UACE Food and nutrition paper 2 questions

1. (a) (i) What is hard water? (02marks)

   (ii) Explain three ways of removing permanent hardness from water. (07mars)

   (iii) Outline **two** advantages and **two** disadvantages of hard water. (06marks)

   (b) State five qualities of a good detergent, (05marks)

   (c) What is the use of the following chemical agents:

   (i) alum (02marks)

   (ii) Fine sand (01marks)

   (iii) chlorine (02marks)

   in industrial water treatment?

2. (a) What is the importance of good ventilation in a kitchen? (04marks)

   (b) Explain how air is naturally purified. (04marks)

   (b) How would you prevent air pollution in a home?

   (d) Describe how the following operate in ventilation:

   (i) Extractor fan (05 marks)

   (ii) Air conditioning. (09 marks)

3. (a) (i) What is electromagnetism? (02marks)

   (ii) With the aid of a well labeled diagram, explain how electromagnetism is applied in the operation of an electric bell.(12 marks)

   (b) How is alternating current generated on a large scale? (06marks)

(c) State five application of photo-electricity, (06marks)

4. (a) Explain the main causes of a fuse blowing. (04marks)

(b) (i) A 3kW electric heart is connected to a standard plug foe operation on 24oV main supply. Calculate the correct size of the fuse for the plug. (04 marks)

(ii) Explain the working principles of a flexible electric heating element. (09marks)

(c) (i) what is illumination? (02marks)

(ii) Describe with examples, three applications of reflection as applied in a home. (06marks)

5. (a) Giving examples, differentiate between cohesion and adhesion forces (03marks)

(b) With the aid of a diagram explain the working mechanism of the following:

(i) vacuum pump (08marks)

(ii) Gas lamp (08marks)

(c) Calculate the maximum height through which a common pump could raise water when the atmospheric pressure is 700mmHg (density of mercury = 13.6g/cm^3). (04marks)

(d) State two ways of minimizing the cost of running a freezer. (02marks)

6. (a) Describe how a wheel and axle is used to draw water from deep wells. (08marks)

(b) Compare the working of fixed and movable pulleys. (04marks)

(c) Give two application of the pulley in daily life. (02marks)

(d) (i) Describe any two types of weighing scales. (08marks)

(ii) Explain the use and care of weighing scales. (03marks)

7. (a) With the aid of well labeled diagram, describe the working of a gas thermostat. (08marks)

(b) How can economy of fuel in a kitchen when using gas fuel? (04marks)

(c) State the measures that promote safety in a home when using the following equipment

(i) Charcoal stove (03marks)

(ii) Paraffin stove (04marks)

(d) Mention the advantages of microwave over electric cookers. (06marks)

8. (a) (i) Define the following forces

- centripetal forces. (02marks)

- centrifugal forces (02marks)

(b) Suggest ways through which centripetal forces are applied in a home. (05marks)

(c) What points should one consider when buying a vacuum cleaner? (07marks)

9. (a) Describe an experiment to illustrate the relationship between radiation and surface texture. (10marks)

(b) (i) How are the three methods of heat transfer controlled in construction of a thermos flask? (07marks)

(ii) List any four insulators commonly used in the home. (02marks)

(c) An electric kettle is rated 960W, 240V. How long will it take to raise 20g of water at 150C to boiling point, if 90% of the heat produced is used in raising the temperature of water? (Specific heat capacity of water = 4200J/kg/K.) (06marks)

10. (a) What do you understand by the following electrical terms:

(i) conductors (02marks)

(ii) Resistance(02marks)

(iii) Kilowatt hour, (02 marks)

(iv) Ampere (02 marks)

(b) With the aid of a diagram discuss the working principle of an electric iron. (11marks)

(c) Describe the working principles and relevance of a circuit breaker in an electric installation in a building, (06mars)

11. (a) Draw a universal three pin plug and state the purpose of each of the three pins. (12marks)

(b) Describe any six features on an electric cooker that influences its efficiency. (06mars)

(c) What precautions should be taken to maintain the efficiency of a refrigerator? (07marks)

12. (a) What are the control measures that can be taken against water pollution? (06marks)

(b) (i) With the aid of a diagram, describe how you would purify contaminated water by the filtration method. (08marks)

(ii) How can total hardness of water be determined? (06marks)

(c) With examples, explain how synthetic detergents are classified. (05marks)

13. (a) (i) What is evaporation? (01mark)

(ii) Analyze the factors that affect the rate of evaporation (04marks)

(iii) Explain the application of evaporation in the daily life. (05marks)

(iv) How can condensation damp be prevented in the kitchen? (04marks)

(b) (i) Describe the working mechanism of an absorption refrigerator. (06marks)

(ii) How is liquid ammonia used to achieve the cooling effect in refrigerator? (05marks)

14. (a) (i) Explain the scientific principle governing the efficiency of a sharp knife. (03marks)

(ii) Explain the effects of pressure on boiling point? (05marks)

(b) Describe one method of finding the density of milk. (06marks)

(c) In an experiment to determine the relative density of oil, the following results were obtained;

- mass of an empty bottle = 30g
- mass of bottle with oil = 35g
- mass of the bottle with water = 60g

Calculate the relative density of oil (06 marks)

(d) State the factors that affect the elasticity of flour dough. (05marks)

15. (a) Describe the qualities of color. (10marks)

(b) What aspect s would you consider when developing a color scheme for a sitting room? (07marks)

(c) What are the advantages of using fluorescent lamp? (03marks)

(d) Discuss how glare can be prevented when furnishing a house in order to provide a soft diffused illumination. (05marks)

16. (a) State the principle of conservation of energy. (03marks)

(b) (i) Give examples of appliances which use the principle of changing electrical energy to mechanical energy. (04marks)

(ii) Explain factors that can lead to accidents when using electrical appliances.

(c) Discuss how storage heater is used for heating up a room. (10marks)

17. (a) (i) What factors should you consider when choosing a detergent? (05 marks)

(ii) Describe how a detergent is able to remove dirt from a fabric. (10marks)

(b) with examples, give the uses of soap additives. (05marks)

(c) What are the advantages of using soapless detergents? (05marks)

18. (a) Distinguish between the following:

(i) Rewireable fuse and cartridge (06marks)

(ii) Circuit breaker and twin switches (06marks)

(b) Explain how conduction and insulation can be used in a home. (06marks)

(c) Name six domestic appliances that make use of thermostats. (03marks)

(d) Why is earthing important in building? (04marks)

19. (a) Describe the working mechanism of the following electrical appliances;

(i) Spin drier (05marks)

(ii) Food mixer (05marks)

(b) How is the magnetic effect applicable in the following appliances:

(i) Electric bell (03 marks)

(ii) Circuit breaker. (03marks)

(c) The following are appliances in household. Study the table below and answer the following questions

Appliances	Quantity	Power rating @	Total time in a month
Cooker	3	8kW	150
T.V	4	75W	60
Electric iron	1	750W	60
Deep freezer	2	250W	65

Assuming UMEME charges as follows;

0-15 units Sh40 each (1unit = 1kWh)

16-100 units Sh80 each Tax (VAT) = 18%

101 and above units Sh95 each

Calculate the electricity bill for the household for the month. (09marks)

20. (a) (i) what is surface tension? (02marks)

(ii) Give examples of the effects of surface tension. (02marks)

(b) Differentiate between adhesion and cohesion forces. (04marks)

(c) Using illustrations, demonstrate how a named household agent reduce surface tension of water. (09marks)

(d) List four traditional scourers and explain how each can be used to clean surfaces in the home. (08marks)

21. (a) Discuss the applications of the effects of air pressure on the boiling point in daily life. (08 marks)

(b) Using diagrams, illustrate how surface area affects the rate of evaporation of water. (07marks)

(c) Explain the applications of the cooling effect of evaporation. (10marks)

22. (a) (i) Distinguish between the causes of temporary and permanent hardness. (02marks)

(ii) Explain how the zeolite process removes hardness from water. (05marks)

(b) Describe the stages involved in the manufacture of powdered synthetic detergent. (07 marks)

(c) Explain the factors that affect the efficiency of laundry soap. (05marks)

(d) Commercialized laundry is gaining popularity among Ugandans today. Identify its advantages and disadvantages. (06marks)

23. (a) What do you understand by the following terms and how can they be controlled in the kitchen?

(i) Draught (04marks)

(ii) Condensation. (04marks)

(b) What is the importance of good lighting? (04marks)

(c) State the advantages and disadvantages of using fluorescent lamps in lighting. (08marks)

(d) How can humidity be controlled in the kitchen? (05marks)

24. (a) Describe how a home maker can modify a three stone cooker to ensure an economic means of cooking. (05marks)

(b) (i) With the aid of a diagram, describe the construction of an improved charcoal stove. (06marks)

(ii) How would you maintain the efficiency of a charcoal stove? (05marks)

(c) Show how insulation of an electric oven is achieved. (04marks)

(d) Explain five applications of radiation is cooking. (05marks)

25. (a) What are hydrometers? (03marks)

(b) Explain the uses of three different hydrometers in the food industry. (09marks)

(c) Define the following terms:

(i) Bulk density (1 ½ marks)

(ii) Unit density (1 ½ marks)

(d) A density bottle weighs 15N when empty, 54N when full of water and 48N when full of a second liquid. Calculate the density of second liquid. (06marks)

(e) A density advice would you give to the Engineer at a site constructing a disco hall about noise reduction? (04marks)

26. (a) (i) What is meant by term Defrosting?

(ii) Explain its importance (03marks)

(iii) Identify the different kinds of defrosting mechanisms in the various types of refrigerators. (06marks)

(b) (i) Describe the working principle of a freezer. (03marks)

(ii) In a domestic kitchen how would you position a deep freezer to ensure maximum efficiency? (03marks)

(c) (i) Outline three sources of humidity in the kitchens. (03marks)

(ii) Explain how textiles used in furnishings can be used to control humidity of the room. (02marks)

(iii) Describe how air conditioners treat the air entering a large building. (05marks)

27. (a) Explain the factors considered when choosing th following surfaces for the kitchen:

(i) Floors (04marks)

(ii) Work surface

(b) Discuss the importance of the following in the kitchen

(i) Good lighting (04marks)

(ii) Proper ventilation (04marks)

(c) Using simple illustration, show the working-triangle in the various kitchen lay out. (09marks)

28. (a) (i) State the law of electrostatics. (01 marks)

(ii) What are the disadvantages of static electricity in a home? (05marks)

(b) Outline the safety precautions one would put into consideration when dealing with electricity. (10marks)

(c) Calculate the fuse size on which the following appliances can operate at once: Blender 100 watts, electric iron 0.75kW and electric cooker 2kW operating from a 240V main supply. (04marks)

(d) (i) With the aid of a diagram, explain how you would test a blown cartridge fuse. (02marks)

(ii) A fuse is very important in all electrical appliances. Outline the circumstances that may cause it to blow. (03marks)

29. (a) (i) Define the term force and state its SI units. (02marks)

(ii) Explain nay four types of forces commonly applied in a home. (04marks)

(b) (i) State the principle of moments (01marks)

(ii) With relevant examples, discuss the different classes of levers. (09marks)

(c) Calculate the mechanical advantages if a total effort of 200N is needed to lift a weight of 600N. (02marks)

(d) Explain how pulley can be applied in the day-to-day life. (07marks)

30. (a) (i) What is a builder in relation to detergents? (01marks)

(ii) Explain the action of the following laundry agent s:

- Enzyme detergent (03marks)
- Grease solvents (03 marks)
- fluorescers

(b) What measures should be taken to economize on the use of detergents in a home? (04marks)

(c) Give the advantages of soft water. (03marks)

(d) How would you maintain the efficiency of a washing machine? (08marks)

31. (a) (i) Define atmospheric pressure. (02marks)

(ii) Discuss any two application of atmospheric pressure in a home. (10marks)

(b) Describe the construction of a simple barometer. (08marks)

(c) A rectangular bock with sides 5.0cm x 10cm x 20cm is made of a material of density 2000kg/m^3, calculate the minimum pressure it can exert when resting with one of its faces on horizontal surface. (05marks)

32. (a) In clothing design, discuss how lines create various effects on individual wearing the garment. (08marks)

(b) Explain the importance of color in a home. (08marks)

(c) (i) State the effects of loud noise on humans. (04marks)

(ii) How can insulation against loud noise be achieved in modern buildings? (05marks)

33. (a) What is fatigue? (02marks)

(b) (i) Explain the type of fatigue that may occur in the body. (08marks)

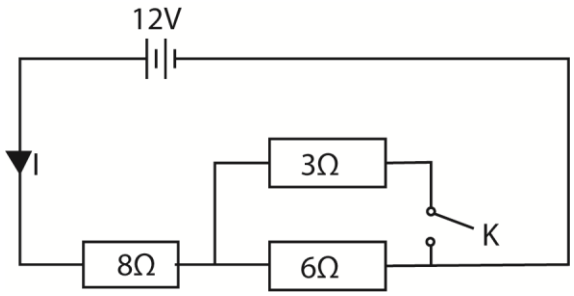
(ii) Outline the causes of fatigue derived from daily work. (05marks)

(c) Using the knowledge of energy management , explain how you would use the head to simplify the work you do with your hand. (10marks)

34. (a) (i) Differentiate between electromotive force and potential difference. (02marks)

(ii) Describe two applications of electrical resistance in a home. (04marks)

(b) Study the diagram below and answer questions that follow



In the circuit network above, calculate the effective resistance when the switch K is

(i) Open (03marks)
(ii) Closed (05marks)

(c) Calculate the following when the switch K is closed

(i) The potential difference across the 8Ω resistance. (04marks)

(ii) The current through the 6Ω resistor. (04marks)

(d) State the care given to an acid accumulator. (03marks)

35. (a) Discuss the properties that make water a good cleaning agent. (08marks)

(b) Explain the commercial uses of water in Uganda.

(c) State the various ways of purifying water for domestic use. (07marks)

36. (a) (i) Differentiate between the **lift pump** and a **force pump**. (04marks)

(ii) Name two uses of a lift pump. Using diagrams, discuss its working principle. (09marks)

(b) Explain the significance of lagging in water pipes. (04marks)

(c) Describe the working mechanism of a water closet (flush toilet) (08marks)

37. (a) With the aid of a diagram, explain the stages water goes through in a water treatment plant before it is declared fit for human consumption. (16marks)

(b) Explain the role of the various soap additives. (06marks)

(c) State how piped water gets contaminated. (03marks)

38. (a) Using illustrations, explain the working of the following:

(i) Vacuum flask (08marks)

(ii) air conditioner. (08marks)

(b) Explain the principle of operation of the absorptive refrigerator.

(c) How can a home maker ensure that an electric cooker does its work efficiently? (04marks)

39. (a) Explain how the following devices work:

(i) Hot plates (07marks)

(ii) Convector heaters. (07marks)

(b) State:

(i) four disadvantages of using electricity as fuel in the home.

(ii) six advantages of using Bio-gas as a source of domestic fuel. (03marks)

(c) (i) An electric kettle with a capacity of 1 ½ kg and rated 0.2kW and 250V, takes one hour to boil its full capacity of water from 30^0C. Neglecting heat losses, calculate the efficiency of the kettle.

(Specific heat capacity of water = 4200Kkg^{-1}K^{-1}) (05marks)

(ii) State how the working efficiency of the Kettle mentioned in (c)(i) above can be improved. (01marks)

40. (a) Explain what is meant by the term evaporation and state the conditions under which it occurs. (06marks)

(b) Describe four types of damp in buildings and outline how each type is controlled or prevented during building construction or house renovation. (10marks)

(c) How are the following processes made use of in a home?

(i) Expansion of materials. (06marks)

(ii) Melting of substances. (03marks)

41. (a) Explain the following characteristics of colour.

(i) Hue (01mark)

(ii) Intensity (02marks)

(iii) Value (02marks)

(b) How can colour be used to correct the following faults in a room?

(i) A north east facing Kitchen (02marks)

(ii) A south west facing bathroom. (02marks)

(iii) A crowded sitting room (02marks)

(iv) A room with visible pipes, wood and other accessories. (02marks)

(c) Describe the ways used for caring for a wooden chopping board. (04marks)

(d) (i) Differentiate between thermosetting plastics and thermoplastics. (04marks)

(ii) List the dangers that are likely to occur from daily use of plastics. (04marks)

42. (a) Using Illustrations, explain the mechanism of the working of a water tap. (14marks)

(b) (i) What are drain traps? (02marks)

(ii) Give examples of their application in a home. (02marks)

(c) Describe the principle of the working of a plunger when unblocking a sink. (03marks)

(d) Distinguish between open drainage and concealed drainage systems. (04marks)

43. (a) (i) Giving one example, define friction. (02marks)

(ii) Discuss the merits and demerits of friction. (08marks)

(b) (i) Outline the finishes that are commonly given to wooden surfaces in the home. (03marks)

(ii) Of what importance are the finishes in (b)(i) above? (06marks)

(c) Suggest the appropriate care that should be given to a washing machine to maintain its efficiency. (06marks)

44. (a) State the principle of conservation of energy. (02marks)

(b) Describe the stages of energy transfer within a body which enables a manual worker to cut down a tree. (07marks)

(c) Calculate the power a boy weighing 52kgwould need to lift his suitcase weighing 30kg, up 20 stairs of 20cm each in height, in 30seconds. (06marks)

(d) Explain the working mechanism of an air conditioning system. (10marks)

45. (a) State the following laws:

(i) Hooke's law. (03marks)

(ii) Newton's first law of motion. (03marks)

(b) Outline the qualities of a good domestic weighing scale. (07marks)

(c) What are the advantages of an electronic weighing scale over a spring weighing scale? (04marks)

(d) Describe the interaction of forces that enable a plunger to unblock a sink. (08marks)

46. (a) State uses of pumps I a home. (04marks)

(b) Explain the working mechanism of a bicycle pump and tyre valve. (08marks)

(c) (i) What is a thermostat? (02marks)

(ii) Illustrate how a gas oven thermostat works. (06marks)

(d) Describe the effects of solid pressure in a home. (05marks)

47. (a) With aid of a diagram, explain the scientific principle underlying the structure and working mechanism of the micro-wave oven. (10marks)

(b) Identify three modern features in an electric cooker and explain how each saves labour. (03marks)

(c) How would you economize gas when cooking? (05marks)

(d) What are the desirable qualities of fuel that you would recommend for cooking? (07marks)

48. (a) Stating the importance of each installation point, trace the supply of electricity from the electric pole outside a house up to the main switch. (08marks)

(b) Describe the contents of a fuse box and its working mechanism. (07marks)

(c) Differentiate between the following:

(i) Cables and flexes (04marks)

(ii) Switches and plugs (03marks)

(iii) Wall sockets and adaptors. (03marks)

49. (a) Define the following terms and give their relevance in the food industry:

(i) Gravitation force (03marks)

(ii) Magnetism (03marks)

(iii) Centrifugal force

(b) Discuss, giving relevant examples the effects of friction in the home. (10marks)

(c) State the advantages of using an electronic weighing scale. (06marks)

50. (a) Describe the different categories of washing machines. (08marks)

(b) Your uncle wants to purchase a washing machine for the home. What advice would you give him concerning the choice? (06marks)

(c) (i) Discuss the working principle of a washing machine (06marks)

(ii) A washing machine having a spin tub of mass 8500g and radius of 20cm resolve at a speed of 120cm/s. calculates the mass of its load. (Acceleration due to gravity is 10m/s) (05marks)

51. (a) (i) Discuss the structure and working principle of a pressure cooker. (10marks)

(ii) What are the merits and demerits of cooking using a pressure cooker? (05marks)

(b) Distinguish between the compressor and absorption type refrigerators. (04marks)

(c) Discuss the ways in which a refrigerator can be handled to maintain it efficiency. (06marks)

52. (a) Explain the use and storage of the following cleaning agents:

(i) Salt. (04marks)

(ii) Turpentine (04marks)

(b) Describe the role of alkalis in cleaning action in the home. (10marks)

(c) (i) Explain why synthetic detergents are effective in their cleaning action. (05marks)

(ii) Outline the disadvantages of using soapless detergents. (02marks)

53. (a) (i) What is bulk density? (02marks)

(ii) How can you determine the bulk density of flour? (07marks)

(b) Calculate the capacity of a container that can hold half a bag of rice if one bag weighs 100kgand bulk density of rice is 20kg/m^3. (04marks)

(c) (i) Explain the application of the knowledge of floatation in daily life. (06marks)

(ii) 80cm^3 of methylated spirit of relative density of 0.71 is mixed with 150cm^3 of water. Calculate the density of the mixture if there is no change in the total volume on mixing. (06marks)

54. (a) (i) State the effects of poor ventilation in a home. (05marks)

(ii) Explain the factors that affect the length of time taken by clothes to dry. (05marks)

(b) Describe how you can determine the relative humidity in a room. (08marks)

(c) (i) How can the knowledge of humidity be made use of in the daily life? (04marks)

(ii) Explain how the human body maintains it normal temperature during athletics (03marks)

55. (a) (i) What do you understand by the term relative density? (02marks)

(ii) Describe any four applications of relative density. (08marks)

(b) Describe the method you would use to determine the density of a potato. (07marks)

(c) With well-illustrated examples, discuss the working principles of a hygrometers. (06marks)

(d) Explain how any four available kitchen utensils can be used to measure ingredients during cookery and state their equivalent measures in metric terms. (02marks)

56. (a) Distinguish between the following, giving a suitable example of their application in home:

(i) Absorption and adsorption (02marks)

(ii) Surface tension and capillarity. (03marks)

(b) Explain the applications of osmosis in food preparation giving relevant examples. (04marks)

(c) Explain why

(i) fruit preserved in dilute sugar syrup are found with burst skins. (02marks)

(ii) Some concrete flows tend to sweat (03marks)

(d) Explain how the following household equipment is adapted for their functions:

(i) Coffee percolator (05marks)

(ii) Aerosol spray (05marks)

57. (a) What is temperature? (02marks)

(b) Analyze the suitability of mercury, water and alcohol as thermometric liquids. (10marks)

(c) Describe an experiment that demonstrates that water is a good conductor of heat. (08marks)

(d) State five categories of thermometers used in the home and their uses. (05marks)

58. (a) (i) A thirsty student drunk tap water which tasted salty. Giving the causes, describe the problems he/she would encounter when using the same water for washing her uniform. (04marks)

(ii) Explain the measures that can be taken to solve above mentioned problems. (04marks)

(iii) Explain how you would measure hardness in water. (05marks0

(b) Describe the functioning of the hot water system. (05marks)

(c) Sewage is one of the major pollutants in Uganda. Describe how sewage water can be safely disposed of in the water body. (07marks)

59. (a) Bright light can cause a lot of discomfort to the eye. Discuss the causes and preventive measures that can be taken to avoid this phenomenon in the home. (08marks)

(b) How would you ensure that the following areas in the home are well lit?

(i) Siting room (03marks)

(ii) Bedroom (04marks)

(iii) Kitchen (03marks)

(c) (i) Describe the structure and functioning of an electric filament. (05marks)

(ii) State the demerits of using a filament lamp. (02marks)

60. (a) Discuss the points that one should consider when choosing and buying electrical appliances. (08marks)

(b) A microwave of 200W, meat curve of 2400W and a robot of 5000W are connected to 250V supply. Calculate the cost of running all the above appliances for three months if the microwave is used 2 hours every day, the robot is used 2hours one a week, and the meat carver 30 minutes three times a month. A unit of electricity costs 240/= and VAT is 7% of the total cost. (09marks)

(c) (i) What is central heating in a home? (01mark)

(ii) Explain the factors that govern the choice of heating system. (07marks)

61. (a) Explain the scientific principle underlying the use of the following for sterilizing:

(i) Calcium chloride (02marks)

(ii) Ashes (02marks)

(iii) Enzyme detergent. (02marks)

(b) Describe the manufacture of soap by hydrolysis. (06marks)

(c) Compare and contrast the force pump and the lift under the headings:

(i) operation (04marks)

(ii) efficiency in use (04marks)

(d) To what extent is the principle of floatation utilized in the home? (05marks)

62. An electric blanket for use on a 240V supply has two identical heating elements each having a resistance of 1000 ohms. The blanket for use on a 240V supply has two identical heating elements each having a resistance of 1000 0hms. The elements are connected to the mains with the help of a special switch in three different ways as follows

(i) one element only is used while the other is disconnected

(ii) both elements are used in series

(iii) Bot elements are used in parallel

(a) Explain how the electric blanket is suitable for its purpose. (05marks)

(b) Determine the current in each case element when used in (i), (ii) and (iii) above (06marks)

(c) If one of the elements is burnt out, state giving reasons, in which one of the three elements the blanket would certainly to give out some heat. (03marks)

(d) Explain the importance of the following devices is an electrical installation:

(i) circuit breaker (03marks)

(ii) adapters. (03marks)

(e) Explain the advantage of boiling water in an automatic electric kettle over boiling water in a sauce pan on a hot coil

63. (a) A column of water in a tube is 0.8m high. The density of water is 1000kgm^{-3}. If gravitation acceleration is 10ms-2, what is the pressure exerted by the column of water? (04marks)

(b) Discuss the principles that govern the sealing and operation of food preservation in sealed jars. (07marks)

(c) Explain how a syringe uses air pressure in its operation. (06marks)

(d) Briefly describe the operational principles of a pressure stove. (08marks)

64. (a) Explain the effect of the following elements in design on the size of a room:

(i) Pattern (04marks)

(ii) Texture (04marks)

(b) (i) Distinguish between reflection and refraction. (04marks)

(ii) Discuss the usefulness of each of the following principles mentioned in (b)(i) above in daily life. (10marks)

(c) What is the importance of using bowls and shades when providing ligh in a home? (03marks)

65 (a) Describe the properties of the following metals that make them suitable for kitchen ware:

(i) Iron (04marks)

(ii) Stainless steel (04marks)

(iii) Aluminium (04marks)

(b) Explain the working mechanism of the following appliances:

(i) Vacuum cleaner (05marks)

(ii) Blender (05marks)

(c) What three precautions should be taken when using a blender? (03marks)

66. (a) Describe the posture that minimizes fatigue in daily work. (06marks)

(b) What is the relationship between mechanical advantage, velocity ration and efficiency of a machine? (06marks)

(c) With clear explanation of the working principle, give two appliances of the 3rd class lever in a home. (06marks)

(d) Explain how thermometric properties are made use of in a household thermometer. (07marks)

67. (a) Explain what is meant by kilowatt hour. (02marks)

(b) A boiler rate 3000W, 240, takes 15 minutes to boil water. Calculate the average weekly costs of using a boiler, if it is used once a day and one unit costs 450 shillings. (05marks)

(c) What are the advantages and disadvantages of an electrical immersion? (09marks)

(d) Describe the importance of an electric installation and color cording. (09marks)

68. (a) State the various principles used in extinguishing kitchen fires. (06marks)

(b) With the help of a diagram, show how a modern ring circuit is installed. (09marks)

(c) Discuss the factors to consider when planning an ideal kitchen. (10marks)

69. (a) By means of illustrations, explain how sand and other materials are used to filter water. (09marks)

(b) (i) Giving examples of solvent detergent, explain how they are used in laundry. (10marks)

(ii) Explain with examples why soap additives are used. (03marks)

(c) Suggest ways of improving the cleansing action of locally available abrasives and give examples where they can be used. (03marks)

70. (a) Define the term pressure. (02marks)

(b) Comment on the effects of a $5cm^2$ base wooden led of a sofa set compared with that of a $2cm^2$ base iron bar leg on a carpet. (05marks)

(c) Explain the factors that make it possible for water to move from the storage reservoir at the water supply to the toilet cistern. (05marks)

(d) Explain the factors responsible for the physical changes that occur when water goes through its free states. (08marks)

71. (a) With the aid of clear diagrams, explain the working mechanism of pulleys. (06marks)

(b) Giving reasons, explain the care you would give to weighing scale. (05marks)

(c) Explain the principles behind the forces below and examples of their effect in daily life.

(i) Gravity

(ii) Friction

(iii) Inertia

(d) State the operational principles underlying the working of the following levers;

(i) Claw hammer (03marks)

(ii) Human arm (03marks)

72. (a) State the characteristics of color (08marks)

(b) Explain how color can be used in correcting construction faults (10marks)

(c) Distinguish between a brittle and ductile material giving one example in each case. (07marks)

73. (a) Describe the principles involved in making charcoal.

(b) Illustrate a good charcoal stove and describe how it works

(c) With the help of diagram, explain how a gas burner operates

(d) Outline the advantages of using gas for cooking

(e) How can an electric cooker be used economically?

74. (a) (i) What is total hardness of water?

(ii) How would one measure hardness of water between $100^0 - 200^0$ Clack?

(b) (i) Using the demineralizing process, explain how total hardness can be removed from water.

(ii) What are the effects of hard water on household garments and how would such effects be reduced?

(c) Outline the process of manufacturing a synthetic detergent powder.

75. (a) Giving four examples, define the term surfactants.

(b) How is the knowledge of pH values useful in the home?

(c) Explain, with illustration, the cleansing action of soap.

(d) Outline the properties of a good laundry detergent.

76. (a) Describe the effects of electricity shock on the body.

(b) Outline the first aid treatment that will be given to a person who had electric shock.

(c) An automatic one litre kettle is rated at 24000 watts and is used on a 240 volt mains. Describe the working mechanism of the kettle and calculate the following.

(i) the resistance of the heating element

(ii) the time taken to heat up the filled kettle from 250^0 to 100^0C. (the thermal heat capacity of wateris 4.2kJ).

(iii) the cost of heating up the water in the kettle to boiling (1unit of electricity costs shs 300).

77. (a) 'Ventilation is important aspect in kitchen planning.' Discuss.

(b) Explain how cooker hoods improve ventilation in kitchen.

(c) Distinguish between generalized and localized lighting.

(d) (i) Describe the working mechanism of a fluorescent tube.

(ii) Identify the advantages and disadvantage of using fluorescent lamps.

78. (a) (i) Define evaporation

(ii) To what extent is evaporation a useful aspect in a home?

(b) Explain the method of operation of a gas-operated refrigerator with reference to construction.

(c) What precaution should be taken to maintain the efficiency of a refrigerator?

79. (a) With aid of clearly labeled diagram, explain the working mechanism of the following:

(i) Cistern ball value,

(ii) Siphon

(b) (i) State what lagging is and its importance.

(ii) Giving eight examples, state the applications of lagging in a home

(c) Describe the methods of heat transfer in an electric oven.

80. (a) (i) Compare the working of thermostats and time clock fitted appliances.

(ii) Giving examples for each, identify appliance in the home where thermostats and time clocks are fitted.

(b) (i) Outline the advantages and disadvantages of heating domestic water by electricity.

(ii) Why is twin-immersion heater quite an economical method of water heating for a family?

(c) State in each case below how insulation is achieved.

(i) Hot water tank.

(ii) Double glazed windows

81. (a) State the importance of the following water treatment processes and describe how they are achieved.

(i) Clarification,

(ii) Disinfection.

(b) (i) Using chemical equations, describe how alkaline hardness is formed.

(ii) How does soap achieve its cleansing action?(Use illustrations)

(c) Write explanatory notes on the following:

(i) Head water

(ii) Qualities of good artificial lighting

82. (a) (i) With aid of illustration, describe the principle and working of an electric steam iron.

(ii) What precautions would you take in order to maintain the efficiency of the item in 4(a) above?

(b) Illustrate the wiring of a three pin plug.

(c) Explain in detail the principle of operation of the following domestic devices:

(i) floor polisher

(ii) Domestic fire extinguisher

83. (a) (i) 'Loud noise is a health hazard'. Justify this statement.

(ii) Suggest **six** methods used in house construction to reduce noise in dwellings.

(b) (i) What is humidity? Outline four sources of humidity in a home.

(ii) Explain the application of humidity in day today domestic activity.

(c) (i) Discuss the factors that influence the choice of color in the home.

(ii) Explain how you would achieve contrasting color scheme in furnishing a home.

84. (a) (i) Distinguish between a fuse box and a circuit breaker unit.

(ii) State the function of a fuse in electrical installations.

(b) Give reasons as to why a fuse would blow.

(c) (i) Calculate the fuse rating of a 720 watts appliance, given a voltage of 240V.

(ii) Calculate the cost of running the following appliances for a month if the cost of electricity is shs. 170 per unit.

- Water heater rating 3000W for 4hours per week
- Hot plate rating 2kW for 2hours per day
- Flat iron rating 1000W for 3hours per week

(d) How can domestic consumption of electricity be minimized?

85. (a) Outline ways by which natural light can be regulated in a building.

(b) Explain the working mechanism of a paraffin lamp.

(c) Describe the physical and mechanical processes that take place in water purification at the water supply system.

86 (a) Aerosol spray are now popular form of devices for dispensing a variety of products such as insecticides, air fresheners, cleansers and perfumes.

(i) explain the working mechanism of an aerosol spray.

(ii) State the health problems associated with the use of liquefied gas in these sprays.

(b) Describe any two methods of extinguishing fires.

87. (a) Give two examples of alloys used in making household utensils.

(b) Describe how utensils made from aluminium and iron can be protected from corrosion.

(c) Explain the working mechanism of a spring weighing scale.

88. (a) State the factors that influence the heating effect of an electric current.

(b) Explain the working of a photo-electric circuit. State four examples of its application in the home.

(c) Suggest five examples of saving on the cost of lighting at home

89. (a) A certain institute has the following gas appliances:

Cooker	$30ft^3/hr$
Grill	$40ft^3/hr$
Deep fryer	$100ft^3/hr$
Water heater	$20ft^3/hr$

Given that 1 ft3 of the gas costs sh. 12.50:

(i) Calculate the cost of running these appliances if they were to be used for 4 hours daily each for a week

(ii) Give any six safety precaution that will ensure efficient functioning of these machines.

(b) Explain the working principles of the gas oven thermostat.

90. (a) Differentiate between

(i) smoke point and flash point of fat.

(ii) evaporated and condensed milk

(iii) food spoilage and food poisoning

(b) (i) Outline the process of manufacturing hard cheese.

(ii) How can cheese be rendered more digestible?

(c) Explain the process of making cheese sauce.

91. (a) Give a detailed explanation of the importance of the following:

(i) Hanging the meat after slaughter for two days

(ii) Vegetable in diet.

(b) Why is textured vegetable protein (TVP) becoming popular?

(c) (i) Outline the social functioning of food.

(ii) Explain the causes of the changes in food habits.