

**M.Sc. Examination, 2016**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

Answer any five questions where question 1 is compulsory.

1. A. Fill in the blanks: 1×5=5
- a. Each time a molecule of uric acid is excreted one molecule of \_\_\_\_\_ is lost.
  - b. Zinc is an essential constituent of \_\_\_\_\_.
  - c. Cage layer fatigue in laying hens may occur when \_\_\_\_\_ supply in diet is inadequate.
  - d. The most limiting amino acid in maize soyabean meal based diet is \_\_\_\_\_.
  - e. The star grazing condition in poultry is due to deficiency of \_\_\_\_\_.
- B. Tick (✓) the correct answer from the followings: 1×5=5
- a) The vegetable protein source rich in lysine is
- i. Groundnut meal
  - ii. Soyabean meal
  - iii. Sesame oil cake
  - iv. None of the above
- b) The fatty acid important for egg size is
- i. Stearic acid
  - ii. Linoleic acid
  - iii. Linolenic acid
  - iv. Palmitoleic acid
- c) Gross energy (Kcal/g) value of pure fats and oils is about
- i. 4.15
  - ii. 5.65
  - iii. 9.40
  - iv. 10.40
- d) The optimum daily requirement of calcium (g/bird) for commercial layers (90% egg production) is
- i. 1.2-2.5
  - ii. 2.5-3.5
  - iii. 3.5-4.5
  - iv. 4.5-5.5
- e) Tryptophan may reduce the requirement of vitamin
- i. Menadione
  - ii. Tocopherol
  - iii. Riboflavin
  - iv. Niacin

2. a) What is nutrient? 1+2+2+5=10  
b) Biological functions of vitamins in poultry.  
c) Essential amino acids in poultry nutrition.  
d) Write a short note on calcium nutrition in laying hens.
3. a) Metabolizable energy(ME). 2+3+5=10  
b) Factors influencing the feed consumption in birds.  
c) Mycotoxins and their impact in poultry production system.
4. a) Describe briefly the role of feed additives in poultry. 3+2+5=10  
b) What role does vitamin E play in poultry nutrition?  
c) Enumerate the protein digestion and absorption in poultry.
5. a) Anti-nutritional factors. 2+3+5=10  
b) Feeding regime layers bird during summer season.  
c) Different parts and their role of digestive system in poultry.
6. a) What is Respiratory quotient (RQ)? 1+4+2+3=10  
b) Role of linoleic acid in poultry nutrition  
c) Exudative diathesis-explain.  
d) Unconventional feeds and their importance in current situation.
7. a) What is Gross Energy (GE)? 2+2+3+3=10  
b) Regime of restricted feeding in commercial layer birds.  
c) Enumerate the significance of manganese in poultry nutrition  
d) Write a short note on biological value of protein.
8. Explain the followings: 2×5=10  
a) Net protein utilization (NPU)  
b) Anti-oxidant  
c) Curl-toe paralysis  
d) Perosis  
e) Non-starch polysaccharide (NSP)
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**M.Sc. Examination, 2017**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. What is nutrient? Write about the calcium nutrition in laying hens. What do you mean by Gross Energy (GE)? Glycine is essential for poultry nutrition-explain. 1+5+2+2=10
  2. Enumerate the importance of phase feeding in poultry. What are the deficiency symptoms of dietary zinc? Briefly describe the energy portioning in poultry nutrition. 3+3+4=10
  3. Calorie-protein ratio. What are the major energy source ingredients for poultry feed formulation? Write about the methods of feed mixing. Critical essential amino acids. 2+3+3+2=10
  4. What do you mean by available phosphorus? Significance of feed restriction in poultry nutrition. Role of vitamin-E in poultry. 2+3+5=10
  5. Write on different feeding system in poultry. Major functions of vitamin-A in poultry. Gizzard, the essential part of digestive system in poultry-explain. The role of digestive enzymes in poultry nutrition. 3+2+2+3=10
  6. Synthesis of non-essential amino acids in poultry. What is net protein utilization (NPU). Different feed additives and their role in poultry nutrition. 3+2+5=10
  7. What are the anti-nutritional factors? Cage layer fatigue-explain. The approach for nutritional adjustment during extreme weather. Role of non starch polysaccharides (NSPs) in poultry nutrition. 3+2+3+2=10
  8. Write short notes: 2×5=10
    - a. Perosis
    - b. Crop milk
    - c. Essential fatty acids
    - d. Star grazing
    - e. Aflatoxins
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**M.Sc. Examination, 2018**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. a) What is vitamin? 1+3+2+4=10  
b) Write about the biological functions of vitamins in poultry.  
c) Role of animal protein supplements in poultry feeds.  
d) Common mycotoxins and their impact on poultry production system.
  2. a) Define Metabolizable energy (ME). 2+3+2+3=10  
b) Role of vitamin E in poultry nutrition.  
c) How does Zn play a role for egg shell formation.  
d) Approach of nutritional adjustment during extreme weather.
  3. a) Define amino acid imbalance. 1+3+4+2=10  
b) Describe briefly the role of feed additives in poultry nutrition.  
c) Draw and label different parts of the digestive system in domestic fowl.  
d) Glycine is essential for poultry nutrition-explain.
  4. a) Write down the role of linoleic acid in layers. 2+3+2+3=10  
b) Enumerate the factors affecting egg shell thickness.  
c) What do you mean by available phosphorus?  
d) Recent trends in poultry nutrition.
  5. a) What is nutrition? 1+3+2+4=10  
b) What are the different feeding systems in poultry?  
c) Ca: P is essential for poultry nutrition-explain.  
d) Unconventional feeds and their importance in current scenario.
  6. a) What is net protein utilization (NPU)? 2+2+4+2=10  
b) Write down the regime of restricted feeding in commercial layers.  
c) Enumerate the quantitative partitioning of gross energy.  
d) Write the mechanism of action of probiotics as feed additives.
  7. a) What are NSPs? 1+4+2+3=10  
b) Give the requirements of protein, energy, calcium and available phosphorus in the diets of broiler starter and finisher.  
c) Factors affecting protein digestibility.  
d) Give a critical appraisal of digestive enzymes in poultry nutrition.
  8. Write short notes: 2×5=10  
a) Exudative diathesis    b) Probiotics    c) Net protein utilization (NPU)  
d) Calorie-protein ratio    e) Curl-toe paralysis
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**M.Sc. Examination, 2019**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. a) What is energy? Name four energy rich ingredients used in poultry feeding. 3+4+3=10  
b) Sketch down the energy portioning (feed to food) in poultry.  
c) Discuss about the feedings of ducks.
2. a) What is a 'balanced ration'? 2+5+3=10  
b) Draw and label the different parts of the digestive tract of a domestic fowl.  
c) Name three commonly available protein feed sources used for feeding of birds in India.
3. Differentiate between the following (**any four**): 2.5×4=10  
a) Broiler starter ration Vs broiler finisher ration.  
b) Nutrient requirement Vs Dietary Allowance.  
c) Mash feeding Vs Pellet feeding  
d) Diet Vs Ration  
e) Probiotics Vs Prebiotics
4. Justify the statements (**any two**): 5×2=10  
a) Birds has a special requirement for Arginine  
b) Birds has a limited capacity to use plant phosphorus  
c) Only Calcium (not Phosphorus) requirement need to be enhanced in layer feed  
d) In case of birds energy is expressed as ME (not DE or TDN)
5. Write in brief (**any two**): 5×2=10  
a) Different feeding system prevailing in poultry rearing practices.  
b) Role of feed additives in poultry production.  
c) Salient features of 'feeding of Turkeys'.
6. Write short notes (**any four**): 2.5×4=10  
a) Least Cost Feed Formulation  
b) Calorie- protein ratio  
c) Salt poisoning  
d) Skip-a-day feeding  
e) Forced moulting  
f) Phase Feeding  
g) Star grazing
7. a) Define macro and micro minerals with suitable examples. 4+2+4=10  
b) What is cage layer fatigue?  
c) What is Cannibalism? How can you prevent cannibalism?
8. a) Define the 'non-conventional feeds' with two examples. 3+3+4=10  
b) Name the anti-nutritional factor(s) present in the following feed ingredients:  
Soyabean, Ground nut cake, Cotton seed cake  
c) Write down the common mycotoxins associated with poultry feeding and its controlling measures.

**M.Sc. Examination, 2020**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. a. What is Carbon-nitrogen balance?  
b. Factors affecting feed intake in broilers  
c. Write the mechanism of action of antibiotics and probiotics as feed additives. 2+3+5=10
  
2. a. Role of vitamin E and selenium in poultry nutrition?  
b. Why is dietary energy expressed as ME in poultry?  
c. Write a brief note on protein digestion and absorption in poultry. 4+2+4=10
  
3. a. What is productive energy?  
b. How does it differ from metabolizable energy?  
c. What are the uses of metabolizable energy in poultry?  
d. What do you mean by TME? 2+4+4+2=10
  
4. Justify the statements (any four):  
a. Oligosaccharides used as prebiotics  
b. Proline is essential for poultry nutrition  
c. In case of birds energy is expressed as ME (not DE or TDN)  
d. Restricted feeding practice in grower birds  
e. Raw soyabean is not recommended for poultry  
f. Zinc is essential for shell strength 2.5×4=10
  
5. Write in brief (any two):  
a. Mixed enzymes as feed additives with special reference to alternate feed resources.  
b. Write a note on management of mycotoxicosis in poultry  
c. Factors affecting feed intake in broilers  
d. NRC requirement of Protein in different phases of egg type chickens 2×5=10
  
6. Write short notes (any four):  
a. Perosis  
b. Limiting amino acids  
c. Calorie – protein ratio  
d. Water management  
e. Curl toe paralysis 2.5×4=10

7.
    - a. Write down notes on B-complex deficiency diseases of poultry.
    - b. What is ascites and how to control this metabolic condition in broiler?
    - c. How is gross energy estimated? 4+4+2=10
  8.
    - a. Role of linoleic acid in poultry nutrition.
    - b. Synthesis of non essential amino acids
    - c. What are the essential minerals in poultry nutrition? Justify your statement. 3+3+4=10
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**M.Sc. Examination, 2021**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. What is PUFA? Write about the Role of Linoleic acid in poultry nutrition. Enumerate the factors affecting protein digestibility. What do you mean by amino acid imbalance? 2+3+3+2=10
  2. What do you mean by feed additives? What is the difference between nutrient requirement and dietary allowance? Discuss about the restricted feeding of grower birds. Write about the NRC requirement of Protein in different phases of layers. 2+2+3+3=10
  3. What is ascites and how to control this metabolic disease in poultry? How does Zn play role for the egg shell formation? Briefly discuss the carbohydrate digestion and absorption in poultry. 4+2+4=10
  4. What is anti-nutritional factor? What are the essential minerals in poultry nutrition – Justify your statement. Write a note on the probiotics in poultry feeding. What is salt poisoning? 1+4+3+2=10
  5. What is NPU? Unconventional feeds and their importance in current trend of poultry nutrition. Write down the different parts and their role of digestive system in poultry. 2+3+5=10
  6. What is cage layer fatigue? Briefly describe the vitamin-minerals deficiency disease in poultry. Give a critical appraisal of digestive enzymes in poultry nutrition. 2+5+3=10
  7. What is carbon-nitrogen balance? Write a comparative note on AME and TME. Enumerate the difference between nutrient requirement and dietary allowance? What are the factors affecting energy and protein requirements of chicken? 2+2+2+4=10
  8. Write short notes: 2×5=10
    - a) Factors affecting P absorption
    - b) Limiting Amino acids
    - c) Feed grade enzymes
    - d) Heat Increment (HI)
    - e) Encephalomalacia
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**M.Sc. Examination, 2022**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: Three Hours**

**Full Marks: 50**

Questions are of value as indicated in the margin.

**Answer any five questions**

1. Calorie protein ratio. What are the major energy source ingredients for poultry feed formulation? Write about the methods of feed mixing. Critical essential amino acids. 2+3+3+2=10
  2. What is NSPs? Give the requirements of protein, energy, calcium and available phosphorus in the diets of broiler starter and finisher. Factors affecting protein digestibility. Give a critical appraisal of digestive enzymes in poultry nutrition. 1+4+2+3=10
  3. Write short notes:
    - a) Water management
    - b) Crop milk
    - c) Curl-toe paralysis
    - d) Salt poisoning
    - e) Choline2+2+2+2+2=10
  4. What are the anti-nutritional factors? How they differ from toxins? Write a note on management of mycotoxicosis in poultry. 3+2+5=10
  5. What is AME and TME? Write about the energy portioning in poultry nutrition. How calcium is essential for laying hens – discuss? Define essential minerals and classify with example. 2+3+2+3=10
  6. What is nutrient? What is the different feeding system in poultry? Role of zinc (Zn) in poultry nutrition. Unconventional feeds and their importance in current scenario. 1+3+2+4=10
  7. What is perosis? Enumerate the synthesis of non-essential amino acids in poultry. Briefly discuss the role of vitamin E in poultry nutrition. Write about the nutritional adjustment during extreme weather. 1+3+2+4=10
  8. Energetic efficiency of diet is improved on addition of fat in diet – justify. Factors affecting carbohydrate absorption. Describe the recent trends of poultry nutrition in relation to C:B ratio. 2+3+5=10
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**M.Sc Examination, 2023-24**  
**Semester-I**  
**Animal Science (Poultry)**  
**Course: PSC-502**  
**(Poultry Nutrition and Feeding)**

**Time: 2:00 Hours**

**Full Marks: 30**

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Answer the following (any three):

1. Enumerate the importance of phase feeding in poultry. What are the deficiency symptoms of dietary zinc? Briefly describe the energy partitioning in poultry nutrition. 3+3+4=10
  
  2. What is nutrition? Write about the calcium nutrition in laying hens. What do you mean by Gross Energy (GE)? Explain the importance of lysine feeding in poultry nutrition. 1+5+2+2=10
  
  3. Write on different feeding system in poultry. Major functions of vitamin-A in poultry. Explain the importance of gizzard in digestive system of poultry and the role of digestive enzymes in poultry nutrition. 3+2+2+3=10
  
  4. What are the anti-nutritional factors? Describe cage layer fatigue. Which nutritional changes should be done to manage the summer and winter stress in poultry? Enumerate the role of non starch polysaccharides (NSPs) in poultry nutrition. 3+2+3+2=10
  
  5. Define the 'non-conventional feeds' with two examples. Name the anti-nutritional factors present in the following feed ingredients: Soyabean, Ground nut cake, cotton seed cake. Write down the common mycotoxins associated with poultry feeding and its controlling measures. 3+3+4=10
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