JINJA JOINT EXAMINATIONS BOARD
MOCK EXAMINATIONS 2022
P515/3 AGRICULTURE
MARKING GUIDE

1 (a).

Experiment	Observation	Conclusion
To test tube 1, add distilled water to cover D and boil to 100^0c then add $1cm^3$ of H_2O_2.	-No effervescence -No gas bubbles given off	The enzyme in D has been denatured by heat
To test tube 2, add distilled water and then warm to 38^0c then add 1 cm^3 of H_2O_2	-Effervescence observed -Gas bubbles seen	Enzyme has hydrolysed H_2O_2
To test tube 3, add $3cm^3$ of conc.Hcl then after 2 minutes add $1cm^3$ of H_2O_2	-No effervescence -No gas bubbles observed.	Enzyme does not work under acidic conditions
To test tube 4,add $2cm^3$ of NaOH and wait for 5 minutes then add 1cm3 of H_2O_2	There is effervescence	Enzymes worked under alkaline condition

(b). (i).Enzyme is a catalase

(ii). The products formed are: Water and Oxygen

$2H_2O_2 \xrightarrow[Catalase]{Enzyme} 2H_2O_2 + O_2$

(c).Explain why hydrogen peroxide is acted on by the enzyme in D.

Reasons:

-It is toxic and must be broken down to water and Oxygen which are not toxic.

2 (a).

Test	Observation	Deduction
To test tube B_1, add 3 drops of 0.5% of Diphenylamine solution and 4 drops of conc.Sulpehric acid.	A blue colouration observed.	Nitrate present.
To B_2, add an equal amount of freshly prepared Iron II sulphate solution, slant the test tube at an angle and carefully add 4 drops conc.sulpheric so that the drops run down the test tube to touch the mixture.	A brown ring is observed.	Nitrate present.
To B_3, add 4 drops of dil.Nitric acid and 3 drops of molybdate solution	Yellow precipitate observed.	Phosphate present.

Award 1 mark each for observation and deduction = 6marks

(b).The nutrient elements in Q are:

Element 1: Nitrogen

Element 2: Phosphorus

Award 1 mark each for the correct element = 2marks

(c) What are the important of the elements in Q to crops?

Element 1: Nitrogen

-Promotes vegetative growth

-Regulate the size of grains

-Helps in protein synthesis and enzyme formation

-It is a constitutient of chlorophyll

-Improves the quality of leafy crops eg cabbages

-Helps in cell division and growth

Award 1 mark each for any 6 correct points = 6marks

Element 2: Phosphorus

-For cell division

-For seed germination

-For photosynthesis

-Important in plant maturation
-Strengthen straws in cereals
-Flowering, fruiting and seed formation
-Plant resistance to diseases
Award 1 mark each for any 6 correct points = 6marks

3 (a).Explain in sequence, how each of the tools/equipments are used in the harvesting of S on the farm.

- Put on or wear S1 first as protective gear from the bees before approaching the hives.
-Place a few embers in a smoker S5, puff all around the sides on the hive then introduce smoke inside the hive gradually to make bees docile and will not sting.
- Using S3, scrape off the bees from the comb.
-Using S2 cut off the comb containing honey from the bar.
-Place the cut comb containing the honey in S4.
Award 2 marks each for any 5 correct points = 10 marks

(b). Name any two nutritional composition of S
-Honey sugar
-Water content
-Acids
-Minerals
Award 1 mark each for any 2 correct points = 2 marks

(c). Give any 4 reasons why farmers should undertake the production of S as a business
-Food to human as sweetener or eaten directly.
-Health benefits are derived from feeding on honey.
-Honey helps with recovering from alcohol intoxication.
-Raw materials in baked products, milk products etc
-Honey is used in tobacco, meat, cosmetic industry.
Award 1 mark each for any 4 correct points = 4 marks

(d).Suggest any 4 factors that may affect the quality of S.
-The method of extraction, direct heating of the honey comb discolours the combs lowering its quality.
-Type of flowers from which the nectar was collected.

-Season of the year, honey formed over dry season tend to be of a lower quality.

-Stage of honey maturity, mature honey is of good quality.

Award 1 mark each for any 4 correct points = 4 marks

4 (a) (i).Name the materials you would use to make a good floor a calf pen: (3 marks).

-Aggregate/small stones/gravels, Sand, Cement,

Award ½mark each for any 3 correct points = 1½ marks

(ii).State the appropriate ratio of the mixture of the materials name in 4 (a) (i) you would make for that floor.

-1 part cement: 2 parts sand: 4 parts aggregate

OR 1; 2; 3

Award ½ mark each for any 3 correct points = 1½ marks

(b) Sate the procedure for mixing the material used in making the part of the farm building mentioned in 4 4(a) (i) above.

-Clear the area where the material will be mixed by removing obstacles and vegetation.

-Make the place water tight by laying up mortar in advance

-Measure cement, sand and aggregate in required ratio of 1:2:3

-Spread the sand on the ground after measuring the required quantity.

-Mix the two items, i.e. sand and cement evenly by turning each over and over.

-Spread the mixture of sand and cement on the ground after mixing.

-Spread the course aggregate over the mixture of cement and sand.

-Mix the aggregate properly with cement and sand.

-Heap the mixture and make a depression in the middle.

-Add water slowly in the depression that has been made in the middle of the heap.

- Use the spade to mix the materials with water until good concrete forms,

Award 1 mark each for any 10 correct procedure = 10 marks

(c).Outline advantages of using O over P

-They are highly durable.

-They can easily resist forces of strain and stress.

-They can be recycled and reused to make other implements.

-Are resistant to pests attacked.

-Can not be easily destroyed by fire.

-Can be used to perform several functions.

-It is highly resistant to wear and tear.

Award 1 mark each for any 7 correct advantages = 7 marks

5 (a). Comment on the defect observed on the specimen.

-Maize plant/maize leaf with symptoms of maize streak virus disease.

Award 1 mark for 1 correct defect = 1 mark

(b).What organism is responsible for spreading the defect observed on the specimen

to the crop plant in the field?

-Leaf hopper/Maize leaf hopper.

Award 1 mark for 1 correct organism = 1 mark

(c). Suggest measures that can be taken to reduce the problem observed on specimen T

-Uproot and burn affected plants immediately

-Grow tolerant/resistant varieties

-Early planting

-Closed season to reduce the population of leaf hoppers

-Crop rotation

-Use of recommended pesticides to the leaf hoppers

-Up root and burn crop residues

Award 2 marks each for any 7 correct measures = 14 marks

(d).Name four other crops that can be infected by the same virus that has caused the

defect observed in 5(a) above.

-barley, wheat, oats, rye, sugarcane, millet and many wild, mostly annual, grass species.

Award 1 mark each for any 4 correctly named crops = 4 marks

END