S4 Home Economics Practice Paper: Nutrients and Energy Calculation, Meal Planning and Energy Requirements, Food Science and Cooking, Food Safety and Preservation, Textile Fibres and Clothing Care, Family Resources and Consumption (100 marks)

Level: S4 | Subject: Home Economics | 60 minutes | 100 marks | 24 questions | question paper

Section A: Nutrients and Energy Calculation (17 marks)

Each question is worth 4-5 marks; show working and units.

#	Question	Marks
1	A 100 g pack of biscuits contains 60 g carbohydrate, 8 g protein and 20 g fat. Given that carbohydrate and protein supply 17 kJ per gram and fat supplies 37 kJ per gram, find the total energy of the pack in kJ.	5
2	Referring to the previous question, what percentage of the total energy comes from fat? (1 decimal place)	4
3	A person takes in 2000 kcal per day. Using 1 kcal = 4.184 kJ, express this in kJ.	4
4	For an adolescent weighing 55 kg, the recommended daily protein intake is 0.8 g per kg of body weight. Find the recommended daily intake.	4

Section B: Meal Planning and Energy Requirements (17 marks)

Each question is worth 4-5 marks; state clearly whether the unit is kcal or kJ.

#	Question	Marks
5	A boy has a basal metabolic rate (BMR) of 1500 kcal and a physical activity factor of 1.55. Find his total energy expenditure (TEE) and convert it to kJ using 1 kcal = 4.184 kJ.	5
6	A person is 1.62 m tall and weighs 57 kg. Calculate the BMI (1 decimal place) and state the category (below 18.5 underweight, 18.5-22.9 normal, 23-24.9 overweight, 25 or above obese).	4
7	If daily energy intake is reduced by 500 kcal, how much energy is saved in one week? Given that 7,700 kcal equals 1 kg of fat, about how many kg of fat is lost?	4
8	In a 2000 kcal daily diet, protein provides 15 per cent of the energy. Using 4 kcal per gram of protein, find the daily protein intake in grams.	4

Section C: Food Science and Cooking (17 marks)

Each question is worth 4-5 marks; use correct food science terms.

#	Question	Marks
9	Bread is made from 500 g of strong flour with a water absorption of 60 per cent; salt is 2 per cent of the flour weight. Find the mass of water and of salt needed.	5
10	Explain two examples of protein denaturation in cooking and state the temperature range at which egg white begins to set.	4

11	What conditions are needed for the Maillard reaction? Why does boiled food (such as poached chicken) brown much less?	4
12	Which two main products are formed when yeast ferments dough? Write the reaction and explain why the dough rises.	4

Section D: Food Safety and Preservation (17 marks)

Each question is worth 4-5 marks; give accurate temperature and pH values.

#	Question	Marks
13	State the temperature range of the danger zone and give the safe temperatures for cold storage, hot holding and reheating.	5
14	Why are foods with a pH below 4.6 much less likely to cause botulism?	4
15	In a fridge at 4 C, bacteria double every 30 minutes. How long does it take to grow from 10^2 to 10^6?	4
16	A freezer is normally set at -18 C. State whether freezing kills bacteria and describe a correct way to thaw food.	4

Section E: Textile Fibres and Clothing Care (16 marks)

Each question is worth 4 marks; relate fibre properties to care methods.

#	Question	Marks
17	Cotton has a moisture regain of about 8.5 per cent and polyester about 0.4 per cent. Compare their moisture absorption, comfort and drying speed.	4
18	A care label gives a maximum wash temperature of 40 C. What could happen to cotton garments and to garments containing elastane if they are washed at 60 C instead?	4
19	Household bleach contains 5 per cent sodium hypochlorite. It is diluted with 1 part bleach to 49 parts water. Find the concentration after dilution.	4
20	Iron settings: cotton 200 C, polyester 110 C. Why should cotton temperature not be used on polyester garments?	4

Section F: Family Resources and Consumption (16 marks)

Each question is worth 4 marks; show the calculation steps.

#	Question	Marks
21	Pack A: 750 g for $18; pack B: 1 kg for $25. Comparing the price per 100 g, which is cheaper?	4
22	A household earns $12000 per month and spends 35 per cent of it on food. Find the monthly food spending, and the percentage of income if food spending rises to $4800.	4
23	An oven rated at 1.5 kW is used 2 hours a day for 30 days. Electricity costs $1.2 per kWh. Find the monthly energy use and the electricity bill.	4
24	A family throws away 2.5 kg of food each week. Find the monthly amount (4 weeks) and suggest two ways to reduce food waste.	4