MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (AGRONOMY, HORTICULTURE, AGRICULTURAL EXTENSION & EDUCATION, AGRICULTURAL ECONOMICS, ANIMAL SCIENCE AND BACHELOR OF EDUCATION WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

AAG 204: PRINCIPLES OF CROP PRODUCTION

Date: 16th June, 2017 Time: 8.30 - 11.30am

INSTRUCTIONS:

- Answer ALL Questions in section A and any other TWO in section B.

SECTION A (40 MARKS): ANSWER ALL THE QUESTIONS IN THIS SECTION.

1. Briefly explain the concept of the following practices.
   a). Timely land preparation (2 Marks)
   b). Non-exhaustive crop rotation (2 Marks)
2. State the conditions necessary for seed germination. (1 Mark)
3. Enumerate four factors influencing seed quality? (2 Marks)
4. State five characteristics of weeds which make them excellent competitors with crop plants. (2.5 Marks)
5. Briefly describe five ways in which weeds cause losses to farmers. (2.5 Marks)
6. Enumerate five methods of preventing the spread of weeds by their seeds and propagules. (2.5 Marks)
7. Define the term tillage. (1 Mark)
8. State five purposes of tillage operations. (2.5 Marks)
9. Briefly describe the following:
   a. Primary tillage (1 Mark)
   b. Secondary tillage (1 Mark)
10. For each of the soil amendments/fertilizer materials give an example of each:
    a. Nitrate fertilizers (1 Mark)
    b. Phosphorus fertilizers (1 Mark)
    c. Compound fertilizers (1 Mark)
    d. Straight fertilizers (1 Mark)
11. List essential elements in plant nutrition (4 Marks)
12. Distinguish between macro and micro nutrients (2 Marks)

13. Define the terms fertigation and foliar fertilizer application (2 Marks)
14. a). Calculate the spacing between plants given that the row width is 0.75 cm and the plant population is 175,000 plants per hectare. (3 Marks)
    b). Estimate the seed quantity per hectare given the following details: 80% germination, 100 seed mass of 3 grams and the required plant population of 250,000 plants per hectare. (3 Marks)

SECTION B (30 MARKS): ANSWER ANY TWO QUESTIONS FROM THIS SECTION. EACH QUESTION IS 15 MARKS)

15. a) Discuss the principles of Integrated Pest Management (IPM) (5 Marks)
    b) Write short notes on the following:
    (i) Allelopathy (2.5 Marks)
    (ii) Crop rotation (2.5 Marks)
    (iii)Mulching (2.5 Marks)
    (iv)Burning crop residue (2.5 Marks)
16. Agro-ecological zone is defined in terms of climate, land, soils and/or land cover and presents both potential and constraints to crop production. Explain in detail the characteristics of rainfall and temperature which present the greatest impact on crop production. (15 Marks)
17. a)The concept of good agricultural practices stipulates the adoption of good decision making and resource management by farmers. State five principles that farmers need to adhere to, to achieve success in their farming activities.
    b) Discuss five different methods of fertilizer application indicating in each case suitable cultural practices, uniformity of application, prevention of losses, environmental pollution considerations, weather condition considerations etc.
18. Select a crop and discuss its requirements under each of the following topics:
    (i) Agro-ecological requirements (rainfall, temperature, soil –texture, pH, drainage), maturity periods and yield expectations (2.5 Marks)
    (ii) Propagation materials and preparation for planting and planting/sowing procedures. (2.5 Marks)
    (iii)Seedbed preparation (2.5 Marks)
    (iv)Sowing/planting density/spacing requirements (2.5 Marks)
    (v) Common pests and their control (2.5 Marks)
    (vi)Harvesting procedures and storage requirements (2.5 Marks)

QUESTION SIX (15 MARKS)

Draw the isometric view of the orthographic views given in Fig Q6. The orthographic views are in first angle projection and all dimensions are in mm

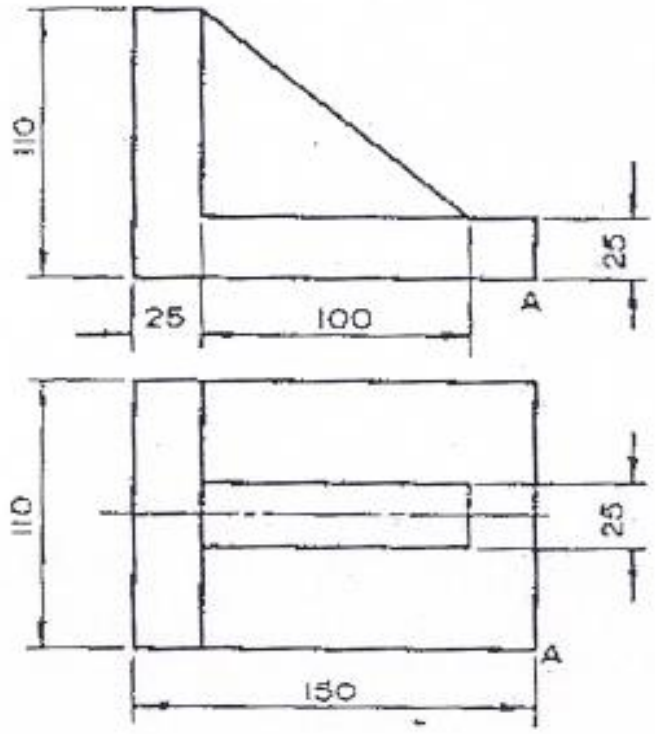

Fig Q6