

Candidate's Name.....

ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL

FORM FIVE MID TERM TEST

CHEMISTRY

Time:2 Hours

Combination

May,2020

INSTRUCTIONS:

1. Answer **ALL** questions in each sections **A** and **B** and **C**.
2. Write your name on every page of your answer sheets
3. The following constants may be used
 - Atomic masses
 - Planke's constant (h)= $6.62 \times 10^{-34}Js$
 - Rydberg's constant (RH)= $1.097 \times 10^7M^{-1}$
 - Velocity of light (C)= $3 \times 10^8ms^{-1}$
 - GAS Constant (R)= $0.0821 atmdm^3mol^{-1}K^{-1}$

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
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TOTAL		

This paper consists of Four (04) printed pages

SECTION A (40 Marks)

1. (a) (i) State four assumptions of kinetic theory of gases.
(ii) Using kinetic gas equation: $PV = \frac{1}{3}nmC^2$. Show that average kinetic energy of a gas is $\frac{3RT}{2}$
- (b) Calculate the wavelength of radiation emitted when an electron in a hydrogen atom makes transition from an energy level with $n=3$ to a level with $n=2$.
Predict the colour of radiation emitted. Given that: $E_n = \frac{-1312}{n^2}KJmol^{-1}$
2. (a) State two assumptions that leads to real gas to deviate from ideal gas. At what conditions when real gas deviates positively from ideal gas?
(b) Briefly explain two factors that determines liquefaction of gases
(c) Using van der waal's equation, calculate the constant "a" when two moles of a gas confined in a 4L flask exerts a pressure of 11.0 atm at a temperature of 300K. The value of "b" is $0.05Lmol^{-1}$
3. (a) Give two differences between real solution and ideal solution.
(b) 7.6g of KBr in $1250cm^3$ of solution was found to have osmotic pressure of 1.804 atm at $27^\circ C$. Find the osmotic pressure, vant hoff's factor and degree of dissociation.
(c) The vapour pressure of pure water at $95^\circ C$ is 84700Pa. Water and insoluble liquid \times of relative molecular mass of 160, distilled at $95^\circ C$ under atmospheric pressure of 1013100Pa. Calculate weight weight of water if the weight of \times is 10g.
4. (a) What will be the pressure exerted by a mixture of 3.2g of methane and 4.4g of carbondioxide contained in $9dm^3$ flask at $27^\circ C$?
(b) The pressure exerted 12g of an ideal gas at temperature $t^\circ C$ in a vessel of volume V litres is one atmosphere when the temperature is increased by $10^\circ C$ at the same volume, the pressure increased by 10%. Calculate the temperature t and volume V molecular mass of the gas=120u

SECTION B: (30 Marks)

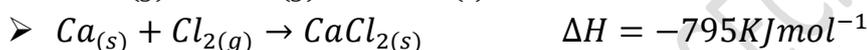
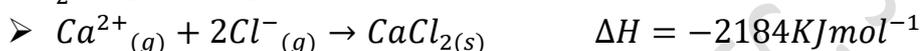
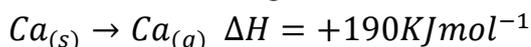
5. (a) Define the term partition coefficient. A compound Z has a partition coefficient of 4.00 between ethoxyethane and water. Calculate the mass of Z extracted from $100cm^3$ aqueous solution of 4.00g of Z by two successive extractions with $50cm^3$ of ethoxythane.

- (b) (i) What are colligative properties?
 (ii) A solution of urea boils at 100.18°C at the atmospheric pressure. If K_f and K_b for water are 1.86 and $0.512^{\circ}\text{Ckgmol}^{-1}$ respectively. Find the freezing point of the solution.

6. (a) State the following:

- Enthalpy change of atomization
- Enthalpy change of neutralization
- Lattice energy

(b) Given the following information



- Use standard enthalpy change to calculate the electron affinity of chlorine through Born haber cycle.
 - If: $\text{Ca}^{+}_{(g)} + \text{Cl}^{-}_{(g)} \rightarrow \text{CaCl}_{(s)} \quad \Delta H = -760\text{KJmol}^{-1}$. Explain which crystal is stable CaCl or CaCl_2 ?
7. (a) Briefly explain the following terms and give one example per each case:
- Nucleophilic substitution reaction bimolecular (SN^2)
 - Elimination reaction bimolecular (EN^2)
- (b) A hydrocarbon contain 10.5g of carbon per gram of nitrogen 1litre vapour of hydrocarbon at 27°C and 1 atm pressure weighs 2.8g. Find the molecular formular.

SECTION C: (30 Marks)

8. (a) Briefly explain the following observations:

- Lithium ion (Li^{+}) has small ionic size than K^{+} . However in aqueous solution, Li^{+} moves less rapid than K^{+} .
- The bond angle in NH_4^{+} is higher than that in NH_3
- BeCO_3 is less stable than MgCO_3
- Bond dissociation energy of F_2 is less than that of Cl_2

(b) Write any two differences between ionic bond and covalent bond.

(c) Define the following terms:

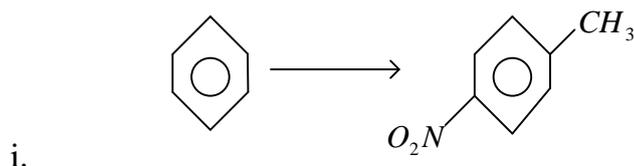
- Polarizability
- Hybridization of orbitals.

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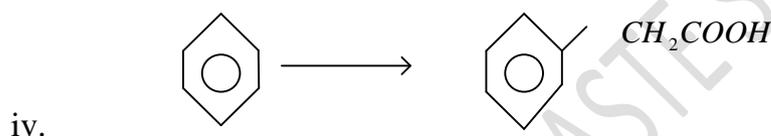
9. (a) A primary alkylhalide, A(C_4H_9Cl) reacted with alcoholic potassium hydroxide to give compound B. Compound B reacted with HCl to give compound C which is an isomer of A. When C (in ether solution) reacted with sodium metal, it gave compound D (C_8H_{18}).

- Give the structure of A
- Write chemical equations for all the reactions.

(b) With aid of chemical equation show how the following conversions can be done:

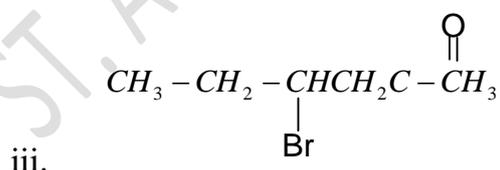
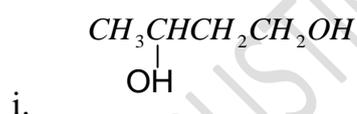


- $CH_3CH_3 \rightarrow CH_3CH_2CH_3$
- $CH_2 = CH_2 \rightarrow C_6H_5CO_2H$

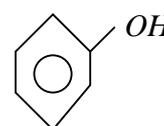


10. (a) With aid of one example, briefly explain to why nucleophilic substitution Reaction bimolecular (SN^2) of alcohols with hydrogen halide decreases from primary alcohol to tertiary alcohols.

(b) Name the following compounds by using IUPAC names



(c) Explain simple tests for distinguishing CH_3CH_2OH from



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ST. AUGUSTINE - TAGASTE SECONDARY SCHOOL
FORM FIVE MID TERM TEST
ECONOMICS 1

Time: 2:00 Hours

Combination

May,2020

INSTRUCTIONS

1. This paper consist **five (8) eight** questions
2. Answer **six (6)** questions
3. Each question carries **twenty (20)** marks in section B and C, ten marks in section A.
4. **All** writing must be in blue or black ink **except** drawings which must be in pencil.
5. Write your **Name** and **Stream** at the top of every page.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
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This paper consists of Three (03) printed pages

SECTION A (20 Marks)

Answer all questions from this section.

1. Write short notes on the following economic concepts
 - i. Production possibility frontier
 - ii. Negative consumption externalities
 - iii. Negative production externalities
 - iv. Normative statement
 - v. Human wants
2. State five advantages of large scale production.

SECTION B 40 (MARKS)

Answer any two (02) questions from this section

3. (a) Given the demand curve for maize represented by equation $P = 300 - 15Q$ and the supply curve represented by $P = 120 + 30Q$.
Where; P = Price on TSH
Q = Quantity in Kgs
Find equilibrium price and Quantity.
(b) By illustration distinguish between movement along the supply curve and shift of supply curve.
(c) Outline six factors which influences elasticity of supply
4. (a) Explain why economic activities or business activities in a country is no stable (three points).
(b) Monopoly firm exists because of unstuffy competition from weak competitive firms explain, any three reasons for existence of monopoly existence.
(c) Critically elaborate four arguments for the policy proposal for **cost sharing** in advanced level and tertiary education and health institutions in your country.
5. You are given the short run cost function as $TC = 200 + 5Q + 2Q^2$ and revenue function as $TR = 500Q - 5Q^2$.
Where; TC = Total cost
TR = Total Revenue
Q = Quantity of output
 - i. Determine the level of output which maximizes total revenue
 - ii. Calculate optimum level of output
 - iii. Work out for total profit
 - iv. What are the total fixed cost
 - v. What are the total variable costs at output that maximize profits.

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SECTION C (40 MARKS)

Answer any two (02) questions from this section

6. (a) what are the effects of inflation on Wage – Earners, Fixed income people, Debtors and Creditors, Producers and Government
(b) State Fisher equation of exchange. Critically analyze the assumptions of the quantity theory of money.
7. (a) Evaluate five policies which can be employed to reduce population growth rate in your country.
(b) “Population census in a country is socially and economically desirable” justify this statement by providing five points.
8. Despite the efforts made by the government of Tanzania, unemployment rate is still rising tremendously and unstoppable. Accounts for eight reasons why unemployment has been so difficult to reduce in our country.

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ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL

FORM FIVE MID TERM TEST

ENGLISH LANGUAGE

Time: 2:00 Hours

Combination

May, 2020

Instructions

1. This paper consists of **two (2)** sections **A** and **B** with a total number of **eight (8)** questions.
2. Answer **seven (7)** questions; **four (4)** from **section A**, **three (3)** from **section B**. Questions number **five (5)** and **six (6)** are compulsory.
3. Write your **FULL NAMES** on every page of your answer sheet (s).

SECTION A (40 Marks)

SHORT ANSWER QUESTIONS

1. a) Differentiate language from a language.
b) Mention six socio-linguistic impacts of language contact.
2. a) Write short notes on the following lexical terms.
 - i. Morph
 - ii. Allomorph
 - iii. Morphemeb) Write short notes on the following concepts;
 - i. Clipping
 - ii. Neologism
 - iii. Blending
 - iv. Coinage
3. a) List down three significances of effective listening.
b) Draw a table showing the place of articulation and manner of articulation. Label all the sounds as required.
4. a) What is the relationship between literature and language.
b) Describe five elements of form. Give examples to each

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SECTION B (60 Marks)
ESSAY TYPE QUESTION

5. Describe eight functions of language.
6. Using any two novels you have read, choose two characters and describe whether you admire or sympathize them.
7. Describe eight functions of literature. Provides any many examples as possible.
8. Explain eight purposes of writing.

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ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL
FORM FIVE MID TERM TEST
ADVANCED MATHEMATICS

Time: 2:00Hours Combination PCM/PGM/EGM May,

2020

INSTRUCTIONS:

1. This paper consists of seven (08) questions.
2. Answer all questions.
3. Write your **name** on every page of your answer sheet(s) provided.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
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This paper consists of Four (04) printed pages

1. a) By using a non – programmable calculator

(i) Calculate $\left[\frac{e^6 \times \ln 7}{\sqrt{15}}\right]^{\frac{1}{11}}$ correct to four decimal places.

(ii) Calculate $\left[\frac{\sqrt{e^3 \times \log_2 6 \times \sinh^{-1}(0.6972)}}{\log_e 3.5 \times \cos 64.5^\circ \times \tan 46^\circ}\right] \times 0.6467^3$ correct to 5 decimal places.

(iii) Evaluate: $\left[\frac{5P3 - \sqrt[3]{\log_2 3}}{\tan^{-1}(0.984)}\right]^{-1}$ correct to 2 decimal places.

b) A manufactures marginal revenue function is $\frac{dr}{dq} = 275 - q - 0.3q^2$. If r is in Tsh. Use a scientific calculator to find the increase in manufactures total revenue if the production increased from 10 to 20.

2. a) Define the following terms as used in Linear Programming

- (i) Optimal point
- (ii) Feasible region
- (iii) Constraints

b) Basheke has made 900tonnes and 600tonnes of bricks at his houses H1 and H2 respectively. He plans to build new houses at three sites P, Q and R. He expects to use 500tonnes of bricks at P, 600tonnes of bricks at Q and 400tonnes of bricks at R. The transportation cost (in Tsh) per ton of bricks from each of this houses to each of the three sites as shown below:

H1	600/=	300/=	400/=
H2	400/=	200/=	600/=
	P	Q	R

How many units of the products should the manufacture deliver to each customer from each Godown to each customer in order to minimize the total transport cost? What is the minimum cost?

3. a) Using the laws of algebra of sets, simplify each of the following expressions.

- (i) $(A \cap B^I) \cup (A \cup B^I)$
- (ii) $(R \cap S^I) \cup (R^I \cup S) \cup (R \cup S)$

- b) Stream A of a certain school in Iringa Municipal has 30 students, 18 are taking Geography and of eleven are taking both Geography and Advanced Mathematics. There are five students in the class who take neither Geography nor Advanced Mathematics. How many students in this class who take Advanced Mathematics? (Use Venn diagram)

4. a) If $f(x) = 4x^2 - x + 5$. Find $g(x)$, for which $f \circ g(x) = 4x^2 - 16x + 21$

b) Sketch the graph of $f(x) = \frac{(x+2)(x-3)}{(x+1)^2(x-2)}$

c) Given $f(x) = \frac{2x+3}{3x+2}$ and $g(x) = \frac{4x}{3x-2}$ find the domain and range of $f \circ g(x)$

5. a) If $y = mx + c$, touch the circle $x^2 + y^2 = r^2$. Prove that $C = \pm r\sqrt{m^2 + 1}$

b) Show that the radial axis of two circles $x^2 + y^2 + 2gx + 2fy + c = 0$ and $x^2 + y^2 + 2g'x + 2f'y + c' = 0$ is perpendicular to the line joining their centre

c) The perpendicular distance from the point (2,5) to the line $ny = 2x - 4$ is $\sqrt{5}$. Find the value of n

6. a) Determine whether the following arguments are valid or not

- (i) Mathematicians are genius. No genius people are lazy. Therefore no mathematicians are lazy.
 (ii) Either the bank is closed or is not after 3 o'clock. It is not after 3 o'clock. Therefore the bank is not closed.

b) Change the proposition into a compound statement connected by \wedge, \vee , and \sim only. $(p \rightarrow q) \rightarrow (q \rightarrow (p \rightarrow q))$

c) Simplify $(p \wedge \sim q) \vee (r \wedge q) \vee q$ and draw the electrical network of the simplified proposition

7. a) (i) Given $M = \begin{bmatrix} 1 & 0 & 0 \\ x & 2 & 0 \\ 3 & 1 & 1 \end{bmatrix}$ Find M^{-1} in terms of x

(ii) Find the sum of the first n terms of the series $2 \times 3 + 3 \times 4 + 4 \times 5 + \dots$

b) Express $\frac{2x^2+8x+7}{(x+2)(x+3)}$ in partial fractions

c) If $a^x = \left(\frac{a}{k}\right)^y = k^m$ and $a \neq 1$; prove that $\frac{1}{x} - \frac{1}{y} = \frac{1}{m}$

d) If $S_n = 575$ where $S_n = \sum_1^n (2r-3)$, find the value of n.

8. a) Solve the equation $\tan^{-1}\left(\frac{x-1}{x+2}\right) + \tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

b) Prove that $\sin^2\theta \cos^2\theta = \frac{1}{8}(1 - \cos 4\theta)$

c) If $\sin x + \sin y = a$ and $\cos x + \cos y = b$,
Show that $\cos(x - y) = \frac{1}{2}(a^2 + b^2 - 2)$

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ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL
FORM FIVE MID-TERM TEST
BASIC APPLIED MATHEMATICS (BAM)

Time: 2:00hours **Combination PCB/HGE** **May,**

2020

INSTRUCTIONS:

1. This paper consists of ten **(08)** questions.
2. Answer **ALL** questions.
3. Write your **name** on every page of your answer sheet(s) provided.
4. Show your working clearly.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
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This paper consists of four (4) question

1. By using a scientific calculator

a) Calculate $\left[\frac{(6.2) \times \ln(\sqrt{7}) \div \ln(\sqrt{3})}{1782 \log 1783} \right]^{\frac{10}{5}}$ correct to 5 decimal places.

b) Find the value of \bar{x} , $\text{var}(x)$ and σ to two decimal places for the data below

Age	frequency
6-11	4
12-17	5
18-23	10
24-29	13
30-35	19
36-41	29
42-47	27

c) Solve for $9x^3 + 6x^2 - 3x - 2 = 0$

2 a) Given $f(x) = \frac{25}{3x-2}$ and $g(x) = x^2$, find the value of x , given $f \circ g(x) = \frac{2}{x-1}$

b) Given that $f(x) = \begin{cases} 3-x, & \text{if } x > 1 \\ x^2 + 1, & -1 \leq x \leq 1 \\ 2x, & \text{if } x < -1 \end{cases}$

Find $f(1) + f(-6) + f(10)$

c) Sketch the graph of $f(x) = \frac{x+1}{x-4}$ and then use it to state the domain and range.

d) Given that $f(x) = 6x + 2$ and $g(x) = x^2 + 3x + 1$

Find (i) $f \circ g(x)$

(ii) $g \circ f(x)$

3. a) Compute $\sum_0^2 x e^x \log(x+1)^{\frac{1}{3}}$

b) Three numbers are in AP, their sum is 36 and their product is 1428. Find the three numbers

c) If y varies partly with x and partly with x^2 . When $x = 2, y = 10$ and when $x = 3$, then $y = 18$. Find y in terms of x

4. a) Let $y = Kx^3 + 2x^2 + 1$, Find

(i) $\frac{dy}{dx}$ in terms of K and x

(ii) The value of K, if $\frac{d^2y}{dx^2} = 28$ when $x = 2$

b) Differentiate with respect to x

(i) $y = \ln\left(\frac{3x-2}{x+1}\right)$

(ii) $y^3 + x^4 + xy + xy^3 = 0$

c) A tank in the form of an Inverted cone having an altitude of 20m and a base radius 6m long. Water is flowing into a tank at a rate of $3m^3/s$. How fast is water level rising when the water is 8m deep?

5 a) Evaluate:

(i) $\int_2^6 x\sqrt{x-2} dx$

(ii) $\int_0^1 (x^3 + 4)^2 dx$

b) Given that $\int_2^4 \left(\frac{4x^6 - 2x^4 + P}{x^3}\right) dx = 225$. Find the value of P

c) (i) Find the area enclosed between the curves $y = 2x^2 + 3$ and $y = 10x - x^2$ and the x- axis

(ii) Find the area enclosed by $y = x^2$ about y - axis and the lines $y = 1$ to $y = 4$

6 a) Solve the simultaneous equations for positive values of unknowns x and y

$$\begin{cases} x - y = 21 \\ \log x + \log y = 2 \end{cases}$$

b) Mr Okechi divided 30 books to his children Saphy, Yohana and Zabron in the ratio 1: 2: 2, what was the share of the three children?

c) The sum of the first two terms of GP is 40 and the sum of the first four terms is 100. Given that all terms of the progression are positive. Show that the common

ration is $\sqrt{\frac{3}{2}}$

7 a) Find the stationary values of the curve and distinguish them. $y = \frac{x^4}{3} - \frac{3x^2}{2} + 2x - 4$

b) Given $f(x) = x^2 - 3x + 4$. Find $\frac{dy}{dx}$ from the 1st principle

c) If the amount equation for a manufacturing product is $(x) = 200 - 0.3x$. Find the marginal revenue function and evaluate it when $x = 100$

8. a) Given the data: 8,5,3,4,7,6,2,9. Find

(i) Mode

(ii) Median

(iii) Semi-interquartile range

b) Given the following distributions

Class interval	6-11	12-17	18-23	24-29	30-35	36-41	42-47
Frequency	4	5	10	13	19	29	27

By using coding method find the mean and standard deviation.

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**ST. AUGUSTINE - TAGASTE SECONDARY SCHOOL
FORM FIVE MID-TERM TEST**

BIOLOGY

Time 2:00 Hours

Combination

May, 2020

INSTRUCTIONS

1. This paper consists of sections **A** and **B** with a total of **ten (10)** questions.
2. Answer **all** questions in section **A** and **two (2)** questions from section **B**.
3. Except for diagrams that must be drawn in pencil, all writing should be in blue or black ink.
4. Write your **name** every page of your answer sheet.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
9		
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This paper consists of four (3) printed pages

SECTION A (70 Marks)

Answer **all** questions in this section. Each question carries **ten (10)** marks.

1. (a) Give five reasons to justify that, human being belongs to phylum Chordata.
- (b) Using examples, explain five advantages of the Kingdom Animalia to human being.

2. (a) (i) Identify three major nitrogenous excretory wastes in animals.
- (ii) Identify which animals excrete each identified type of nitrogenous wastes in (a) (i) and give three reasons for your answer. Tabulate your answer as shown in the following table:

Nitrogenous wastes	Animals excreting it	Reasons

- (b) Enumerate three responses which occur in the body when the body temperature is lower than normal.
3. (a) Discuss four functions of the liver.
- (b) Briefly describe the structure of the mammalian nephron.
4. (a) Explain endosymbiotic theory.
- (b) Describe Danielli – Davson model of plasma membrane.
5. (a) What is the major problem facing shark in their environment?
- (b) How are sharks adapted to their environment? (Four points).
- (c) Give three causes and two effects of acute kidney failure.
6. (a) Write the summary of glycolysis.
- (b) Describe the oxidation of protein molecule.
7. (a) Using diagram only, differentiate the following:
 - (i) Tertiary protein and quaternary protein.
 - (ii) Glycogen and cellulose
- (b) What structural features of carbohydrates account for the fact that a variety of polysaccharides exists?

SECTION B (30 Marks)

Answer **two (2)** questions from this section.

Each question carries **fifteen (15)** marks.

8. (a) Draw a large, well labeled diagram of a chloroplast of higher plants.
(b) How is the chloroplast's structure related to its functions?
(c) (i) What are lysosomes?
(ii) Briefly elaborate on the roles of lysosomes in organisms.
9. (a) Why does the lactic acid level in the blood continue to rise after exercise when anaerobic respiration has ceased?
(b) The rate of uptake of oxygen increases immediately exercise starts. How is the supply of oxygen from outside the body to the cells increased during exercise?
(c) Construct a table showing the major differences between photosynthesis and aerobic respiration.
10. Using diagrams and one example in each case, classify bacteria on the basis of their morphology.

Candidate's Name.....

ST. AUGUSTINE – TAGASTE SECONDARY SCHOOL

FORM FIVE MID TERM TEST

GEOGRAPHY

Time: 2:00Hours

Combination

May, 2020

INSTRUCTIONS

1. This paper consists of sections **A** and **B** with a total of seven (7) questions.
2. Answer a total of **five (5)** questions, **two (2)** questions from section **A** and three questions from section **B**. Question number **one (1)** is Compulsory.
3. In section **A**, question **ONE (1)** carries **25** marks and the rest **15** marks, while in section **B**, each question carries **20 marks**.
4. Map extract of HANANG (Sheet 84/4) is provided for question number one(1).
5. Non programmable calculators may be used.
6. Write your **Name** on every page of your answer sheet(s).

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
19		
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TOTAL		

This paper consists of two (2) printed pages

SECTION A: (40 Marks)

Attempt only two (2) questions from this section.

Question number ONE (1) is compulsory.

1. Study carefully the map extract of HANANG (Sheet 84/4) provided then answer the following questions.
 - (a) Calculate the area covered by Lake Balangida in square Kilometer.
 - (b) Explain five (5) land uses in the mapped area.
 - (c) A farmer was at grid reference 680160. He saw fire in the North East (4.2 Kilometer).
 - i) Find the grid reference position of the fire.
 - ii) Name the physical obstacle which the farmer will face if he walks in a straight line to the position of the fire.
 - (d) What are the three indicators of climate in the area? Give evidence.
 - (e) Express the scale of map into statement scale
 - (f) Measure the length of all weather roads from grid reference 680264 to 747299 in kilometer.
2. (a) Describe the following terms.
 - (i) Dot maps
 - (ii) Isopleth maps
 - (iii) Choropleth maps
 - (iv) Flow line maps
- (b) Describe the contents of topographical maps
- (c) (i) Define Map projection
(ii) Describe three types of map projection.

SECTION B: (60 Marks)

Answer three (3) questions from this section.

3. Using concrete examples, explain how faulting has been responsible.
4. "Plate tectonic theory is a new version of continental drift theory" Elaborate causes of continental drift and its evidence. Use five points at each.
5. Examine eight methods to use in soil conservation in order to improve agricultural production in Tanzania.
6. Examine four layers of the atmosphere and in each give three characteristics.
7. Describe all processes of chemical weathering.

Candidate's Name.....

ST. AUGUSTINE – TAGASTE SECONDARY SCHOOL

FORM FIVE MID TERM TEST

HISTORY 1

Time: 2:00Hours

Combination

May, 2020

INSTRUCTIONS

7. This paper consists of **SEVEN (7)** questions.
8. Answer **five (5)** questions, choosing **number ONE (1)** is compulsory.
9. Each question carries **twenty (20)** marks.
10. Write your **Name** on every page of your answer sheet(s) provided.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
26		
27		
28		
29		
30		
31		
32		
TOTAL		

This paper consists of two (2) printed pages

Candidate's Name.....

1. The feudal mode of production did not develop in the entire African continent. Account for the variations (Give six points).
2. Marine technology played a big role in the widening of the gap between Africa and Western Europe. Comment with six points.
3. Analyze four changes and four objectives of education policies and development in Tanzania from 1961-1967.
4. Discuss six roles of the principle of self-determination nation towards the rise of African nationalism and the struggle for independence.
5. With examples, evaluate six (6) roles of colonial coercive apparatus to the development and consolidation of colonialism in Tanganyika from 1880s to 1919s.
6. Explain six (6) objectives of introducing progressive master farmers in Africa after the Second World War.
7. Identify the main obstacles to the socialist path of development in Tanzania since 1960's to 1980's use six points,

Candidate's Name.....

ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL

FORM FIVE MID TERM TEST

GENERAL STUDIES

Time: 2:00 Hours

Combination

May, 2020

INSTRUCTIONS

1. This paper consists of **seven (7)** questions.
2. Answer **five (5)** questions, considering question number **one (1)** which is compulsory
3. Each question carries **twenty (20)** marks

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	SIGNATURE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
TOTAL		

This paper consists of two (02) printed pages

Candidate's Name.....

1. From 1990's Tanzania diverted her philosophical foundation from socialism to the liberal philosophy" By providing six points analyse the reasons for developments of liberal philosophical ideas in Tanzania.
2. As an expert in General Studies, use the knowledge you have to educate the society on the utility of teaching General Studies as a subject in A level secondary schools (Give six points)
3. Suggest six measures that should be taken by the 5th phase government of Tanzania in its policy of industrialization.
4. Describe six aims of the structural adjustment policies (SAP'S) towards the restructuring of African economies in the mid 1980's.
5. With six points show how human rights is abused in Tanzania.
6. Examine social-economic impacts of covid-19 worldwide. (Give six points)
7. What measures should be taken to combat corruption in Tanzania? (Give six points)

ST. AUGUSTINE-TAGASTE SECONDARY SCHOOL**FORM FIVE MID TERM TEST****PHYSICS 1****TIME: 2 HOURS****Combination****May, 2020****INSTRUCTIONS:**

1. This paper consists of **ten (10)** questions.
2. Answer **nine (9)** questions.
3. Write your full names in the answer sheets provided
4. Mathematical tables and non-programmable scientific calculators may be used.
5. **The following useful information may be used;**

- | | | |
|--------|--|---|
| (i) | Acceleration due to gravity, g | 10 m/s^2 |
| (ii) | Universal Gravitational constant, G | $6.67 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$ |
| (iii) | Planck's constant, h | $6.6 \times 10^{-34} \text{ Js}$ |
| (iv) | Density of air | 1.2 kgm^{-3} |
| (v) | Speed of sound in air, v | 330 m/s |
| (vi) | Speed of light, c | $3.0 \times 10^8 \text{ ms}^{-1}$ |
| (vii) | Earth's radius, R | $6.4 \times 10^6 \text{ m}$ |
| (viii) | Mass of the earth, M | $6.0 \times 10^{24} \text{ kg}$ |
| (ix) | Pie, $\pi = 3.14$ | |
| (x) | $1 \text{ eV} = 1.9 \times 10^{-19} \text{ J}$ and $1 \text{ amu} = 931 \text{ MeV}$ | |

FOR EXAMINER'S USE ONLY		
QUESTIONS NUMBER	SCORE	SIGNATURE
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
TOTAL		

This paper consists of **Five (5)** printed pages

SECTION A

1. (a) The following results were obtained in an experiment to determine to determine the resistivity ρ of a metal wire; resistance of the wire $R=(2.00\pm 0.01)\Omega$, diameter of the wire $d=(0.57\pm 0.01)mm$ and length of the wire $l=(105.60\pm 0.1)mm$. Calculate the percentage error in resistivity from the obtained experimental results.
- (b) The viscosity of a liquid η depends on the radius of the tube, pressure gradient and the rate of flowing of the liquid through the tube. Use the method of dimensional analysis to determine the relation that shows how viscosity depends on the radius of the tube, pressure gradient and rate of fluid flow.
- (c) Explain any limitation encountered in deriving the formula in 1 (b).
2. (a) Why the sun gets hot when the particles in a cloud of gas are coalesced?
- (b) A body is moving with an angular acceleration, $\alpha=(-2.5t+4.4t^2+t^3)rad\ s^{-1}$. Find its angular velocity at time, $t=2s$.
3. (a) (i) Why in telecommunication, it is advantageous for the satellite to remain at the same location relative to a location on the earth?
(ii) Why do pitchers step forward when delivering the pitch?
- (b) In Jules Verne's classic novel from the earth to the moon, a giant cannon dug into the earth in Florida fired a spacecraft all the way to the moon. If the space craft leaves the cannon at an escape speed. What is the speed of the spacecraft when located at $1.50\times 10^5 km$ from the Centre of the earth?
4. (a) Sketch a graph of acceleration against displacement for a simple harmonic motion.
- (b) A vertical spring fixed at one end has a mass of $0.2 kg$ and is attached at the other end. Determine:
(i) the extension of the spring.
(ii) the energy stored in the spring.
- (c) The displacement of a particle from the equilibrium position moving with simple harmonic motion is given by $x=0.05\sin 6t$, where t is the time in seconds measured from an instant when $x=0$. Calculate:
(i) the amplitude of oscillations.
(ii) The period of oscillations.

5. (a) Explain any three applications of projectile in real life.
- (b) A player kicks a ball at an angle of 30° with the horizontal at an initial velocity of 19.6ms^{-1} . A second player standing at a distance of 20 m from the first player in the opposite direction of the kick starts running to meet the ball at an instant the ball is kicked. How far and how fast does the runner run in order to reach the ball before it hits the ground?
6. (a) Explain the following phenomenon;
- (i) The microphone uses a capacitor with one moving plate to create an electrical signal.
- (ii) A thunderstorm separates positive charge from negative charges found in a thundercloud.
- (b) (i) Deduce the change on the conductance if the diameter of the cylindrical conductor is doubled
- (ii) An RC circuit is discharged by closing a switch at $t=0\text{ s}$ when the initial potential difference across the capacitor is 100 V . If the potential difference has decreased to 1.06 V after 10 s , calculate the time constant.
7. (a) Explain the following;
- (i) An earth satellite moves in an elliptical path, how are potential and kinetic energy of the satellite affected?
- (ii) Why does the speed of the of an earth satellite changes in the elliptical orbit?
- (b) (i) Differentiate between gravitation field and gravitational gradient.
- (ii) State the Kepler's laws of planetary motion.
- (c) (i) Show that the gravitational potential energy of the body of mass m near the surface of the earth is mgh , where h is the height of the body above the surface of the earth.
- (ii) Find the velocity of the body thrown upward from the surface of the earth so that it reaches a height of $10R$?
8. (a) Derive an expression to show that excess pressure inside a soap bubble is inversely proportional to its radius
- (b) A water -filled cane sit on a table, the water squirts out of a small hole in the side of the cane located a distance y below the water surface. The height of the water level in the cane is h .
- (i) At what distance R from the base of the cane directly below the hole does the water strike the table?
- (ii) How far from the water surface must a hole be located to have maximum range?

9. (a) State the following;
- The law of conservation of angular momentum
 - The Parallel axis theorem
- (b) A uniform circular disk of moment of inertia 0.2kgm^2 and radius 15cm is mounted on a horizontal cylindrical axle of radius 1.5cm and negligible mass. Neglecting friction losses in the bearings, calculate;
- the angular velocity acquired from rest by the application, for 12s of force of 20N tangential to the axle.
 - the kinetic energy of the disc at the end of 12s .
 - the time required to bring the disc to rest if a constant braking force of 1.0N were applied tangentially to its rim.
10. (a) (i) Differentiate between the viscous drag and pressure gradient.
- (iii) Three capillaries of the same length but different internal radii of $3R$, $4R$ and $5R$ are connected in series and a liquid flows through them under streamline conditions. If the pressure across the third capillary is 8.2mm of liquid. Find the pressure across the first capillary.
- (b) (i) Why sound is heard more clearly in a hall with many people than when there are few people?
- (ii) Consider two progressive waves $y_1 = 2\sin\left(\omega t - \frac{\pi x}{16}\right)$ and $y_2 = 2\sin\left(\omega t + \frac{\pi x}{16}\right)$. Use the principle of superposition to formulate a stationary wave and determine its amplitude when $x = 4\text{cm}$.
- (c) (i) Use the concept of doppler effect to determine the speed and position of a moving aeroplane.
- (i) A hawk is flying directly away from a birdwatcher and directly toward a distant cliff at a speed of 15ms^{-1} . The hawk produces a shrill cry whose frequency is 800Hz . What frequencies are heard by the birdwatcher?
11. (a) A composite bar is made of a bar of copper 10cm long, a bar of iron 8cm long and a bar of aluminum 12cm long all, having the same cross-sectional area. If the extreme ends of the bars are maintained at 100°C and 10°C respectively. Find the temperature at the two junctions. Given that thermal conductivity of copper, iron and aluminum are $400\text{Wm}^{-1}\text{K}^{-1}$, $40\text{Wm}^{-1}\text{K}^{-1}$ and $20\text{Wm}^{-1}\text{K}^{-1}$ respectively.
- (b) Describe Searle's experiments to determine thermal conductivity of a good conductor.