S3 Home Economics Practice Paper 1 | Diet energy, recipe cost, food safety, textile care and family budgeting (with answers and marking scheme)

Junior Secondary Home Economics

S3 Home Economics paper on diet energy, recipe costing, food safety, textiles, family budgeting and cooking energy, with answers and marks.

1. Dietary energy and macronutrient ratio (18 marks)

A meal contains 30 g protein, 60 g carbohydrate and 25 g fat. Protein and carbohydrate supply 4 kcal per gram; fat supplies 9 kcal per gram. Health authorities advise that fat should provide no more than 30% of total energy.

#	Question
1	(a) Calculate the total energy of the meal in kcal, showing your working.
2	(b) What percentage of total energy comes from fat? Give one decimal place.
3	(c) Does this meal meet the advice? If not, by how many percentage points does it exceed it?
4	(d) If fat is cut to 15 g, recalculate the total energy and the fat percentage, and suggest one way to use less oil.

2. Recipe scaling and costing (18 marks)

A recipe for four servings needs 320 g flour, 3 eggs, 80 g butter and 200 ml milk. Unit prices: flour $0.0084 per g, eggs $2.5 each, butter $0.12 per g, milk $0.009 per ml. Six servings are required.

#	Question
5	(a) Find the scaling factor and the flour needed for six servings.
6	(b) Calculate the total material cost for six servings (two decimal places).
7	(c) Find the cost per serving.
8	(d) If each serving sells for $9, find the gross margin, and state what happens to it if prices stay the same but materials cost more.

3. Food safety and bacterial growth (16 marks)

Bacteria multiply quickly at room temperature; the danger zone is 5 C to 60 C. In a food sample the count doubles every 20 minutes, starting at 500 per gram.

#	Question
9	(a) State the danger temperature zone for food.
10	(b) Calculate the count per gram after 120 minutes, showing your working.
11	(c) If the food stands for only 60 minutes, what is the count and how much lower is it than in (b), as a percentage?

#	Question
12	(d) Suggest two measures to prevent food poisoning.

4. Textile fibres and clothing care (16 marks)

A cotton curtain is 150 cm long before washing and the label states a 4% shrinkage rate. The washing machine uses 0.9 kWh per wash; the family washes 4 times a week at $1.2 per kWh.

#	Question
13	(a) Calculate the length after washing and the amount of shrinkage.
14	(b) Calculate the number of washes in a year (52 weeks).
15	(c) Calculate the annual electricity use and cost of washing.
16	(d) Compare cotton and polyester in two properties and give one care tip for cotton garments.

5. Household resource management and budgeting (16 marks)

A family earns $28000 a month. Expenses: rent $10500, food $6000, transport $1200, utilities $1800, education $3500 and others $2000.

#	Question
17	(a) Calculate the monthly total expenses and the balance.
18	(b) Find the saving rate (balance as a percentage of income, one decimal place) and rent as a percentage of income.
19	(c) If the emergency fund should cover 3 months of expenses, find the target amount and how many months of saving it takes at the present balance.
20	(d) Suggest two ways to improve the household finances (one to raise income, one to cut costs).

6. Cooking methods, nutrients and energy (16 marks)

Spinach contains 30 mg vitamin C per 100 g. Boiling loses 60% of it while steaming loses only 25%. A rice cooker rated 0.4 kW runs for 0.5 h and an oven rated 2.0 kW runs for 1.5 h; electricity costs $1.2 per kWh.

#	Question
21	(a) Calculate the vitamin C left in 100 g of spinach after boiling and after steaming.
22	(b) What is the difference in mg, and why does steaming retain more nutrients?
23	(c) Calculate the total electricity used by the rice cooker and the oven in kWh.
24	(d) Find the electricity cost of this cooking session and suggest one way to save cooking energy.