicellular protists are pleomorphic
    4) Mutualistic fungi are found in lichens and mycorrhizae
    5) *Nostoc* is free-living form of cyanobacteria that able fix atmospheric N_2

33. Correct statement about food spoilage
    1) Accumilation of toxins is a chemical change
    2) Rancidity is caused by proteolytic bacteria
    3) Food intoxication is caused by ***Shigella.***
    4) Aflatoxins are produced by ***Aspergillus flavus***
    5) Relative humidity does not affect on food spoilage.

34. Select the correct order in translation process.
    a) Amaino acids are added to the C – terminus of the growing polypeptide chain.
    b) Release of the t RNA in the P site
    c) t RNA carries methionine
    d) A sit is then ligned with the next codon.
    e) Small subunit of ribosome binds to m RNA

    1) a b d c e
    2) e a c b d
    3) e c d a b
    4) a b c d e
    5) e c a b d

35. Which is not an application of DNA sequencing.
    1) To reveal evolutionary relationships within and among species.
    2) Diagnosis of cancer
    3) To determine the person on carrier or not regarding family inherit disease.
    4) To understand the functions of DNA
    5) To make recombinant vectors

36. False statement about human upper limb
    1) Carpel bones are arranged in two rows
    2) Radius articulate with three carpel bones at its distal end to form wrist joint
    3) Opposable thumb permits precision grip
    4) Ulna articulate with the distal end of humerus at elbow joint
    5) Humerus forms a complete ball socket joint in glenoid cavity

37. Which is not a function of human skeletal system
    1) Production of blood cells
    2) Support
    3) Movement
    4) Protection
    5) Transportation

38. Select the false statement about human genetic disorders
    1) In males x – linked recessive disorders are expressed only at their homozygous genotype
    2) Red – green colour blindness is caused by x – linked recessive disorder
    3) Haemophilia is caused by x – linked recessive disorder
    4) Cystic fibrosis is an autosomal recessive disorder
    5) Sicke cell disease is caused by single gene mutation.

Answer the questions 39 and 40 according to the given description.

A man of A blood group married to a woman with B blood group. Their son's blood group is O and daughter is AB

39. What are the gene types of parents for blood group?
    1) $I^A I^A \times I^B I^B$
    2) $I^A i \times I^B i$
    3) $ii \times I^A I^B$
    4) $I^A I^A \times ii$
    5) $I^A i \times I^B I^B$

40. What is the probability of daughter with AB blood group?
    1) 1/8
    2) 3/8
    3) 1/2
    4) 1/4
    5) 1/16

Answer questions 41 – 50 using the given instruction

1	2	3	4	5
ABD correct	ACD correct	AB correct	CD correct	Other combination

41. Paired bones found in human cranium
    A. Sphenoid
    B. Mandible
    C. Parietal bone
    D. Temporal bone
    E. Frontal bone

42. Select the incompatible relationship between the micro – organism and the human disease
    A. Typhoid - ***Salmonella typhi***
    B. Bacterial meningitis - ***Streptococcus pheumonige***
    C. Tuberculosis - ***Mycobacterium tuberculosis***
    D. Pneumonia - ***Streptococcus pneumoniae***
    E. Food poisioning - ***Staphylococcus aureus***

43. Which are is not a macro – molecule
    A. Keratin
    B. Ribose
    C. Phospholipid
    D. Collagen
    E. Glycogen

44. Which is nota a main part of human brain
    A. Spinal cord
    B. Spinal nerves
    C. Thalamus
    D. Medulla oblongata
    E. Pituitary

45. False statement(s) about human skin
    A. Dermis composed of keratinized epithelium
    B. Blood capillaries extend in to epidermis
    C. Collagen fibers provide tensile strength
    D. Melanocytes found in deep layers of dermis
    E. Skin is the largest organ in the human body

46. Hormones released by anterior pituitary
    A. Oxytocin
    B. ADH
    C. Prolactin
    D. AcTH
    E. CRH

47. Coastal ecosystems found in Sri Lanka
    A. Sand Dunes
    B. Sea shore
    C. Savana
    D. Villu
    E. Patana

48. Select the incorrect relationship according to IUCN publishes
    A. Extinct - Dodo
    B. Endanger - Elephant
    C. Vulnerable - Marbled rock frog
    D. Critically endangered - Jungle squirrel
    E. Exotic species - Thilapla

. Effects of global warming

A. Degradation of coral reefs
B. Sea level rising
C. Depletion of ozone layer
D. Extreme water events
E. Photochemical smog

0. Which is / are contributary factors for desertification

A. Acid rains
B. Over – exploitation of soil
C. Uncontrolled mining
D. Excessive use of agro chemicals

i. Emission of green house gases.

DE MAZENOD COLLEGE – KANDANA
THIRD TERM TEST – 2019 JULY
BIOLOGY – GRADE 13

01.08.2019

3 HOURS

Part A – Structured Essay

Answer the questions using the given space.

1. A)

i. Name the elements that found as 96% in living matter.

.....

ii. Why water is important fo life?

.....

.....

iii. Name a Nitrogen containing polysaccharide.

.....

iv. Name a Structural polysaccharide found in prokaryotes.

.....

vi. (a) What is meant by resolution power of microscope?

.....

(b) What is the resolution of light microscope?

.....

vii. (a) Draw and label the ultra-structure of mitochondria.

(b) What are the functions of the above organelle?

.....

.....

B)

i. What is meant by respiratory quotient?

.....

ii. What are the major differences of lactic acid fermentation and Alcoholic fermentation?

.....

.....

.....

iii. What are the major processes that take place in CO_2 fixation in C_3 plants?

.....

.....

.....

iv. What are the factors that affect on the rate of photosynthesis?

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v. What are allosteric regulators?

.....

vi. What are the changes occur in 'S- 'phase of interphase in mitotic cell division.

.....

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(C)

i. Name the significances of mitosis

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.....

.....

.....

ii. Briefly explain what is meant by **crossing over.**

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2. A)

i. What is meant by radial transport?

.....

ii. Name the different types of routes used in the radial transport.

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1.08.2019
Grade - 13
Biology

iii. What is meant by nutrition in plants?

.....

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iv. What are the needs of nutrition in plants?

.....

.....

.....

v. Why essential elements are needed for plants?

.....

.....

vi. Name deficiency symptoms of Ca in plants.

.....

.....

vii. Name the source and the form of absorption of P into plants.

Source: - .....

Form: - .....

viii. Name the soil microbial interaction in effective uptake of P into plants.

.....

B)

i. Name the key steps in the Nitrogen cycle.

.....

.....

.....

.....

ii. what are the applications of micro-organisms in agriculture?

.....

.....

.....

iii. Name the indicator organism used to test the quality of drinking water.

.....

iv. State the characteristic features of the above mentioned organism.

.....

.....

.....

v. Name two water born diseases

.....

.....

vi. What are the adverse effects of discharging large amount of waste water into natural water bodies?

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.....

(C) i. What is the functional unit of liver?

.....

ii. What are the functions of liver related to digestion?

.....

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iii. (a) Name the hormones released by the duodenum.

.....

(b) What are the functions of the above hormones.

.....

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.....

.....

3. A) i. (a) Name the efferent components of peripheral nervous system

a-.....

b-.....

b) Write the function of each of the above-mentioned components.

a – .....

b – .....

ii. Name the functions of human cerebellum

.....

.....

.....

iii. What are the factors required to maintain the resting membrane potential?

.....

.....

.....

iv. What are the phases of action potential?

.....

.....

.....

v. Name the different types of photoreceptors in human eye and state the visual pigment in those receptors

.....

.....

B) i.(a) Name the tissues that form the dermis of the human skin.

.....

(b) Name the main types of cells found in the above-mentioned tissue.

.....

(c)Name 4 structures found in the dermis.

.....

.....

(d) State functions of human skin.

.....

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.....

ii. Name a non-trophic hormone secreted by anterior pituitary.

.....

iii. What is the function of above-mentioned hormone?

.....

C) i. What is the function of thymosin?

.....

ii. What are antibodies?

.....

iii. Name basic features of acquired immunity.

.....

.....

.....

iv. Name an important inflammatory signalling molecule.

.....

v. What are the signs and symptoms of inflammation?

.....

.....

4. A) i. What is meant by dihybrid test cross?

.....

.....

ii. 1280 plants were obtained in F1 generation in a cross between genotypes Aa BB cc X Aa bb CC.

(a)Find the probability of obtaining the AaBbcc in their F1 generation

.....

.....

.....

(b)Find the number of organisms that possess the Genotype AaBbcc?

.....

iii. Red-green colour blindness is caused by sex linked recessive allele. In a family of normal parent's s is colour blind and their daughter is normal for colour blindness. write the genotypes of family members?

(Dominant allele = C recessive allele = c)

Mother ..... Father .....

Son ..... Daughter .....

iv. What is meant by mutation?

.....

.....

v. What are the different types of gene mutations?

.....

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B) i. Name three genetic disorders that occur due to chromosomal mutations.

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.....

ii. State major steps and techniques used to make a recombinant vector?

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iii. What is meant by cloning site?

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iv. Name an international agreement established in order to safeguard consumers, society and environment due to potential risks of GMO s?

.....

.....

v. What is the objective of the above mentioned agreement?

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vi. What are the functions of DNA polymerase in DNA replication?

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.....

.....

vii. What are the three main steps in elongation of translation?

.....

(C) i. State 5 characteristic features of the vegetation in desert biome in tropics?

1 .....

2 .....

3 .....

4 .....

5 .....

ii. Name the values of Biodiversity?

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iii. Write two human activates leads to desertification?

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Final Term Test – Grade 13 – July 2019

Index Number .....

BIOLOGY I I

Time : 3 hours

❖ Part B – Essay
Answer four questions only.

PART B – ESSAY

1. Explain the process of osmoregulation in human body.
2. Briefly explain the lung ventilation mechanism and its regulation
3. i. Explain the vitality of water in living matter with respect to its major properties.

   ii. Explain the stomatal transpiration in higher plants.
4. i. Briefly explain the ultrastructure of chloroplast in eukaryotic cell.

   ii. Explain the C_3 cyclic pathway of CO_2 fixation in photosynthesis.
5. i. Explain sterilization techniques used in laboratory preparation of microbial culture

   ii Briefly explain the physical and chemical changes that take place in microbial food spoilage.
6. Write short notes.

   i. Cardiac conduction system.
   ii. Acid rains
   iii. Gross structure of human ovary

Part B - Essay

Answer All Questions

5. (a) (i) Deduce the relationship between the relative molecular mass (M) and the density(d) of a particular gas by using the ideal gas equation.

(ii) A mixture of gases contains 75% of N_2 gas and 25% of O_2 gas by volume. The pressure of the mixture of gases is 1.00×10^5 Pa and the temperature is 300 K. Assuming ideal behavior, calculate the following,

a. The partial pressure of O_2 in this mixture of gases
b. The relative molecular masses relevant for this mixture of gases. (the relative atomic masses of N and O are 14.0 and 16.0 respectively)
c. The density of the mixture of gases.

(iii) Various mixtures consisting with finely powdered Al, Mg and Zn were prepared, each weighing 100 g. Masses of different metals used for the preparation were given below.

Mixture	Mass of the metals / (g)			Total mass/ (g)
	Al	Zn	Mg	
P	21.6	13.0	65.4	100.0
Q	27.0	52.0	21.0	100.0
R	32.4	65.0	2.6	100.0

(Al= 27, Mg= 24, Zn = 65)

However the labeling of the samples was found to be inaccurate. Using balanced chemical equations and proper calculation, how would you identify the samples separately?

(iv) Speeds of six gaseous molecules of an ideal gas measured at -250 °C were given as, 2.0 m s^{-1}, 2.2 m s^{-1}, 2.6 m s^{-1}, 2.7 m s^{-1}, 3.3 m s^{-1} and 3.5 m s^{-1} respectively. Using these values calculate the following,

a. Average speed of a gas molecule
b. Root mean square speed
c. Molar mass of the gaseous species
d. Density of the gas at 10 Pa pressure

6. (a) Consider the chemical reaction, $2Na_{(s)} + \frac{1}{2} O_{2(g)} \longrightarrow Na_2O_{(s)}$

Some of the thermo chemical data given relevant to the above reaction are given below.(at 25°C.)

Atomization enthalpy of $Na_{(s)}$	= 107 kJ mol^{-1}
First ionization enthalpy of $Na_{(g)}$	= 494 kJ mol^{-1}
Atomization enthalpy of $O_{2(g)}$	= 249 kJ mol^{-1}
First electron affinity of $O_{(g)}$	= -149 kJ mol^{-1}
Second electron affinity of $O_{(g)}$	= 798 kJ mol^{-1}
Lattice enthalpy of $Na_2O_{(s)}$	= 2522 kJ mol^{-1}

I. Write chemical equations to express above enthalpy changes.

II. Calculate the enthalpy change of formation of $Na_2O_{(s)}$ by constructing an appropriate enthalpy level diagram.

b) Standard enthalpy change of hydration of $Li^+_{(g)}$, $Na^+_{(g)}$ and $Cl^-_{(g)}$ are -499 kJ mol^{-1}, -390 kJ mol^{-1} and -381 kJ mol^{-1} respectively. And standard enthalpy change of lattice of $LiCl_{(s)}$ and $NaCl_{(s)}$ are -864 kJ mol^{-1} and -780 kJ mol^{-1}.

I. Calculate the standard enthalpy change of dissolution of $LiCl_{(s)}$ and $NaCl_{(s)}$

II. State, whether the temperature of the system increase or decrease, when $LiCl_{(s)}$ is dissolving in water.

c) Calculate the enthalpy of formation of $NaCl_{(s)}$ from the following data

Reaction	ΔH^0_{298} / kJ mol^{-1}
$NaOH_{(aq)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$	-57.3
$HCl_{(g)} + aq \rightarrow HCl_{(aq)}$	-71.9
$H_{2(g)} + ½\ O_{2(g)} \rightarrow H_2O_{(l)}$	-285.9
$½\ H_{2(g)} + ½\ Cl_{2(g)} \rightarrow HCl_{(g)}$	92.3
$Na_{(s)} + ½\ O_{2(g)} + ½\ H_{2(g)} \rightarrow NaOH_{(aq)}$	-425.6
$NaCl_{(s)} + water \rightarrow NaCl_{(aq)}$	+3.9

7. (a)" L" is an element that belongs to the p block of the periodic table. In the group that L belongs, there are metals, non metals as well as metalloids. The first member of the group is distinctive as it has a tendency to form a large amount of compounds. L is the second member of this group.

i. Identify L
ii. Write the complete electronic configuration of L
iii. Write the chemical formula and the colour of the most stable oxide of L.
iv. L is very important in the manufacture of integrated circuits and transistors. State another important use of L

(b) Consider the oxidation of SnC_2O_4 by $KMnO_4$ in the dil. H_2SO_4 medium.

i. Write the reduction half reaction
ii. Write the oxidation half reaction
iii. Give the balanced redox reaction

(c) You are supplied with a mixture consisting of barium carbonate, dolomite, potassium carbonate and silicon dioxide. Explain how you would attempt to determine quantitatively each of the constituents present in this mixture.

(d) When 20.0 g of a white solid X is heated, 4.4 g of an acidic gas A and 1.8 g of a neutral gas B are evolved, leaving behind a solid residue of mass 13.8 g. A turns lime water milky and B condenses into a liquid which changed anhydrous cupric sulphate blue. The aqueous solution Y is alkaline to litmus and gives 19.7g of white precipitate Z with barium chloride solution. Z gives carbon dioxide with an acid. Identify A, B, X, Y and Z. (C= 12, H= 1, O = 16, Ba= 137)

8. (a) State all possible reactions (balanced) which can be occurred when a piece of Na is exposed to air.

(b) How would you distinguish between the below mentioned pairs?

i. Li_2CO_3 and Na_2CO_3
ii. Na_2CO_3 and $MgCO_3$
iii. $LiNO_3$ and $NaNO_3$
iv. KNO_3 and $Ba(NO_3)_2$
v. Na_2CO_3 and $NaHCO_3$
vi. LiOH and NaOH

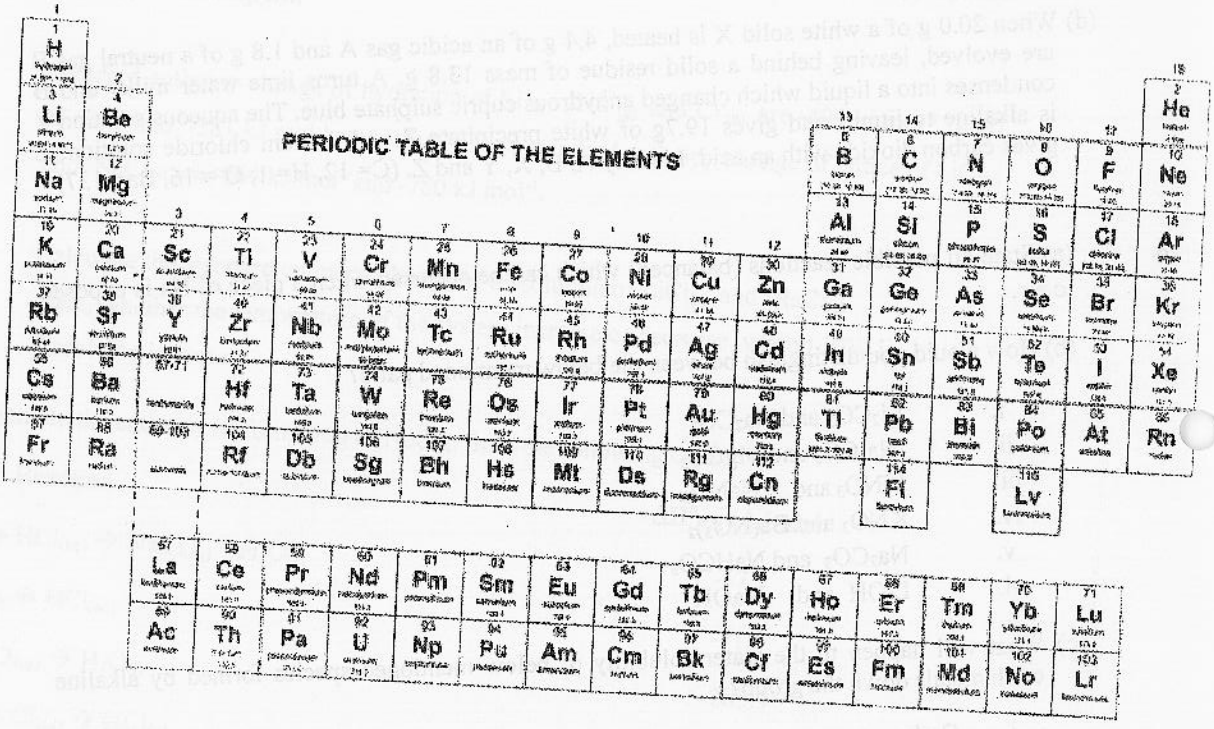
(c) What will happen to the water solubility of below mentioned species formed by alkaline earth metals down the group?

i. Carbonates
ii. Sulphates
iii. Oxalates
iv. Hydroxides
v. Chromates

(d) Assume that you have provided a mixture containing KNO_3 and K_2CrO_4. You are provided $Ba(NO_3)_2$ and CH_3COOH as the only chemical reagents. How would you confirm the presence of KNO_3 using the given reagents. (Heating is allowed)

(e) X is an element of the main group of the periodic table. Nitrate of the element X is soluble in water forming a solution Y. White precipitate Z can be obtained due to the drop wise addition of dil. NaOH to solution Y. Z is soluble in excess NaOH forming a colourless solution P. Z can be re-emerged due to the drop wise addition of dil. HCl to solution P. Z is soluble in excess dil. HCl forming solution Y. Identify X,Y,Z and P.

(f) A mixture of zinc and aluminum weighing 1.67 g was completely dissolved in dilute sulphuric acid and evolved 1.69 L of hydrogen gas measured at 273 K and 1 atm pressure. What was the weight of aluminum in the original mixture? (Assume the ideal behavior of hydrogen gas, Al= 27, Zn = 65)


PERIODIC TABLE OF THE ELEMENTS