For chicken and stock

2 (3 1/2- to 4-lb) chickens
10 cups cold water
1 celery rib, quartered
1 carrot, quartered
1 medium onion, quartered
1 large garlic clove, smashed
2 fresh thyme sprigs
1 teaspoon salt
1/4 teaspoon whole black peppercorns

For cheese sauce and casserole

1 stick (1/2 cup) unsalted butter plus additional for greasing gratin dishes 1 garlic clove, minced 1/2 cup all-purpose flour 3 cups whole milk 1 cup crème fraîche (8 oz) 1 teaspoon salt 1/2 teaspoon black pepper 1/4 teaspoon cayenne 1 lb Gruyère, coarsely grated (6 cups) 1 oz Parmigiano-Reggiano, finely grated 1 lb penne rigate tubular pasta 6 cups fine fresh bread crumbs (from 14 slices firm white sandwich bread)

Poach chicken and make stock:

Cut backbones, wing tips, and second joints of wings from chickens, then cut each chicken into quarters. Put backbones, wing tips, second joints, and giblets (except livers) in a 6- to 8-quart pot with water, celery, carrot, onion, garlic, thyme, salt, and peppercorns and bring to a boil. Add chicken quarters and return liquid to a boil, skimming off any foam, then reduce heat and simmer, uncovered, 10 minutes. Remove from heat and let stand, covered, 40 minutes.

Transfer chicken quarters with tongs to a shallow baking pan. When chicken is cool enough to handle, remove meat from skin and bones, transferring meat to a cutting board and returning skin and bones to pot. Cut chicken into 1-inch pieces and reserve in a large bowl. Boil stock 40 minutes, then pour through a fine-mesh sieve into a large bowl, discarding solids. Let stand 5 minutes, then skim off fat and set aside 4 cups stock for making sauce. (Reserve remaining stock for another use.)

Make sauce, cook pasta, and assemble casserole:

Put oven rack in middle position and preheat oven to 425°F. Butter gratin dishes.

Heat butter (1 stick) in a 4-quart heavy pot over moderate heat until foam subsides, then add garlic and cook, whisking, 1 minute. Add flour and cook, whisking, 1 minute. Add milk and reserved stock (4 cups) in a slow stream, whisking, then bring to a boil, whisking. Reduce heat and simmer, whisking occasionally, until sauce is slightly thickened, about 10 minutes. Remove from heat and stir in crème fraîche, salt, pepper, cayenne, 2 cups Gruyère, and 1/2 cup Parmigiano-Reggiano.

While sauce simmers, cook pasta in a 6 to 8-quart pot of boiling salted water, uncovered, until not quite al dente, 8 to 10 minutes (pasta should still be firm), then drain in a colander. Return pasta to pot, then add chicken and sauce, tossing to coat. Divide pasta mixture between gratin dishes.

Toss bread crumbs with remaining 4 cups Gruyère and 3/4 cup Parmigiano-Reggiano,

then sprinkle evenly over pasta mixture. Bake gratins until crumbs are golden brown and sauce is bubbling, 20 to 30 minutes. Let stand 10 minutes before serving.

Cooks' notes:

- If using rotisserie chickens, pull meat from bones and reserve, then make stock by cooking skin and bones with celery, carrot, onion, garlic, thyme, salt, peppercorns, and 8 cups water 40 minutes total before straining.
- Chicken can be poached and stock can be made 1 day ahead and cooled completely, uncovered, then chilled separately, covered.
- Bread crumbs can be made 1 day ahead and kept in a sealed plastic bag at room temperature.
- Cheeses can be grated 1 day ahead and chilled separately in sealed plastic bags.