

S.5 HOLIDAY WORK TERM 3, 2024

AGRICULTURE

- a) Give any five principles on which cooperatives operate.
- b) Mention the problems faced by cooperatives.
- c) Suggest 4 types of records kept on a farm.

DIVINITY 1: Answer TWO questions

1. (a) Account for the conflict between Prophet Amos and Chief Priest Amaziah at Bethel. (12mks)
(b) Discuss the hypocrisy in worship that exists in some churches today. (13mks)
2. (a) Analyse Isaiah's vision of God's throne (Cherubim) in Isaiah Chapter 6. (13mks)
(b) Explain lessons that Christians today can learn from this Vision. (12mks)
3. (a) Discuss Prophet Ezekiel's signs on the destruction of Jerusalem. (13mks)
(b) Explain ways in which Christians today can avoid God's wrath upon them. (12mks)
4. (a) Examine the message in Psalm 137. (13mks)
(b) Explain the relevance of Psalm 137 to Christians today. (12mks)
5. (a) Analyse the ways in which Job demonstrated faith in God during his suffering. (13mks)
(b) How do Christians perceive suffering? (12mks)

DIVINITY 2

Compare Jesus' anointment at Bethany in the gospels of John and Mark.

DIVINITY 3

To what extent has the church in east Africa been Africanized?

GEOGRAPHY 1

1. Account for the occurrence of mechanical weathering in East Africa.
2. (a) Distinguish between lateral and vertical earth movement.
(b) Examine the relevance of the plate tectonism theory in the understanding of the present day distribution of oceans and land masses.
3. To what extent has relief influenced the development of drainage patterns in East Africa?
4. (a) Draw a landscape sketch of the areas shown on the photograph; and on it mark and name,
 - i). Four landforms by wave action
 - ii). One vegetation type
 - iii). Four land use patterns
 - iv). A ridge



- (b) Account for the formation of the wave depositional landform in the middle foreground of the area shown in the photograph.
- (c) Explain the problems being faced in the area shown in the photograph.

S.5 HOLIDAY WORK TERM 3, 2024

(d) With evidence, suggest a place in East Africa where the photograph could have been taken.

GEOGRAPHY 3

“In Uganda, It is no lack of physical resources that is primarily responsible for the low levels of power development.”
Discuss.

TECHNICAL DRAWING

- 1). Construct the locus of a point which an eccentricity of 3:5 has given the focus is 48mm from the directrix. Name the locus.
- 2). Construct a superior trochoid of a generating circle whose diameter is 38mm given that the locus is formed by a point which is 29mm from the centre of the generating circle.

LITERATURE 1

Choose one poem written by a Ugandan poet and show how stylistic devices have been effectively used.

LITERATURE 2

W. SHAKESPEARE: Richard III

Discuss the playwrights used of contrast in Richard III (Use the internet where possible)

LITERATURE 3

CHARLES DICKENS: Great Expectations

Discuss the role played by Miss. Havishana in the novel Great Expectations.

GENERAL PAPER

Examine the role played by NEMA in environmental conservation in Uganda.

ART: Attempt all

1. Make a study or studies of a head of mature Chicken.
2. Draw or paint a landscape with clear vegetation in the foreground, a building in the middle ground and some trees in both the middle and background.

ICT

1. What is a device driver? Name two devices that may require the installation of device driver to work properly.
2. Name two kinds of information normally required to log on to a multiuser operating system
3. Describe briefly why virtual memory is slower than physical memory
4. Give two advantages of using a print spooler
5. How is multitasking different from multiprocessing?
6. Explain briefly why system software is also important for application software to work properly.

PHYSICS

1. (a) (i) State **two** differences between **real** and **virtual** images.
(ii) Explain with the aid of a labeled diagram how a thick plane mirror forms multiple images.
(b) Describe the principle and mode of operation of a sextant.
(c) A concave mirror forms a real image which is three times the linear size of the object. When the object is displaced through a distance y , the real image formed is four times the linear size of the object. If the distance between the two image positions is 20.0 cm, find the;
(i) focal length of the mirror.
(ii) distance y .
(d) Explain the defect of spherical aberration in curved mirrors and suggest how its effect is mitigated in car head lamps.
- 2 (a) (i) Define the terms magnetic field and magnetic flux density.
(ii) Sketch the magnetic field pattern due to two parallel straight wires carrying currents I_1 and I_2 in the same direction in air.
(iii) Write down the expression for the magnetic flux density at the centre of a plane circular coil of N turns, radius R , and carrying a current I in a vacuum.
(b) Two identical wires R and S lie parallel in a horizontal plane, their axes being 0.10m apart. A current of 10A flows in R in opposite direction to a current of 30A in S. Neglecting the effect of the earth's magnetic flux density, calculate the magnitude of the magnetic flux density at a point P midway between R and S and state its direction.
i) Describe with the aid of a labelled the structure and mode of action of a moving coil galvanometer.

S.5 HOLIDAY WORK TERM 3, 2024

- ii) Explain two features of a moving coil galvanometer that should be modified for it to be used as a ballistic galvanometer.

CHEMISTRY

Read, make personal notes about Carboxylic acids and carboxylic acid derivatives. Your work should clearly give a preamble about carboxylic acids, their nomenclature, their isomerism, synthesis of carboxylic acids, physical properties of carboxylic acids, their chemical properties, identification of the carboxylic acid functional group; the uniqueness of methanoic acid.

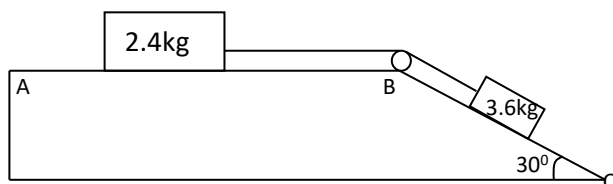
The carboxylic acid derivatives should include the acid halides; acid amides, acid nitriles; and esters. You should briefly read and write about the nomenclature of esters; synthetic preparation of esters; their physical properties; their chemical properties as well as uses of esters.

APPLIED MATHEMATICS

- 1). The number of cows owned by residents in a village is assumed to be normally distributed. 15% of the residents have less than 60 cows while 90% of the residents have less than 100 cows.
- Determine the value of the mean μ and the standard deviation δ of the cows.
 - If there are 200 residents, find how many have more than 80 cows.
- 2). (a) Use the trapezium rule with 6 ordinates to find the approximate value of $\int_{0.5}^{1.5} \left(\frac{3}{x} + x^4\right) dx$, correct to 4 s.f
(b) Calculate the exact value, hence find the absolute, relative and percentage error for your estimation in (i).
Suggest how the error may be reduced.
- 3). Two particles A and B move with velocities $(\lambda i + 3j + 30k)ms^{-1}$ and $(4i - 2j - 15k),s^{-1}$ respectively where λ is a constant. At $t=0$, the particles are located at points $(2, 1,-15)m$ and $(1,4,12)m$ respectively.
- Find the value of λ such that A and B will collide and find the value of t when collision occurs.
 - When $\lambda=2$, find the time after which the particles will be nearest to each other.
- 4). The mass (x) in kg of 50 students were as follows:

Masses (x)	Number of students
$40 \leq x \leq 45$	3
$45 \leq x \leq 50$	2
$50 \leq x \leq 60$	20
$60 \leq x \leq 65$	18
$65 \leq x \leq 70$	3
$70 \leq x \leq 75$	4

- Calculate the mean and standard deviation.
 - Construct an Ogive and use it to estimate
 - Median
 - Percentage of students who have a mass of 55kg and above
- 5). A particle of mass 2.4 kg is held at rest on a rough horizontal surface AB with coefficient of friction of 0.5. It is connected by a light inextensible string passing over a smooth fixed pulley at B to a particle of mass 3.6kg. The sloping face BC is smooth and makes an angle of 30° to the horizontal.



If the system is released from rest, find the;

- Acceleration of the system and tension in the string
- Force exerted on the pulley B
- Velocity of the 3.6kg mass after 2 seconds

S.5 HOLIDAY WORK TERM 3, 2024

6). A random variable x has probability density function

$$f(x) = \begin{cases} kx; & 0 < x \leq 3 \\ 3k(4 - x); & 3 < x \leq 4 \\ 0; & \text{otherwise} \end{cases}$$

- (a) Sketch $f(x)$, hence find the value of the constant, k .
 (b) Find the;
 i). Mean $E(X)$
 ii). Cumulative distribution function $f(x)$, hence find $P(x < 3.5)$

7). (a) Use graphical method to show that the equation $e^x + x - 4 = 0$ has a root between 1 and 2. Correct to one decimal place.

(b) Show that the Newton Raphson formula for finding the root of the equation above is

$$X_{n+1} = \frac{e^{x_n}(x_n - 1) + 4}{1 + e^{x_n}} \quad n = 0, 1, 2, \dots$$

(c) Hence use the initial approximation x_0 obtained in (a) above to find the root of the equation correct to 3 decimal places.

8). A uniform plank of length 8m and mass 100kg rests in limiting equilibrium with the end A on a horizontal ground and the end B against a vertical wall. If the coefficient of friction at each end of the plank is 0.3. Find the;

- a). Angle the plank makes with the vertical
 b). The plank is now placed at an angle of β to the horizontal where $\tan\beta = 2$ to slip. Find the maximum value of M and the magnitude of the corresponding normal reaction at A.

9). A particle is projected from O with the velocity $u = (4i + 3j) \text{ms}^{-1}$. If the particle moves with a constant acceleration of $-g \text{ms}^{-2}$, show that the position vector r of the particle at t seconds is given by $r = 4t \underline{i} + (3t - \frac{1}{2}gt^2) \underline{j}$. If $r = x \underline{i} + y \underline{j}$.

Show that $y = \frac{3x}{4} - \frac{gx^2}{32}$ at , hence determine in terms of g

- a). The horizontal range travelled
 b). The maximum height reached by the particle.

10). The cumulative frequency table below shows the number of absentees for a class of 32 children during the term.

Time absent	0	≤ 1	≤ 2	≤ 3	≤ 4	≤ 5	≤ 6	≤ 7
Cumulative frequency	5	10	20	23	27	28	31	32

- a). Find the median number of absentees
 b). Represent the data on a histogram and use it to find the modal number of absentees
 c). Find the range of the middle 50% of the observations
 d). Calculate the standard deviation