



# POULTRY MYTHS AND REALITIES

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**Commercial Broiler** (Photo Courtesy: Aviagen)





**Poultry Feed Ingredients** (Photo Courtesy: Govt. of Punjab Website)



**Model Commercial Layer Farm (Caged)**



**Egg Collection System (Automatic)**



**Broiler Chicks in Hatchery** (Courtesy: Adobe Stock Images)





**Broiler Breeder Farm** (Courtesy: Adobe Stock Images)



**Commercial Broiler Farm** (Photo Courtesy: Sentient Media)



**Commercial Processing Plant** (Photo Courtesy: Marel)

## Contents

<b>Sections</b>	<b>Title</b>	<b>Page Number</b>
1	Poultry Mythology	1
2	Human Nutrition and Dietetics	27
3	Poultry Production	42
4	Poultry Nutrition	53

# Preface

It gives me immense pleasure to share my words regarding the book compiled by Drs. Faisal Hussain and Jibrán Hussain highlighting the nutritional significance of Meat and Eggs from Commercial Broilers and Layers. The effort is praiseworthy in the sense that very simple language is used to explain the poultry-related facts along with busting the myths about poultry products.

Presently, meat and eggs from poultry are the most economical, convenient, and accessible animal protein sources with the best nutritional profile. Yet, there exist several myths and misconceptions among the general masses hindering people from using such quality products. Hence, this results in the poor nutritional status of the nation as reported in the National Nutritional Survey 2018. More than 40% of our kids are suffering from stunting and wasting due to malnutrition. 80% of the population has Vitamin D deficiency which affects immunity and bone health. Such an alarming situation calls for holistic approaches and the awareness of the general masses is a step in the same direction. Educating the masses through such effort is commendable, and I congratulate the whole team, especially Dr. Faisal Hussain and Dr. Jibrán Hussain from University of Veterinary and Animal Sciences, Lahore for presenting such valuable information in the form of a book. This book is equally good for poultry professionals as well as human nutritionists devising diet plans and strategies. Further, medical science professionals may also benefit from this effort.

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## Author's Note

Dealing with the myths and misconceptions regarding meat and eggs from commercial poultry is a big challenge for the industry and allied academia. These misconceptions have played an extremely negative role in pushing consumers away from poultry products. Hence, such myths have a big contribution to creating nutritional deficiency among the masses. Being Poultry Academicians, it is our moral duty to educate the professionals as well as consumers regarding highlighting the nutritional importance of poultry products along with busting the myths.

This book is an effort to address such issues. While compiling this, the mentorship and guidance of Prof. Dr. Talat Naseer Pasha (*S.I., H.I.*), Vice Chancellor, University of Education, Lahore, Prof. Dr. Nasim Ahmad (*S.I.*) Vice Chancellor, University of Veterinary and Animal Sciences, Lahore remained unequivocal. We are extremely obliged for their guidance and support throughout this process.

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**Dr. Faisal Hussnain, Ph.D.**

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## Section 1

# POULTRY MYTHOLOGY

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### Broiler Growth and Use of Hormones and Steroids

#### **FAQ 1. How a broiler gains more than 2 kg weight in just 35 days?**

The improvement in the growth rate of broilers was made with the selection for higher body weight over the last 100 years. At the start, the parents of broilers had the same genetic potential as our desi birds today, but the scientists working in the breeding companies selected the best birds, based on their weight, from each generation and make them the parents of the next one. By this, now the broiler gains more than 2 kg body weight within 35 days. A table describing how genetic selection improved the performance of broiler over the last 100 years has been mentioned below. The pictures below show a comparison of the growth performance of the 1950s and 2020's broiler.

Time Period	Market Age (Days)	Live weight (kg)	Mortality %
1920's	120	1.0	20
1930's	100	1.2	15
1940's	85	1.4	10
1950's	75	1.5	8
1960's	70	1.6	8
1970's	60	1.9	5
1980's	50	2.2	5
1990's	50	2.6	4
2000's	42	2.3	3
2010's	35	2.3	2.5

Adapted from Broiler Breeder Production by Leeson and Summers



1950 vs 2020 broiler at 7 days age



1950 vs 2020 broiler at 14 days age



**1950 vs 2020 broiler at 21 days age**



**1950 vs 2020 broiler at 28 days age**



**1950 vs 2020 broiler at 35 days age (Pic Courtesy: University of Georgia)**

**FAQ 2. Is there any example of this selective breeding in Pakistan?**

Yes, the Department of Poultry Production, University of Veterinary and Animal Sciences, Lahore has followed the protocol of selective breeding to improve the 4-week bodyweight of Japanese quail (Batair). The product is available with the brand name “UVAS Jumbo Quail”. At the start of the experiment, the average weight of the quail was 100-120 grams, but at the end of the experiment, we achieved an average weight of



240-g in 4-weeks. Anyone can repeat these experiments on their farm with proper record keeping for improving their birds.

**FAQ 3. Are Chickens genetically modified organisms?**

No, Chickens are not genetically modified organisms. All the improvements in the growth rate, feed efficiency, and egg production of modern commercial chickens are due to selective breeding. In selective breeding, only superior birds are kept which would be the parents of the next generation. By this, the next generation will be better than the previous one. The same process is repeated from time to time. In the case of commercial chickens, the breeding companies are doing these experiments for over 100 years.

**FAQ 4. Are broilers injected with steroids and hormones for growth? Do broilers have hormone and steroid residues in their meat?**

No. The broilers are **neither injected with any kind of steroids and hormones nor does their meat contain any residue** of these. It is a baseless myth that broiler gains weight due to injection of hormones. Broilers have the genetic potential to gain weight rapidly. They just need balanced nutrition and an environment to show their potential. These birds are fed diets having 20-22% protein, which even most humans are unable to get, which makes broiler grow so fast. There are many reasons which can be narrated in support:

1. Broilers have the genetic potential to grow. Neither they need hormones nor there are any hormones sold in the market for broilers.
2. Hormones are too expensive to be used and they need to administer regularly to be effective. For example, insulin used by diabetic patients in humans is both expensive and needs to be administered on daily basis.
3. Growth hormones of chickens have pulsated production they peak after every 90 minutes. So, if we have to give hormones, we have to inject them many times a day. On a broiler farm, having more than 25000 birds on average, it is very difficult to manage each bird to be injected from time to time again.

**FAQ 5. Are steroids and hormones mixed in the feed of broilers to gain weight quickly?**

Some people think that steroids and hormones are being supplemented in feed as a growth enhancer. It is important to know that the growth hormones of broilers are protein in nature. If we add them to feed, the gastric juice of their stomach will break these proteins making them useless. Hormones only act when they are injected into the bloodstream. It is not possible to inject each broiler repeatedly on a broiler farm where we have 30,000 birds.

Similarly, in the case of anabolic steroids, muscular activity and high proteins are required for growth whereas the broiler does not have a higher activity profile that makes steroids useless in broiler farming. Many researchers have tried to give oral steroids (used for humans) to broilers and all these experiments resulted in no improvement or negative growth of the birds. As an experiment, the broiler feed can be given to desi birds to check whether they gain weight like the broiler or not. If there are hormones, then the desi birds will improve their weight, but in reality, they will not gain weight because they do not have the potential to do so.

**FAQ 6. What kind of injections is being injected into broilers for rapid weight gain?**

No injection can enhance the growth rate of the broiler. This is a baseless myth. The broiler already has the genetic potential to grow rapidly and only needs optimum temperature and a high protein diet to express its potential.

**FAQ 7. I have seen a video where a person is injecting the birds. If those were not hormones, then what was injected into the birds?**

Broilers and other poultry birds are injected with vaccines (killed vaccine) under the skin (sub-cut) or in muscles once or twice in life. It takes almost 02 days to vaccinate the whole flock. The vaccines build immunity in birds against disease-causing agents and do not have any residue that affects human beings. Injection of vaccine should not be confused with the injections of hormones, as in the case of hormones, we need to inject the hormone multiple times in a day which is practically impossible in flocks where we have more than 30,000 birds in a single shed.

**FAQ 8. Broilers have hormone residues. Eating broiler meat and chicken eggs can cause the growth of facial hair and affect the menstrual cycle.**

No. These are baseless myths based on the perception that broilers are injected or fed with growth hormones. The broiler industry does not use hormones, so there is no chance of any kind of hormone residue in the meat. This fact has already been proven in the **Supreme Court of Pakistan**. Anyone can conduct the test on meat samples for any hormone residue and will find nothing in the meat or feed of the birds. According to scientific studies, **factors causing the irregularities in the menstrual cycle** are stress, obesity, low daily nutrient intake, poor eating, and low workout behavior of human females. This irregularity affects the production of androgens which ultimately results in the growth of facial hairs (Hirsutism). Most of us know that these factors are disturbed in our current population, so

there is a high incidence of such problems these days. These are not due to eating broiler meat.

**FAQ 9. Poultry can cause hormonal imbalance in humans.**

This myth has been linked with poultry due to its faster growth rate. People believe that the broiler gains weight due to the injection or addition of hormones in their feed. The residues of these hormones then come in meat and result in hormonal imbalance in human females. However, in reality, both these facts are wrong. Chicken broilers are neither injected with hormones nor are they fed. So, if they are not being injected or fed with hormones then there is no chance that their meat has any of such residue. This was also proven in the Supreme Court of Pakistan. As per scientific studies, stress, poor sleep-wake cycle, irregular diet patterns, and poor activity profile are among the major factors that can result in hormonal imbalance in humans.

**FAQ 10. Eating chicken can cause early maturity in teenagers.**

This myth is based on the wrong assumption that the chickens are fed with hormones that cause early puberty in teenagers. According to scientific studies, factors such as family genetics, nutrition, endocrine regulation, physical activity, ethnicity, and their interaction are among the major factors affecting early maturity. People now a days have better knowledge and availability of nutrients. There is an overall decrease in age of maturity all over the world. Moreover, broilers meat is a source of high-quality proteins and helps the human population in combating protein deficiency.

**FAQ 11. Eating broiler meat will make you obese like broilers.**

No, there is no scientific evidence about this myth. The consumption of chicken will provide your body with high protein content. Scientist claims that intake of high protein in the diet will have the following effects on our body:

1. Reduce hunger and give a feeling of satiety under less food intake.
2. Increase the metabolism of the body and energy expenditure, thus breaking the extra fats in the body (if we eat a less caloric diet with high proteins).
3. A high protein intake in diet will increase muscle mass and reduce the production of fats in our body (i.e., fat-free body mass).

Due to these factors, high protein intake is usually recommended for bodybuilders (to build muscle mass) and those who want to reduce their body weight (Dieting). A person can become obese if he/ she eats chicken Shawarma, Pizza, Burgers, and other such fast foods.



**In this case, obesity is not due to chicken intake but a higher intake of carbohydrates in these foods.** A higher intake of carbohydrates will result in more energy in the body which the body will process in the formation of fat.

### **DESI CHICKEN VS COMMERCIAL BROILER**

**FAQ 12. The meat of desi or backyard chicken is more nutritious than broilers.**

No, all scientific research declines this statement. The meat is a source of protein, and the protein contents of broiler and desi birds are the same or have negligible differences. There might be a difference in minerals and vitamin contents which are usually higher in desi birds than broilers because they eat insects, green leaves, and other such materials. Many people consider that the toughness of meat is associated with the nutritional profile, but that's not true. The meat of the desi bird is tough due to more collagen contents. Moreover, the protein (gram) per rupee will be much more costly for desi birds than broilers.

**FAQ 13. Why does desi chicken meat taste and smell different than broilers?**

Yes, the desi chicken's meat has a different taste and smell than broilers, but no one can claim that one has a better taste than others. For some people, the flavor of desi chicken is better while for others, broilers have a better flavor. It varies from person to person. Scientists have concluded that the amino acids, peptides, organic acids, salts, and nucleotides produce taste qualities in meat that are affected by the genotype, age, and gender of the birds. The desi birds are older, grow slowly, have a different diet (carotenoid enriched), and differ in muscle fat contents from broilers. The number of carotenoids in meat plays a vital role in the development of aroma. The production of these compounds may vary in desi birds than in broilers. Desi chicken's meat needs more cooking time due to its tough texture, which may also lead to increased production of these compounds as well as volatile compounds, which develop the aroma of the meat. Thus, the desi birds have slight differences in meat fatty acid contents than broilers and have a stronger aroma of meat than broilers. However, the differences in smell and taste do not affect the nutritional profile of both sources of meat. In experiments, it has been observed that keeping broilers for extended periods and under foraging conditions can also increase their flavor and aroma.

**FAQ 14. Desi meat is hard to eat while broiler meat is soft. why?**

The meat of desi chicken is hard due to the presence of more collagen fibers which is an age-dependent process. Keeping the broilers for longer periods will also increase the collagen in them and make the meat less tender to eat. Moreover, desi chickens have higher



movements compared to broilers which also makes meat tougher. This does not add value to the nutritional profile of the meat.

**FAQ 15. If the nutritional profile of desi chicken and broiler is the same then why do the price of desi chicken always higher than broiler?**

The higher costs are not due to nutritional benefits. A desi chicken is more costly than a broiler because we keep them for a longer period before selling them in the market. They consume more feed, have more time on the farm, have higher resource utilization, and ultimately produce less meat than broilers which makes their cost of production much higher than broilers.

**FAQ 16. I like to eat desi chicken, but my children are not. Is there any compound in the broiler that makes them dislike the desi meat?**

No, there is no such compound that can make people love broiler chicken. The development of taste in humans is a very complex process and mainly depends on the things we eat at the start of our life. Some people love to eat very spicy foods while others cannot eat them, same is the case with sugar and salt contents. The upper generations (parents and grandparents) are those who ate desi chickens in their early life and later converted to broiler meat that is why they always like and prefer desi chicken while today's generation have more consumption of broiler, so their taste buds developed in such a way to like chicken. For example, many of today's generation kids do not like to eat vegetables.

**FAQ 17. The bones of desi chicken are stronger than broilers. Why?**

The bones of desi chickens are stronger because of their age and slow growth rate. The calcification of bones is an age-dependent process. Moreover, the desi birds are always on the move, so their bones are stronger. We eat broiler after 05 weeks that is why their bones are weaker, but it does not add anything to meat's nutritional profile as we do not eat bones.

**FAQ 18. Desi chickens have more bone weight than broilers. Why?**

It is not about more bone weight rather we can say less meat in desi chickens. Broilers are grown for a higher meat-to-bone ratio, so they have more meat than bones, while, in desi chicken, there is less meat compared to broilers and they have a lower meat-to-bone ratio.

**FAQ 19. What is meant by free-range and organic chickens?**

Free-range chickens are those birds that are reared in an open field area with foraging space. These birds are fed with green leafy and leguminous plants along with the commercial feed. As they are given low nutrients diets, thus these birds will grow

relatively slowly and have higher production costs. Organic chicken farming is a slightly advanced form of free-range farming. In this type of production, we increase the criteria to more natural things. In organic farming, the birds should not be given any vaccine or medicine and should be reared on land and fed with feed without any fertilizer, insecticide, or pesticide spray for the last 3-5 years. This practice will further slowdown their growth and increase the cost of production.

**FAQ 20. What is the difference between desi and organic chicken?**

The organic production system has some mandatory requirements such as no use of medicine, fertilizer, insecticide, and pesticide for birds or their feed ingredients. Although the real desi chickens do eat natural ingredients, we cannot ensure any use of fertilizer, insecticide, and pesticide in those ingredients. Moreover, we often gave medicine to these birds when they get sick. However, such types of desi birds are hard to find now. Most of the birds sold as desi birds, now a days, are reared on commercial farms on commercial feeds just like broiler farming.

**FAQ 21. Do organic chickens are better than broilers?**

Organic chickens are grown slowly under natural conditions. The nutritional composition of organic chickens and broilers is comparable, but there are some little variations in minerals, vitamins, and omega-3 fatty acid contents due to differences in the bird's diet. These chickens are grown without any antibiotic, fertilizer, insecticide, or pesticide residue and can benefit our overall health on continuous use. Eating only organic chicken and other non-organic products will have no benefit. It should also be kept in mind the price of such meat is very high than broilers.

**ANTIBIOTICS, HEAVY METALS, AND FEED INGREDIENTS**

**FAQ 22. Chickens are fed huge quantities of antibiotics to make them grow faster.**

Yes, broiler chickens are given antibiotics, but not huge quantities for growth promotion rather as a medicine. For growth, these birds are given a well-balanced protein-rich diet. Antibiotics are costly and their continuous use in huge quantities will make the cost of production higher. Moreover, most of the antibiotics used for poultry are not used in humans, for example, neomycin is one of the most common antibiotics used in poultry and it is not used to treat humans.

**FAQ 23. Can broiler meat have antibiotic residue?**

Yes, there are some cases where antibiotic residues are present in meat, but not all the time. Every antibiotic has a withdrawal time (3-5 days), in which its residues end in meat, and most poultry farmers follow the practices to ensure this withdrawal time. Most poultry-producing companies ensure proper antibiotic withdrawal time. However, some farmers are not following the instructions and use antibiotics up till the last few days, but these are a very limited number. Keeping in view, the Poultry industry is shifting toward the use of antibiotic alternatives such as prebiotics, probiotics, organic acids, and phytochemicals.

**FAQ 24. Can antibiotic residue in meat damage our bodies?**

There are very few residues in meat but most of them accumulate in the liver and kidneys of the birds. However, the levels of these accumulated compounds are too low (exceptions can be there) to harm the body and they will also denature during cooking. The negative effect mostly includes antibiotic resistance in microorganisms and change in the microflora of the human body. According to World Health Organization, the major reason for antibiotic resistance of microbes is the unchecked and un-prescribed use of antibiotics by humans.

**FAQ 25. Does the poultry industry use chicken intestines in their feed?**

Poultry companies do not use any kind of animal product in manufacturing feed and even claim that their chicken is grown on a vegetarian diet. However, there are a few feed mills that use 1-2% of the processed poultry by-products (feathers, intestines, and heads) in their feed. These ingredients are not added as such but processed under high temperature to form a protein-enriched meal (powder) that is then mixed in feed. These ingredients cannot be used at a higher level as they can result in deterioration of the feed due to oxidation and affect chicken health.

**FAQ 26. What are the major ingredients of poultry feed? Can we make feed at home that helps birds grow at the same speed?**

Yes, the poultry feed can be formulated easily at home with little knowledge of poultry nutrition. The major ingredients that make poultry feed include Corn (50-70%), Soybean meal (15-30%), Rice Tips (5-15%), Rice Polish (5-15%), Wheat bran (5-10%), Corn gluten (3-5%), Molasses (1-3%), and other grains that are used in various combinations to make feed having more than 20% protein and 2800 kcal/kg energy.

**FAQ 27. Is there any haram ingredient such as raw blood and pig fat in poultry feed?**

No, there is no use of pig fat and blood in poultry feed at any level in Pakistan. Pakistan does not have commercial pig production. Thus, the assumption that pig fat is added to poultry feed is baseless.

**FAQ 28. Does broiler meat have heavy metals?**

No, broiler meat does not have heavy metals in it. However, they can accumulate in meat if birds are given heavy metals in feed or water throughout their life, **which is impossible**, as both feed and water have been tested before offering to birds. Almost all poultry farms have Reverse osmosis (RO) plants that filter out heavy metals. So, heavy metals do not come in meat or eggs.

**FAQ 29. Arsenic is given to broilers for growth. Broiler meat has arsenic and causes cancer in humans.**

No. The Poultry Industry of Pakistan does not use any medicine or ingredient in their feed or farms which contains arsenic. In the international market, there were compounds named “3-Nitro” and “Roxarsone” that were used in the American poultry industry since 1940. Later, the use of these compounds was banned when the researchers found that these compounds are leaving arsenic residues in meat. However, these were neither imported nor used in Pakistan ever.

**FAQ 30. Many news channels on TV said that the Food and Drug Authority (FDA) of America concluded that chicken meat is a source of arsenic and can cause cancer.**

FDA is an organization responsible for protecting public health by ensuring the safety of America’s food supply. Last year, FDA experimented to assess the mode of action and deposition pattern of arsenic, if added to broiler diets, and reported that when we add arsenic to the diet, most of the arsenic was found to be stored in the liver and then the skin of the bird. However, this experiment was a need-based trial to understand its deposition and they added arsenic to diets. It is not a field study that they collected the samples from the market and found arsenic. So, news on media channels is fake, misinterpreted, and highly exaggerated. They misquoted this news as "Eating chicken liver and skin can cause cancer as they have arsenic", which was wrong.

**FAQ 31. Are there any insecticide or pesticide residues in chicken meat?**

Yes, insecticide or pesticide residues can accumulate in meat if the birds are fed with feed that is made up of crops having insecticide or pesticide residues. However, under normal

conditions, there are very rare chances for such contamination of crops and the accumulation of these residues in meat is also a very slow and rare process.

### **GENERAL QUESTIONS RELATED TO POULTRY MEAT**

#### **FAQ 32. How can we differentiate between meat from a dead bird or slaughtered bird?**

In the case of raw meat, the meat of a dead bird will be reddish (as blood is still present in the bird's body) as compared to the meat that was slaughtered. The dead bird's meat may have yellowish patches inside the reddish area and smells very bad after some time even in the fridge. However, there is no specific difference once the meat has been cooked. Some people claim that the meat of the dead birds will be juicier and softer than normal meat, but this observation lacks any scientific evidence.

#### **FAQ 33. Chicken meat is a source of many bacteria and causes food poisoning.**

No, chicken meat itself has no bacteria or viruses. Scientists have concluded that the internal muscles of healthy animals are generally sterile at the time of slaughter. But, under normal processing conditions, equipment, workers, butchers, and any surface with which meat comes in contact, can be the source of contamination and spread bacteria to the meat. So, it is all about our handling and management that can contaminate chicken meat and determines the level of contamination; otherwise, the meat itself is sterile and clean. Once contaminated, it is difficult to kill these bacteria unless we cook the meat.

#### **FAQ 34. When we visit the market, the broilers seem lazy, cringy, sick, and often have a foul smell.**

Yes, the outlook of the broiler sometimes feels very cringy and sick in the markets but not on the farms. The reason is that these birds are kept at 24-28°C on the farms, but, in the market, they have to stay for many hours in harsh conditions (more than 35°C) without feed and water which makes them stressed, lazy, exhausted, and even sick (they aren't sick, but they seem to be sick due to poor environment). During traveling from farm to shop and even in the shops, these birds are kept in cages, and many times the feces of upper story birds fall on the body of the lower side causing a dirty appearance.

Some shopkeepers also shower these birds, during the summer season, with water to reduce heat stress. This practice also makes them look dirty as the feces will stick with the



wet body. In most of the shops, these birds are being kept at a very high stocking density and many birds will feces in the shops, which results in a smell from the shop. Moreover, biochemical and microbial degradation of the drums having waste materials of these birds also results in the development of a foul smell.

**FAQ 35. Broilers are very lazy birds, they can make us, the humans, lazy too.**

Broilers are lazy but not as lazy as most people think. This concept develops in the mind of people when they visit the butcher shop and see the sitting broiler. These birds are lazy due to the stressful environment of the shop as they use to live at 25-27°C on the poultry farm while in chicken shops the temperature is too high which makes them uncomfortable and lazy. Moreover, there are three more reasons:

1. They are kept under intensive housing with very little space which makes them unable to move freely and ultimately makes them lazy. If we give the broilers open space, then they will run, just like desi birds but they will have less weight which can result in less profit.
2. They have a very high meat growth rate than their bones which makes them unable to withstand their weight.
3. Thirdly, a farmer also does not want that the birds move more often, as it will waste the energy of feeding on the movement of birds and not in developing the meat on the body. Therefore, for economic reasons, their energies are preserved.

However, the argument that eating broiler makes you lazy is wrong and illogical.

**FAQ 36. Why there is blood under the meat of the cooked drumstick?**

It's possible for properly cooked chicken drumsticks to appear red, or even bleed. This blood comes from the femoral artery, which carries blood through the chicken's leg. The poor handling and management of chicken before slaughtering can cause bleeding from that artery and blood remain there even after cooking. It's unsightly, but not a food safety risk under proper cooking conditions.

**FAQ 37. Cooked chicken meat often has redder bones. Why?**

It's also common for properly cooked chicken, especially young fryers, to be a deep pink or even red at the bone. This is because pigments in the bone marrow seep through the thin bones of these juvenile birds, tinting the meat with a heat-stable pigment. Again, this is not a food safety concern.

**FAQ 38. The broiler is unable to stand by itself. How can they support us?**



Broilers can stand, walk, and run. However, they are reluctant to do so due to their fast growth rate and higher body weight. Broiler farming aimed to get maximum meat, not the bones, as only meat can be sold in the market. Therefore, scientists breed them for higher meat production. The calcification and strengthening of bones are an age-dependent process, and we slaughter these birds before this phase. Therefore, when they gain too much weight, their bones do not withstand the pressure. However, for humans, only the protein of the meat is important not the bones, as we do not eat them. So, it will not affect the nutritional benefits of the meat.

**FAQ 39. Broilers are unable to jump. They are energy-less, and so is their meat (phoka).**

They are unable to jump due to their heavy weight. They do not waste their energy on movement, but the only objective is their fast growth. Details are given in the previous answer.

**FAQ 40. Broilers always need medicine to protect them from disease. How will their meat increase our immunity?**

Yes, we give medicines to the chicken broilers but not “always”. They get sick because they are kept at a very high stocking density (16-20 birds in m<sup>2</sup>), which is stressful for the birds. Recently, many farmers grew their birds in more space and comparatively fewer birds get sick their birds get less sick, but profit margins are reduced many folds. It is a scientific fact that the diseases of animals cannot be transferred to humans unless they are zoonotic. Chicken meat consumption boosts our immunity, as they provide us with proteins that are converted into that then convert to immunoglobulins and support other protection systems.

**FAQ 41. Broilers are vaccinated regularly. These vaccines can affect humans too.**

Yes, broilers are vaccinated regularly to protect them against diseases. These vaccines produce immunity in birds. However, there is no evidence that these vaccines affect human health as they do not have residues in meat. Moreover, the viruses in these vaccines will be dead during cooking.

**FAQ 42. Broilers are very sensitive to environmental challenges. Eating the broiler will also make us susceptible to such problems.**

Yes, we can say that the broilers are sensitive birds, particularly to heat stress. The reason for their sensitiveness is their very fast growth rate. They use most of their energy in developing body mass, rather than their immunity and regulatory systems which is why

they are sensitive to environmental stress. However, their sensitivity to stress cannot be transferred to humans as our immune system is entirely different.

**FAQ 43. The poultry farms smell so bad that no one can survive near them. Why?**

Yes, the poultry farms smell stinky to others. Commercial poultry farms are intensive farming units where 30,000 to 50,000 birds live in a closed area. This high number of birds produce huge quantities of feces daily. The breakdown of these feces and other organic matter generates certain gases such as NH<sub>3</sub>, H<sub>2</sub>S, and SO<sub>2</sub>, which combine to create an unpleasant smell. However, these gases do not affect the health of people living outside as they have very little exposure to them that's why poultry farms are usually built far from human living areas.

**FAQ 44. Can air coming from poultry farms have such bacteria and viruses that can make us sick?**

No, the air from a poultry farm cannot make humans sick. The 99% of bacteria and viruses that can cause sickness in the chicken are those that cannot cause sickness in humans. However, continuous exposure to such air can cause the respiratory issue in sensitive people as air coming out from poultry farms have feather particles and dust from the farm, and many people have dust allergies, but it only happens in long-term exposure.

**FAQ 45. Do the birds slaughter in a processing plant through halal methods?**

Yes, processing plants in Pakistan have butchers that slaughter all the birds manually with knives reciting takbeer. Moreover, they have Halal Zabiha certification from famous religious organizations and there is very strict monitoring of the slaughtering process.

**FAQ 46. Does the meat is properly washed in a processing plant?**

Yes, cleaning and disinfection of meat is an integral part of the processing plant's operation. All processing plants in Pakistan wash the birds after complete processing and then disinfect them with food-grade disinfectant to remove any kind of bacteria in the very hygienic environment of a processing plant.

**FAQ 47. Is there any monitoring authority to monitor processing plants in Pakistan?**

Yes, many organizations regularly monitor processing plants. On the government level, the Punjab Food Authority is working vigilantly to monitor all the processing plants regularly. Moreover, all certification organizations (HACCP, HALAL, ISO) and restaurant brands that purchase meat from processing plants routinely visit and monitor the processes of a chicken processing plant.

**FAQ 48. If broilers are safe to eat, why do M.B.B.S. doctors instruct us to avoid them?**

Yes, broiler meat is very safe and full of nutrients, and consuming a balanced diet with chickens makes us healthy and strong. Human doctors lack knowledge about poultry production so, most of them believe in myths that the broiler is given hormones for growth. They then link this hormone addition (myth) with facial hair growth in females, hormonal imbalance, early maturity, skin problems, cancer, hepatitis, osteoporosis, arthritis, and many such problems. In reality, the broilers are never fed any kind of hormones, so all these allegations are baseless. If you ask for scientific proof from doctors for their statements, they will answer that most of the information they had about chickens was based only on rumors and public discussion. Pakistan Poultry Association and the Department of Poultry Production are working towards the education of these doctors and trying to guide them to the reality of poultry production.

**FAQ 49. Chicken can cause cardiovascular diseases.**

No, chicken meat cannot cause cardiovascular disease. There is no scientific evidence to support this claim. Heart associations in different developed world countries have worked on factors affecting this disease, and they never doubted broiler meat as a causative agent for these problems. In fact, Chicken meat has very little fat (3-4%) compared to beef and mutton and does not increase cholesterol or fat in the body.

**FAQ 50. Can we say that the broiler meat is non-nutritious (Phoka) compared to other meats?**

No. All the scientific studies in this regard have shown almost equal nutrient levels in both types of meats. The proteins, energy, vitamins, and minerals are comparable in desi and broiler meat. Some scientists have reported relatively higher vitamins and minerals in the desi chicken due to the type of feed they eat. This, however, does not affect the nutritional value of the meat. Furthermore, the desi birds have higher collagen contents in their meat than the broilers, which makes its meat tougher than broilers and many people misinterpret it as the nutritional value of the meat. The broiler meat is more economical, easily available, and easy to eat than desi chicken which gives it an advantage over the others.

**FAQ 51. Broilers are made in machines with electric currents. They have no parents.**

Commercial broiler chickens have complete ancestors. They have parents, grandparents, and great-grandparents and have separate farms for each generation due to the intensive farming system. Moreover, they are not a product of electricity as claimed by some clerics. Yes, broilers are incubated in machines (Incubators) that run on electricity, but these machines work on the principles of natural incubation (as done by broody hen). These

machines provide heat, oxygen, and humidity (water) to the eggs just like a hen, and ultimately chicks hatch after 21-days. These machines are important to produce billions of chickens which will be impossible if we try to hatch eggs under hens. So, artificial incubation machines were developed to increase the production of chicks that support large poultry facilities. In these machines, more than 1 Lac chicks can hatch in a single day in a hatchery.

**FAQ 52. Broiler meat is a source of coronavirus.**

No, all the medical research proves that keeping chicken or eating chicken meat and eggs has no relation to the transmission of the COVID-19 virus. All possible causative agents and routes of transmission of this deadly disease are already very well described by health authorities. It should also be kept in mind that the coronavirus is very common in human beings and animals for hundreds of years causing flu and colds. A member of this virus family causes Infectious bronchitis disease in chickens (first reported in the 1920s), but that virus strain has no relation to the one causing COVID-19. There is no scientific evidence to date that the virus that affects chickens can transmit disease to humans and vice versa. So, chicken meat is safe to eat and has no role in developing sickness in humans.

**FAQ 53. The broiler is a source of the Nipah virus.**

According to World Health Organization (WHO), Nipah virus infection is a zoonotic illness that is transmitted to people from animals such as pigs and bats and can also be transmitted through contaminated food or directly from person to person. This virus is mainly present in bats which transmit it through pigs (intermediate host) or urinating on fruits which then transmit the virus to humans. Moreover, the Food and Agriculture Organization (FAO) and Center for Disease Control (CDC) of the USA denied the existence of the Nipah virus in any animal except pigs and fruit bats.

**FAQ 54. Eating broilers is resulting in blood pressure problems.**

There is no compound in broiler meat that can affect blood pressure. The fat contents of the broiler meat are also too low to cause blood pressure problems. However, higher consumption of chicken as fast food or junk food can cause blood pressure problems due to their high salt contents and bad quality oil used in the fryer.

**FAQ 55. Eating the liver of the broiler can cause cancer.**

No, there are no carcinogenic compounds in the liver of the chickens. However, just remember that the basic function of the liver of any animal is detoxification and there are

so many chemical processes that occur in that organ. It converts drugs, hormones, and waste produced inside our/ chicken's body into water-soluble forms for excretion, so it is better to consume them in a limited amount. The broiler has a very high growth rate that makes their liver more susceptible to stress and ultimately lowers their quality than desi chicken. Overall, the liver has more than 15% protein and is rich in vitamin A, selenium, and iron.

**FAQ 56. Why there are so many variations in the price of chicken?**

The price of chicken depends on the supply and demand balance of the market. It has no connection with any political party (a common perception). In the periods of higher demand (i.e., marriage season, Rabi ul Awal, Ramzan, Eid ul Fitr) and low supply (i.e., low production, disease attack), the prices increase. On the other hand, in the periods where the demand is less (i.e., Eid ul Azha, Muharram, hot and humid summer season), and supply is higher (i.e., overproduction), the prices of chicken fall. There is no controlling authority for over or underproduction of chicken. Therefore, chicken prices fluctuate several times a year.

**FAQ 57. Broilers are produced the same way as the pig. They are similar to pigs.**

This is a baseless myth. Broilers are improved using genetic selection mechanisms keeping in view nature's principle of Survival of the fittest. These improved broilers are kept in a very ideal environment and fed diets having more than 20% proteins. These are the conditions that help them grow large. There is no relation between pigs and poultry production.

**FAQ 58. If we raise broilers at home, they do not grow at the speed they used to grow on farms. Why?**

A broiler needs optimum temperature and a high-quality protein-rich diet to gain weight. These conditions are usually difficult to achieve when we grow birds at home or even in open-sided poultry houses. Therefore, these birds grow slowly in such an environment.

**FAQ 59. Broiler carcasses often have broken wings. Why?**

Yes, there are many incidences of broken/ disjointed wings in broilers. These happen due to poor handling of birds during catching, transportation, and handling of birds. It is better to remove such part as it is contaminated with blood at the time of slaughtering.

**FAQ 60. What precautions are recommended for purchasing and storing broiler meat?**



1. The birds to be selected for slaughtering should be healthy and active. Try to purchase meat in the early morning or till noon. The birds in the later phase of the day will be stressed and have a poor quality of meat.
2. Always ask the shopkeeper to slaughter the bird in front of you. Never trust a shopkeeper to purchase meat from the birds already slaughtered. Some shopkeepers may keep dead birds already slaughtered to avoid losses. Make sure that the butcher does not have any dead birds already present in the bleeding drum.
3. Purchasing meat from butcher shops may pose a threat of bacterial contamination due to the poor hygienic status of equipment present in the shop.
4. Try to lower the temperature of the meat as soon as possible after reaching home. For this, try to keep the meat in a chiller rather than a freezer. Too much cooling just after slaughtering can increase the toughness of the meat.
5. It is usually recommended not to wash meat before placing it in the fridge. The water will not remove the bacteria but rather increase the chances of cross-contamination.
6. If meat is needed to be stored, first keep the meat in the chiller for 4-6 hours, then move it to the freezer. The same process shall be repeated in a reverse manner before using the frozen meat.
7. For proper cooking of meat, a core temperature of 72°C is recommended. Cooking below this temperature may cause food poisoning and other such issues.

**FAQ 61. What precautions are recommended for barbecuing meat?**

The ideal temperature for cooking is that where the internal temperature of the meat reaches 72°C. Improper barbecuing (at a high temperature) will make a crust on the surface of the meat and hinder the transfer of heat to the inner side of the meat. This will result in uncooked meat on the inner side of the meat. Uncooked meat can result in food poisoning and other such issues.

**EGGS AND THEIR IMPORTANCE**

**FAQ 62. Eating eggs will heat our bodies. We shall not eat eggs during summer.**

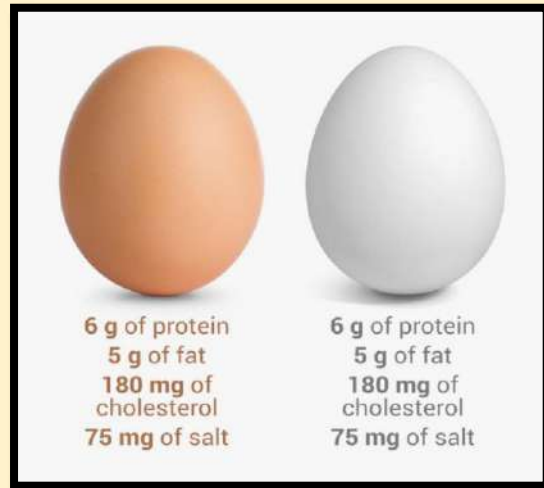
Yes, eating eggs will increase the body temperature, whether it is in summer or winter. However, in summer, we will feel it more because the ambient temperature is already higher. It is not a harmful or disturbing phenomenon. The reason for body heat-up is that the eggs are rich in proteins and scientists say whenever you have a higher protein intake,



it will increase your metabolism. Higher body metabolism is linked with higher metabolic heat production that will heat the body. It does not have any kind of negative effect on human health.

**FAQ 63. Some eggshells are white, and others are different shades of brown. Why?**

The difference in eggshell color is due to the origin of the chicken breed. Over the thousands of years, the chickens have spread throughout the globe changing themselves according to that specific region and developing into new breeds. Presently, we can classify chickens into four major geographical classes Asiatic, English, American, and Mediterranean. Among these classes, only the birds of the Mediterranean class lay white eggs while all other classes lay brown eggs.



**FAQ 64. Are brown-shelled eggs more nutritious than white-shelled eggs?**

No, the color of the shell has no relation to the internal contents of the egg. The color of the shell is a genetically determined trait that can vary among breeds however the nutritional profile has no major differences. There can be differences in the minerals, vitamins, and certain fatty acid contents if the chickens are fed with green leafy vegetables, but it has no relation to shell color.

**FAQ 65. We can get more nutrition by eating desi egg.**

No, it is just a baseless myth. Many scientific studies compared the egg nutritional profile of several types of chickens and found no variations in the internal contents of the eggs. Moreover, the eggs from desi chicken are much smaller than those from commercial hens. Thus, they provide lesser total protein and other nutrient contents than desi eggs.

**FAQ 66. Why eggs of desi chicken are smaller than white eggs?**

The commercial layers were selected, for higher egg weight, over the decades. The selection of better birds resulted in the production of more eggs per hen with higher egg weight than typical desi chicken. However, the desi chickens have lower genetic potential, thus producing small size eggs.

**FAQ 67. How a bird can lay an egg without males? Hormones are injected into layers to get eggs just like oxytocin injections are injected for getting milk. Eggs without males are nutrient-less and harmful.**

Laying of the egg, by a female hen, is a natural process that starts as the bird reaches their sexual maturity (Normally 17-28 weeks of age in different breeds), just like a menstrual cycle in human females. It only requires good nutrition and a specific light duration for a hen to start egg production. Males just fertilize these eggs for the propagation of next-generation. Otherwise, the layer lays the infertile eggs. There is not any sort of hormones that are being injected for the production of eggs.

**FAQ 68. How a layer can lay more than 300 eggs without an injection? How do commercial layers lay an egg almost daily without any hormonal injection?**

The modern commercial white egg layers have been developed using the Single Comb White Leghorn breed of chicken which is usually found in the Mediterranean region. If you google this word, you may find that the hens of these breeds lay more than 250 eggs a year under normal conditions. The poultry scientist took the birds of this breed, selected the best of the best for the propagation of next generations for more than 50 years, and ultimately developed the birds that can lay more than 300 eggs in a year with very few off days. These birds just need good management, ideal temperature, a balanced diet, and 16 hours of light to produce eggs rather than any kind of hormone injection. As an experiment, you may try to inject oxytocin into desi birds to check if they produce eggs with hormones.

**FAQ 69. There are hormone residues in eggs that result in hormonal imbalance in human females.**

As answered above, the commercial egg layers do not need hormones for the production of eggs. Even, though there is no hormone available for the chicken in the market. So, if there is no hormone used in the production of eggs, then there cannot be hormonal residues in eggs. It is just a baseless myth without any scientific evidence.

**FAQ 70. Eggs of desi hens have a darker color yolk which makes them more nutritious than the paler yolks of commercial eggs.**

The eggs of desi hens have darker yolk color than commercial eggs, but it does not increase their nutritional values. The yellow color of the yolk is due to the presence of carotenoids and xanthophyll pigments. The birds get these pigments only from the corn present in their feed, while the desi birds eat a variety of seeds, fresh leaves, and vegetables that are a major



source of carotenoids and make the yolk color of desi hen darker. We can also alter the yolk color by adding carotenoid-enriched compounds to the hen's diet for example marigold petals.

**FAQ 71. Plastic eggs are being sold in markets now a days. I have seen some videos of making plastic eggs.**

No, it is wrong fact that plastic eggs are sold in markets. The human body cannot digest plastic. The egg is nature's gift, and it is almost impossible for anyone to develop a product the same as the egg. Plastic and eggs have entirely different properties when heated, and plastic is also costlier. The eggshell is porous, which is difficult to create in artificial eggs. The video of making plastic eggs was for toy purposes not for human consumption. Keeping eggs for longer periods during the summer will cause the breakdown of albumen and make it watery. People often wrongly confuse the watery albumen with the fake egg.

**FAQ 72. Why are there blood spots in some eggs?**

Egg yolks are produced inside the ovary of the birds. Sometimes a part of the capillary, supplying blood to the ovaries, falls and comes along with an egg which gives a red appearance. These eggs are safe to eat.

**FAQ 73. Why are there blood spots on the shell of an egg?**

Sometimes a bird lays an egg larger than its reproductive tract. This can cause injuries inside the tract or sometimes popping out of the reproductive system (prolapse) which can lead to a blood stain on the surface of the shell. Such eggs are safe to eat.

**FAQ 74. I saw an egg with red veins on the yolk. Can I eat such an egg?**

No, such eggs cannot be used for food purposes. Such problems often come in fertile eggs from flocks where both males and females are kept during production. In the case of fertile

eggs, keeping eggs at higher temperatures will result in the growth of the embryo (blood veins on/ around yolk at the start) thus making such eggs unfit for consumption.

**FAQ 75. Boiled eggs often have greenish/ blackish yolk. Why?**

The discoloration that sometimes forms around the yolk of hard-boiled eggs is the result of a reaction between sulfur in the egg whites and iron in the yolks. It is harmless. It occurs when eggs have been cooked for a longer duration or at a very high temperature.

**FAQ 76. Eggs have very thin shells in summer. Are they safe to eat?**

Yes, such eggs are safe to eat. The egg shell is thin during the summer season due to heat stress on birds which results in lower feed intake and a decrease in calcium carbonate (raw material of egg shell) in the body. The internal contents of such eggs will dry up quickly (7-10 days) if kept at room temperature. There are also chances of cracks in such eggs.

**FAQ 77. What is the shelf life of an egg?**

The shelf life of a chicken egg depends on a variety of factors such as temperature, relative humidity, shell quality, and integrity. Eggs kept at room temperature can maintain their freshness for 10-12 days; however, shelf life reduces further with the increase in storage temperature. If we store eggs in the fridge (4-8°C), they remain eatable for up to 28-days, provided they do not have a crack on the shell, but the quality will be lower than a fresh egg.

**FAQ 78. Can we wash eggs after purchasing from the shop?**

It is not a good practice to wash eggs. Washing the eggs will provide water to the bacteria present on the surface of the shell to proliferate and sometimes help them to go inside. Normally, the eggs have natural protective coverings to protect bacteria to go inside. If eggs are dirty, they may be cleaned with a cloth/ towel. However, eggs can be washed only on an industrial scale under proper water and disinfectant temperature.

**FAQ 79. Why there are so many variations in the size of the eggs present in the market?**

Yes, eggs of different sizes are present in the market. The variations exist due to the difference in age of the birds. At the start of egg production, the commercial layers lay eggs of approximately 45 g. With the increase in age, the egg weight increases gradually to 65-70 g. So, eggs coming from poultry farms having younger flocks will have smaller sizes as compared to those coming from farms having older flocks.

**FAQ 80. We must eat albumens (egg whites) only. They are healthier than the yolk.**

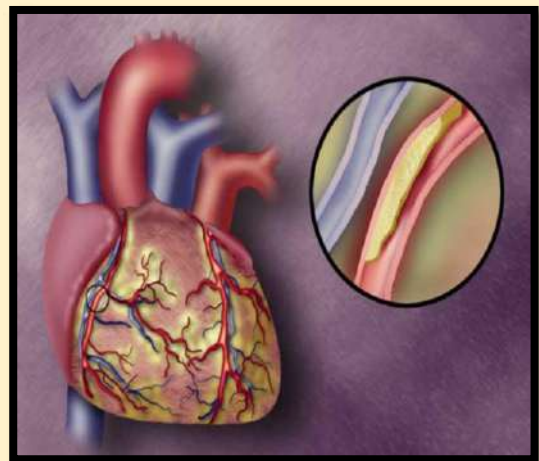
It is a common misconception. An egg is usually consumed as a protein source (6 – 7 g of protein in one egg). The proteins of the egg are almost equally distributed in albumen (3.3 – 3.6 g) and yolk (2.7 – 3.2 g). However, the fats (5.5 g in one egg) are solely present in the yolk of the egg. The yolk also has 100% of fat-soluble vitamins such as Vitamin A, D, E, and K. The remaining minerals and vitamins are almost equally distributed in yolk and albumen. Therefore, if you are not eating the yolk, you are wasting half of the proteins, minerals, and fat-soluble vitamins.

**FAQ 81. Bodybuilders shall eat only egg albumens.**

The trainers of bodybuilders and sportsmen/ sportswomen often recommend them to eat albumen only. Such recommendations are based on the fact that these people have to eat a larger quantity of eggs (12-24 per day). As yolks have higher fat and calorie contents, thus eating these many yolks will cause other health hazards for them. Therefore, they only eat albumen to fulfill their protein requirements.

**FAQ 82. Eggs are a source of cholesterol and cause heart diseases.**

It is a very common myth. Initially, it was believed that eggs can cause heart diseases. However, recent research has concluded no relationship between eating eggs with heart diseases. In reality, consuming eggs will decrease the production of cholesterol in the body and also convert bad cholesterol in the body (LDL) into good cholesterol (HDL). It should also be kept in mind that most of such



problems occur due to oil used during the frying of the egg rather than the egg itself.

**FAQ 83. Eating raw eggs will be more nutritious than cooked.**

No, it is not safe to eat raw eggs. The raw egg may contain disease-causing bacteria that can result in food poisoning. Moreover, the egg contains a protein “Avidin” which binds to biotin (Vitamin B7). Cooking the egg will denature this protein and make biotin available for consumers, while eating raw eggs may block the biotin of our body and result in its deficiency. The best form of egg is the half-boiled egg which provides maximum nutrients.

**FAQ 84. Why eggs are considered good for weight loss?**



Eggs are considered as a very ideal breakfast for people trying to lose weight. Eggs are very low in calories (i.e., 19 calories in albumen and 65 in the yolk). Thus, eating eggs will not increase caloric intake. Moreover, the high protein level of eggs will increase the metabolism of the body and helps in the burning of fat. Thirdly, eating eggs will decrease the production of Ghrelin (a hormone that controls hunger) and will ultimately reduce the dietary intake.



**FAQ 85. Shall Pregnant women avoid eggs?**

This is a very wrong concept. An egg is a nature's gift from which a chick develops without any external help. Thus, it is considered a universal source of protein, vitamins, minerals, amino acids, and omega-3 fatty acids. Along with these, a very high quantity of choline in the egg will help the development of the brain cells of the fetus. However, it is better to consume cooked eggs rather than raw eggs.

**FAQ 86. What are the benefits of eating eggs on eye health?**

Egg contains many natural vitamins that strengthen our vision. The vitamin A, Lutein, and Zeaxanthin present in egg yolks are considered as medically best ingredients for vision and eye health.



**FAQ 87. What are the benefits of eating eggs on hair and nails?**

An egg is a rich source of proteins that act as raw materials for hair and nail growth. Moreover, the eggs have many sulfur-containing amino acids, and research showed that the sulfur-containing amino acids are very beneficial for hair and nail growth.

**FAQ 88. What is the dietary value of the eggs?**

Eggs are considered an ideal diet for every age group. Eggs are among the very few natural foods that have a protective covering to prevent adulteration. The World Health Organization (WHO) has given a 100-completeness score to the eggs due to their nutrients. The protein in eggs is one of the most easily digestible proteins (high biological value) and is used as a standard protein to compare the value of other proteins.

**FAQ 89. I have seen a video in which the hens are laying eggs with green yolk color. Are they safe to eat?**

Yes, such eggs are safe to eat. This video emerged from Kerala (India), in which the farmer was giving his birds feed having an herb named “Kurunthotti”. The color of the yolk depends on the feed the bird eats; thus, birds fed this diet started producing green yolk color. These birds started to lay yellow yolk eggs under standard feed.

**FAQ 90. How can we identify the older eggs?**

The best way to find the freshness of the egg is by dipping the eggs in a bowl of water. Fresh eggs will sink to the bottom while older eggs



will rise depending on their storage period. On breaking, the fresh eggs will have a lesser spread of albumen and more height, whereas the albumen of older eggs will be watery and spread on the whole plate. On boiling, the fresh egg will have an oval shape on both ends, while the older egg will have a flat surface on one side.

**FAQ 91. How can we check that egg is cooked or raw without breaking it?**

The eggs can be checked whether they are raw or cooked by swirling the egg around its axis. The cooked eggs will rotate along their axis, whereas the raw egg will change its position due to the movement of internal contents.

**Example of Feed Formulation used for broiler**

**Table 1. Ingredients and nutrient composition of the experimental diets (as-fed basis) Broiler**

Sr. No.	Items (%)	Starter (0-21 d)	Grower (22-35 d)
1.	Corn 90	52.8	58.2
2.	SBM 44	31.0	25.0
3.	CM	0.0	0.0
4.	Gluten 60	4.0	4.0
5.	Guar Meal	4.0	4.0
6.	OIL	3.3	4.7
7.	CaCO <sub>3</sub>	1.0	0.85
8.	DCP	2.2	1.85
9.	L-Lysine Sulphate	0.6	0.5
10.	DLM	0.3	0.2
11.	Threonine	0.1	0.1
12.	L-Isoleucine	0.1	0.05
13.	NaCl	0.2	0.2

14.	NAHCO <sub>3</sub>	0.1	0.1
15.	Vitamin Premix <sup>1</sup>	0.3	0.3
<b>Total</b>		<b>100</b>	<b>100</b>
<b>Analyzed Nutrient (%)</b>			
1.	ME (kcal/kg)	2996	3156
2.	CP (%)	23.0	20.0
3.	D-Lysine (%)	1.28	1.08
4.	D-Methionine (%)	0.57	0.53
5.	D-Threonine (%)	0.85	0.75
6.	D-M+C (%)	0.87	0.81

Premix composition (per kg of diet): 12,000 IE retinol, 2,400 IE cholecalciferol, 50 mg dl-a-tocopherol, 1.5 mg menadione, 2.0 mg thiamine, 7.5 mg riboflavin, 3.5 mg pyridoxine, 20 mcg cyanocobalamin, 35 mg niacin, 12 mg D-pantothenic acid, 460 mg choline chloride, 1.0 mg folic acid, 0.2 mg biotin, 80 mg iron, 12 mg copper, 85 mg manganese, 60 mg zinc, 0.8 mg iodine, 0.1 mg selenium, 125 mg anti-oxidant mixture.

**Example of Feed Formulation used for commercial layers**

**Table 2.** Ingredients and nutrient composition of the experimental diets (as-fed basis) Layer during production

Sr. No.	Items (%)	
1.	Corn	47
2.	Rice Polish	12
3.	SBM	20
4.	Sunflower meal	3
5.	Sesame meal	4
6.	Limestone	8
7.	DCP	5
8.	L-Lysine Sulphate	0.1
9.	DLM	0.7
10.	Mineral Vitamin Premix	0.3
<b>Total</b>		<b>100</b>
<b>Analyzed Nutrient (%)</b>		
1.	ME (kcal/kg)	2512
2.	CP (%)	16.1
3.	Ca (%)	4.3
4.	P (%)	1.45

## Section 2

### Human Nutrition and Dietetics

1. Egg is a \_\_\_\_\_ caloric diet.
  - A. **Low**
  - B. High
  - C. Medium
  - D. Extremely high
2. Eating eggs will increase the body temperature of the human due to:
  - a. Heat of egg
  - b. High Protein in eggs increases metabolism**
  - c. Hormones in egg
  - d. Carcinogenic compounds
3. Why do dietitians recommend a high protein diet during weight loss treatments?
  - a. A high metabolic rate will help breakdown body fat**
  - b. Heat up body
7. Which of the following is considered lean meat?
  - a. Chicken with skin
  - b. Chicken without skin**
  - c. Beef
  - d. Mutton
8. Scurvy is caused due to the deficiency of
  - a. Vitamin C**
  - b. Vitamin D
  - c. Vitamin E
  - d. Vitamin K
9. Infants born to vegan mothers may be at increased risk of deficiency of \_\_\_\_\_ nutrient.
  - a. Vitamin C
  - b. Folate
  - c. Vitamin B12**
  - d. Calcium
10. Meat is a rich source of \_\_\_\_\_ vitamins.
  - a. A
  - b. B complex**
  - c. D
  - d. K
4. The energy from fats is called cold energy due to \_\_\_\_\_.
  - a. Cooling effect on the body
  - b. Slow metabolic breakdown and less heat production**
  - c. Rapid breakdown
  - d. Increase metabolic rate
5. The vegetable fats mainly contain
  - a. Saturated fats
  - b. Unsaturated fats**
  - c. Monounsaturated fats
  - d. Trans fats
6. To avoid constipation, the pregnant woman should increase her intake of:
  - a. Milk and dairy products.
  - b. Whole-grain bread and fruits.**
  - c. Lean meat, and fish.
  - d. Eggs and poultry products
11. Deep frying of potato chips leads to the generation of carcinogens:
  - a. Acrylamide**
  - b. Acetamide
  - c. Formamide
  - d. Bioactive peptides
12. A high risk of atherosclerosis is associated with low levels of
  - a. Chylomicrons
  - b. VLDL cholesterol
  - c. LDL cholesterol
  - d. HDL cholesterol**
13. According to the American heart association which of the following is not a risk factor for heart diseases?
  - a. Sedentary lifestyle
  - b. Eating Eggs**
  - c. Genetics
  - d. Smoking
14. Nutrient requirements during adult life generally
  - a. increase with age
  - b. decrease with age**

- c. change very little  
d. no change in requirement
15. Can eating chicken liver and skin can cause cancer in humans (As reported by new channels)?
- True
  - Wrong**
  - May be
  - Depends on quantity
16. The protein contents of an egg are:
- 20 %
  - 18 %
  - 9 %
  - 12 %**
17. Which of the following microorganism is a serious concern in “canning”?
- Clostridium botulinum***
  - Streptococcus thermophiles*
  - Lactobacillus bulgaricus*
  - Bifidobacterial*
18. The biological value of which food is the highest?
- Milk
  - Meat
  - Egg white**
  - Wheat
19. The digestion that occurs in the large intestine is caused by:
- Lipase
  - Pepsin
  - Saliva
  - Bacteria**
20. The temperature in your freezer should be ----  
----- for proper storage of frozen products.
- 0 degree C
  - 4 degree C
  - 12 degree C
  - 18 degree C**
21. What is avidin?
- A protein found in raw eggs**
  - An oligosaccharide found in banana
  - A vitamin-like compound
  - An anti-depressant
22. What role does Avidin play?
- Binds Biotin**
  - Accelerate digestion
  - Glowing of skin
  - Foaming of egg
23. Avidin bind Biotin. What makes Biotin available in the egg?
- Addition of salt to egg
  - Denaturation of avidin during cooking of the egg**
  - Remains in bound form
  - Eating raw egg
24. A significant amount of vitamin K comes from:
- Sunlight exposure
  - Fortified grains
  - Bacterial synthesis**
  - Milk
25. The amount of protein in one egg is usually about
- 6-7g**
  - 10-12g
  - 65-70g
  - 45g
26. The amount of fat in one egg is usually about
- 5g**
  - 2.7g
  - 10-15g
  - 30-40g
27. 100% of fat-soluble vitamins are present in
- Egg yolk**
  - Egg albumen
  - Both egg yolk and albumen
  - None
28. The amount of cholesterol in one egg is usually about
- 200 mg**
  - 500-600mg
  - 10-20mg
  - None
29. The percentage of fat in broiler meat is usually about
- 3-4%**



- b. 10-12%  
c. 1-2%  
d. 20%
30. Most of the fat is present in the \_\_\_\_\_ part of the broiler.  
a. Neck  
**b. Skin**  
c. Legs  
d. Breast
31. Are broilers injected with steroids and hormones for growth?  
a. Yes  
**b. No**  
c. Sometimes  
d. Conditional
32. Do broilers have hormone and steroid residues in their meat?  
a. Yes  
**b. No**  
c. Sometimes  
d. Often
33. Eating broiler meat and chicken eggs can affect \_\_\_\_\_?  
a. Facial hair  
b. Menstrual cycle  
c. Both  
**d. None**
34. Eating broiler meat can cause \_\_\_\_\_ in humans?  
a. Blindness  
b. Deafness  
c. Lameness  
**d. None of these**
35. Eating broiler meat can cause \_\_\_\_\_ in teenagers?  
a. Early maturity  
b. Late maturity  
c. Lameness  
**d. None of these**
36. Eating broiler meat can result in the development of \_\_\_\_\_ in humans.  
a. Obese  
b. Weakness  
**c. Muscle**  
d. None of the above
37. The eggs have \_\_\_\_\_ residues.  
a. Hormones  
b. Vaccine  
c. Antibiotic  
**d. No**
38. Egg albumen / white is mixture of \_\_\_\_\_ different proteins.  
a. 5-10  
b. 10-20  
c. 20-30  
**d. 40-50**
39. Medically best ingredient(s) for vision present in eggs are:  
a. Vitamin A  
b. Lutein  
c. Zeaxanthin  
**d. All**
40. Pre-formed vitamin A is present in \_\_\_\_\_.  
**a. Eggs**  
b. Wheat  
c. Corn  
d. Cabbage
41. A high quantity of \_\_\_\_\_ in eggs will help the development of the brain cells of the fetus.  
a. Dopamine  
**b. Choline**  
c. Adrenaline  
d. None
42. Eating eggs will decrease the production of which hormones:  
a. FSH  
b. STH  
**c. Ghrelin**  
d. Insulin
43. Ghrelin is a hormone that controls:  
a. Weight  
b. Cholesterol  
**c. Hunger**  
d. All
44. Eggs contain a protein Avidin which binds to:

- a. Vitamin B3  
**b. Vitamin B7**  
c. Vitamin K  
d. Vitamin A
45. Does eating eggs increase the cholesterol level in the body?  
a. Yes  
**b. No**  
c. May be  
d. Unknown
46. Eating eggs convert LDL (cholesterol) into \_\_\_ cholesterol in the body.  
a. VLDL  
b. TDL  
c. **HDL**  
d. None
47. Egg is a rich source of \_\_\_\_\_.  
**a. Omega-3 fatty acids**  
b. Omega-6 fatty acids  
c. VLDL  
d. LDL
48. Chalazae are white thread-like structures inside eggs that provide stability to the yolk. They chiefly consist of \_\_\_\_\_ protein.  
a. Vitelline  
b. Globulin  
c. **Mucin**  
d. Biotin
49. \_\_\_\_\_ hours are required for formation of one egg.  
a. 5  
b. 12  
c. **24**  
d. 36
50. At the start of egg production, the commercial layer lays eggs of approximately \_\_\_gm.  
a. 70  
b. **45**  
c. 20  
d. 65
51. Eggs kept at room temperature can maintain their freshness for \_\_\_ days.  
a. **10-12**  
b. 20  
c. 5  
d. 25
52. If eggs are stored at 4-8 °C, they remain eatable up to \_\_\_ days:  
a. 35  
b. 40  
c. **28**  
d. 50
53. Heat stress in summer weakens egg shells due to decreased supply of feed and \_\_\_\_\_ intake.  
a. **Calcium carbonate**  
b. Hydrogen peroxide  
c. Magnesium sulfate  
d. None
54. The discoloration around the yolk of boiled eggs is due to a reaction between \_\_\_ in egg white and \_\_\_ in the yolk.  
a. Iron, Carbon  
b. **Sulfur, iron**  
c. Iron, hydrogen  
d. Sulfur, carbon
55. The best way to eat egg is \_\_\_\_\_.  
a. Raw  
**b. Boiled**  
c. Fried  
d. Fried in olive oil
56. The meat of desi chicken contains higher contents of \_\_\_ than broiler making it tough to eat.  
a. Reticular  
b. **Collagen**  
c. Elastic  
d. None
57. The meat composition of Desi and broiler birds are comparable except...  
a. Energy  
b. Minerals  
c. Proteins  
**d. Collagen**
58. The liver is a rich source of

- a. Vitamin E and Iodine
  - b. Vitamin A and Selenium**
  - c. Iron and Iodine
  - d. Vitamin D and Calcium
59. Using higher temperature during chicken BBQ causes improper cooking due to
- a. The crust is formed that hinders heat transfer**
  - b. Overcooked meat
  - c. Useful nutrients are lost
  - d. Proteins are denatured
60. Can eating broiler meat results in irregularities in the menstrual cycle?
- a. Yes
  - b. No**
  - c. Sometimes
  - d. In some people
61. The healthiest way to cook chicken is \_\_\_\_\_.
- a. Grilling**
  - b. Frying
  - c. Stewing
  - d. Roasting
62. Can eating broiler meat results in obesity?
- a. No**
  - b. Yes
  - c. Sometimes
  - d. In some people
63. An increase in obesity in modern times is due to
- a. High broiler consumption
  - b. Eating egg
  - c. Eating junk foods having higher carbs and fats**
  - d. Eating vegetables
64. Foods like burgers and pizza are rich in \_\_\_\_\_.
- a. Fats
  - b. Carbohydrates**
  - c. Proteins
  - d. Vitamins
65. Can eating broiler meat results in the production of androgens?
- a. Yes
  - b. No**
  - c. Sometimes
  - d. In selective people
66. Vitamin that is available only from animal origin is
- a. Vitamin A
  - b. Vitamin D
  - c. Vitamin B6
  - d. Vitamin B12**
67. The protein found in human hairs is
- a. Actin
  - b. Myosin
  - c. Keratin**
  - d. Mesothelin
68. Eggs are excellent for \_\_\_\_\_.
- a. Hairs and nails
  - b. Obesity control
  - c. Brain development
  - d. All of the above**
69. Which food source can provide 33% of the daily value of biotin?
- a. Eggs**
  - b. Spinach
  - c. Milk
  - d. Rice
70. How many grams of Trans-fat is present in chicken meat?
- a. 0**
  - b. 1
  - c. 2
  - d. 4
71. How many grams of Trans-fat is present in chicken eggs?
- a. 0**
  - b. 1
  - c. 2
  - d. 4
72. Egg contains \_\_\_\_\_ essential amino acids.
- a. 0
  - b. 4
  - c. 7
  - d. 9**

73. Egg contains \_\_\_\_\_ non-essential amino acids.
- 0
  - 3
  - 6
  - 11**
74. Rickets is caused by the deficiency of Vitamin
- A
  - B
  - C
  - D**
75. An egg is the second-best dietary source of vitamin
- A
  - B
  - C
  - D**
76. A bowl of chicken soup can be used as an anti-depressant. Why?
- High levels of protein
  - High level of cocaine
  - High level of vitamins
  - High level of tryptophan**
77. Tryptophan present in chicken meat and eggs increases \_\_\_\_\_ production and results in happiness/ anti-depressant.
- Serotonin**
  - Caffeine
  - Ephedrine
  - Nicotine
78. The meat of chicken is also called white meat which is characterized with
- Low fat**
  - High fat
  - Low protein
  - High protein
79. Choose the correct option.
- Chicken is low in Sodium which does not raise your Blood Pressure.
  - Chicken is rich in amino acids.
  - Chicken contains Vitamins A, C, B3, B6, B12, Iron, Phosphorous, Selenium, Copper, Magnesium, Thiamine, Riboflavin, etc.
  - All the above**
80. Does the color of the yolk affect the overall nutritional value of the egg?
- Yes
  - No**
  - Sometimes
  - Depends on hens
81. The color of the yolk can be changed from light yellow to dark orange using \_\_\_\_\_ in the feed.
- Hormones
  - Antibiotics
  - Carotenoids and Xanthophylls**
  - Vaccines
82. A pouch of air inside the chicken egg is due to \_\_\_\_\_?
- Hormone injection
  - Antibiotics injection
  - Shrinking of egg contents**
  - Plastic egg
83. The size of air pouch (air cell) in egg can increase with \_\_\_\_\_.
- Egg storage
  - High storage temperature
  - Low storage humidity
  - All of the above**
84. How can we measure the size of an egg air cell to check its freshness?
- Breaking egg
  - Placing egg in front of bright light (Candling)**
  - Throwing egg in the air
  - Keeping in a sand jar
85. The fresh egg will \_\_\_\_\_ in water tub.
- Float
  - Sink**
  - Middle
  - No effect
86. The old egg will \_\_\_\_\_ in water tub.
- Float**
  - Sink

- c. Middle  
d. No effect
87. The albumen of eggs becomes watery with \_\_\_\_\_.
- a. **Storage**
  - b. Bacterial infection
  - c. Chilling
  - d. Hormones injection
88. The yolk of an older egg will have \_\_\_\_\_.
- a. **Less height**
  - b. More height
  - c. No effect on height
  - d. Intermediate height
89. On the breaking of an egg, mixed albumen and yolk show \_\_\_\_\_.
- a. Plastic egg
  - b. **Old egg**
  - c. Fresh egg
  - d. Frozen egg
90. According to the economic survey of Pakistan 2021-22, the per capita per year consumption of eggs in Pakistan is \_\_\_\_\_.
- a. 25 eggs
  - b. 50 eggs
  - c. **100 eggs**
  - d. 150 eggs
91. The per capita per year consumption of eggs in developed countries is \_\_\_\_\_.
- a. 100 eggs
  - b. 150 eggs
  - c. 200 eggs
  - d. **300 eggs**
92. According to the economic survey of Pakistan 2021-22, the per capita per year consumption of meat (all sources) in Pakistan is \_\_\_\_\_.
- a. 10. Kg
  - b. **22.5 kg**
  - c. 40 kg
  - d. 50 kg
93. The per capita per year consumption of meat in America is \_\_\_\_\_.
- a. 30 kg
  - b. 60 kg
  - c. **100 kg**
  - d. 150 kg
94. The per capita per year consumption of meat in Israel is \_\_\_\_\_.
- a. 30 kg
  - b. 60 kg
  - c. **90 kg**
  - d. 120 kg
95. According to the National Nutrition Survey of Pakistan, \_\_\_\_\_ children under five years of age have stunted growth.
- a. 10%
  - b. 20%
  - c. 30%
  - d. **40%**
96. According to the National Nutrition Survey of Pakistan, \_\_\_\_\_ children under five years of age have wasted growth.
- a. 7%
  - b. **17%**
  - c. 27%
  - d. 37%
97. According to the National Nutrition Survey of Pakistan, \_\_\_\_\_ children under five years of age were underweight.
- a. 9
  - b. 19
  - c. **29**
  - d. 39
98. According to the National Nutrition Survey of Pakistan, \_\_\_\_\_ children under five years of age has overweight.
- a. 5%
  - b. **10%**
  - c. 15%
  - d. 20%
99. Stunting is \_\_\_\_\_.
- a. Low weight for age
  - b. **Low height for age**
  - c. Low width for age
  - d. The low-fat score for age



100. Pakistan has almost \_\_\_\_\_ million stunted kids.
- 4
  - 8
  - 12**
  - 16
101. Wasting is \_\_\_\_\_
- Low weight for age
  - Low weight for height**
  - Low bones weight
  - Low height for age
102. \_\_\_\_\_ % Pakistan children are anemic.
- 20
  - 30
  - 40
  - 50**
103. \_\_\_\_\_ % of Pakistani children have Vitamin A deficiency.
- 21
  - 31
  - 41
  - 51**
104. \_\_\_\_\_ % of Pakistani children have Vitamin D deficiency.
- 32
  - 42
  - 52
  - 62**
105. \_\_\_\_\_ % of Pakistani women of reproductive age have Vitamin D deficiency.
- 60
  - 69
  - 79**
  - 85
106. One albumen of a normal-sized egg has \_\_\_\_\_ gram protein.
- 1 - 1.5
  - 2 - 2.5
  - 3 - 3.5**
  - 4 - 4.5
107. One yolk of normal-sized eggs has \_\_\_\_\_ gram protein.
- 1.5 - 2
  - 2.5 - 3**
  - 3.5 - 4
  - 4.5 - 5
108. One albumen of a normal-sized egg has \_\_\_\_\_ gram fat.
- 0**
  - 2
  - 4**
  - 6
109. One yolk of normal-sized eggs has \_\_\_\_\_ gram fat.
- 2.5
  - 5**
  - 8
  - 10
110. Eggs are used in cookies for
- Foaming property
  - Addition of nutrients
  - Imparting yellowish color
  - All of the above**
111. The \_\_\_\_\_ protein in egg act as antimicrobial agent.
- Avidin
  - Lysozyme**
  - Globulin
  - Albumin
112. The pH of the albumen \_\_\_\_\_ with storage length.
- Increase**
  - Decrease
  - First, decrease then increase
  - First, increase then decrease
113. The egg is among the best diets for the brain of the fetus in pregnant women due to the presence of \_\_\_\_\_ in it.
- Cholesterol
  - Calories
  - Choline**
  - Calcium

114. White pimples on shell of egg are \_\_\_\_\_.
- Calcium deposits**
  - Disease signs
  - Bacterial colonies
  - Insect eggs
115. Most of the body fat of chicken is present in \_\_\_\_\_.
- Drumstick
  - Breast
  - Thigh
  - Skin**
116. Eating the skin of a broiler will increase \_\_\_\_\_.
- Flavor**
  - Chances of cancer
  - Smell
  - Antibiotic residues
117. \_\_\_\_\_ used in processing plants to clean and disinfect the carcass.
- Chlorinated Water**
  - Chilled Water
  - Dettol
  - Harpic
118. Which of the following part of chicken will have the highest protein %?
- Breast**
  - Thigh
  - Drumstick
  - Wings
119. Which of the following part of chicken will have the highest concentration of Polyunsaturated fatty acids (PUFA)?
- Breast
  - Leg**
  - Ribs
  - Wings
120. Which of the following part of chicken will have the highest iron %?
- Breast
  - Legs**
  - Wings
  - Neck
121. The liver of chicken has \_\_\_\_\_ % protein.
- 12
  - 15
  - 17**
  - 22
122. The neck of chicken has \_\_\_\_\_ % PUFA.
- 0
  - 2.18**
  - 5.15
  - 7
123. The giblet is a term used to categorize \_\_\_\_\_.
- Liver
  - Heart
  - Gizzard
  - All of the above**
124. Which of the following part of the chicken body will have the highest concentration of iron?
- Giblets**
  - Breast
  - Wings
  - Skin
125. The \_\_\_\_\_ of chicken has the highest concentration of Selenium (i.e., 54.6 µg/ 100 g).
- Liver**
  - Neck
  - Wings
  - Thigh
126. The \_\_\_\_\_ of chicken has the highest concentration of Vitamin A (i.e., 54.6 µg/ 100 g).
- Liver**
  - Neck
  - Wings
  - Thigh
127. The chicken meat has \_\_\_\_\_ mg choline.
- 0
  - 45
  - 65**

128. 01 Large egg will have \_\_\_\_\_ calories.  
 d. 85  
 a. 0  
 b. 25  
 c. 50  
**d. 75**
129. 01 Large egg will have \_\_\_\_\_ mg Calcium.  
 a. 0  
 b. 8  
 c. 16  
**d. 24**
130. 01 Large egg will have \_\_\_\_\_  $\mu\text{g}$  of selenium.  
 a. 0  
 b. 5  
**c. 15**  
 d. 50
131. 01 Large egg will have \_\_\_\_\_  $\mu\text{g}$  folate.  
 a. 0  
**b. 36**  
 c. 72  
 d. 100
132. 01 Large egg will have \_\_\_\_\_ mg choline.  
 a. 0  
 b. 60  
**c. 170**  
 d. 250
133. 01 Large egg will have \_\_\_\_\_ IU of Vitamin D.  
 a. 0  
 b. 20  
**c. 50**  
 d. 200
134. Eating one albumen will provide \_\_\_\_\_ calories.  
 a. 0  
**b. 19**  
 c. 150  
 d. 500
135. Eating one yolk will provide \_\_\_\_\_ calories.  
 a. 0  
 b. 25  
**c. 55**  
 d. 200
136. Which of the following part of the egg have more selenium contents?  
 a. Albumen  
**b. Yolk**  
 c. Shell  
 d. Whole egg
137. One yolk contains \_\_\_\_\_  $\mu\text{g}$  of Biotin which is beneficial for hair growth.  
 a. 0  
**b. 8**  
 c. 16  
 d. 50
138. One albumen contains \_\_\_\_\_ mg of Lutein which is helpful for eye health in humans.  
**a. 0**  
 b. 5  
 c. 10  
 d. 20
139. One yolk contains \_\_\_\_\_  $\mu\text{g}$  of Lutein which is helpful for eye health in humans.  
 a. 0  
 b. 50  
**c. 100**  
 d. 500
140. One yolk contains almost \_\_\_\_\_ mg of Vitamin E.  
 a. 0  
**b. 1**  
 c. 2  
 d. 5
141. Egg whites will coagulate at \_\_\_\_\_  $^{\circ}\text{C}$ .  
 a. 20  
 b. 40  
**c. 60**  
 d. 80

142. Egg yolk will coagulate at \_\_\_\_\_ °C.  
a. 45  
**b. 65**  
c. 85  
d. 100
143. A serving of two eggs will provide \_\_\_\_\_.  
a. 22% of vitamin D requirements  
b. 47 % of vitamin D requirements  
c. 69 % of vitamin D requirements  
**d. 82% of vitamin D requirements**
144. A serving of two eggs will provide \_\_\_\_\_.  
a. 0% of daily folate requirement  
b. 25% of daily folate requirement  
**c. 50% of daily folate requirement**  
d. 100% of daily folate requirement
145. A serving of two eggs will provide \_\_\_\_\_.  
a. 0% of daily selenium requirement  
**b. 25% of daily selenium requirement**  
**c. 40% of daily selenium requirement**  
d. 100% of daily selenium requirement
146. Salt is added in water during egg boiling for \_\_\_\_\_.  
a. Killing bacteria  
b. Ease in shell breaking  
c. Add flavor  
**d. Increase water boiling point**
147. A thin membrane attached to the shell during the peeling of the egg is \_\_\_\_\_.  
**a. Shell membrane for the protection of the egg**  
b. Bacterial colony  
c. Vaccine cover  
d. Membrane of residues
148. Which of the following act as a barrier to preventing the entry of microbes into the egg?  
a. Cuticle  
b. Shell  
c. Shell membrane  
**d. All of the above**
149. Egg contains Lecithin and Choline which are very important in \_\_\_\_\_ development.  
**a. Brain and Memory**  
b. Heart  
c. Cancer  
d. AIDS
150. \_\_\_\_\_ in egg will act as natural anti-depressant.  
**a. Tryptophan**  
b. Antibiotics  
c. Choline  
d. Protein
151. \_\_\_\_\_ in egg accelerates post-exercise muscle recovery.  
**a. Leucine**  
b. Lutein  
c. Retinol  
d. Carotene
152. Lutein and Zeaxanthin are present in ample amounts in eggs which prevent \_\_\_\_\_.  
**a. Age-Related Macular Degeneration**  
b. Breast Cancer  
c. AIDS  
d. Food poisoning
153. The biological value of egg white proteins is \_\_\_\_\_.  
a. 100/100  
b. 80/100  
c. 60/100  
d. 0/100
154. The protein of \_\_\_\_\_ is used as a standard to compare the quality of other proteins.  
**a. Egg**  
b. Meat  
c. Fish  
d. Pulses
155. If a product is said to be "Sugar-Free" it should contain how much sugar?  
**a. Less than 0.5 grams of sugar per serving**  
b. Less than 1 gram  
c. No more than 40 kcal per serving

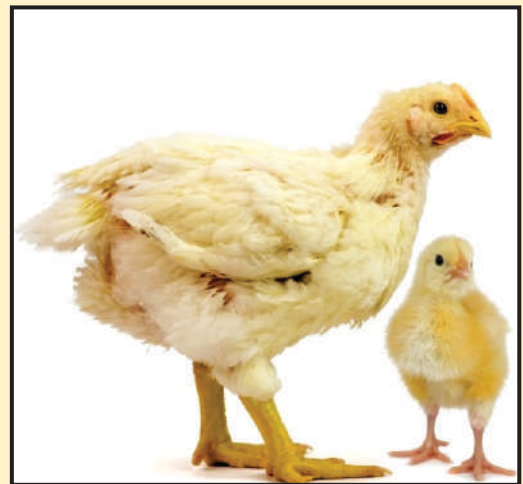
- d. Less than 5 grams
156. Bone remodeling occurs throughout life as a result of the continuous actions of
- Myosin and actin
  - Osteoblasts and osteoclasts**
  - Trabecular and cortical bone
  - Steroid and glycoprotein hormones
157. These cells are very sensitive indicators of the body's nutritional status
- Immune system cells**
  - Skeletal system cells
  - Glial cells
  - Cholecystokinin
158. After a person has fasted for a while, the brain adapts to using which of the following for some of its fuel needs.
- Fatty acids
  - Amino acids
  - Glycerol
  - Ketone bodies**
159. Do FDA experiments prove broiler meat harmful?
- Never**
  - Yes
  - Depends on conditions
  - In case of injections
160. The best type of fiber to eat for reducing constipation is:
- Glycogen
  - Crude fiber
  - Insoluble fiber**
  - Starch
161. Which of the following is NOT an emulsifier?
- Triglycerides**
  - Bile acids
  - Lecithin
  - Monoglycerides
162. Which of the following mineral function as an antioxidant?
- Magnesium
  - Iron
  - Iodine
  - Selenium**
163. Most vegetables are low in energy content except for which of the following?
- Leafy green vegetables
  - Orange vegetables
  - Salad vegetables
  - Starchy root vegetables**
164. Which of the following has the highest glycemic index?
- Ice cream
  - Cucumber
  - Dextrose**
  - Dietary fiber
165. Which of the following is a biological method for food preservation?
- Fermentation**
  - Addition of chemical preservatives
  - Radiation
  - Heating
166. Which of the following is the richest source of vitamin C?
- Guava**
  - Corn
  - Poultry
  - Beef
167. Egg contains all vitamins except \_\_\_\_\_.
- Vitamin A
  - Vitamin B complex
  - Vitamin C**
  - Vitamin D
168. The pregnant woman needs to increase her energy intake by about how many calories per day during the last two trimesters of pregnancy.
- 100 kcal
  - 400 kcal**
  - 600 kcal
  - 800 kcal
169. Egg contains \_\_\_\_\_ g saturated fats.
- 0
  - 1.7**



- c. 5.5  
d. 10
170. Which of the following nutrients may be unintentionally restricted when a patient restricts phosphorus intake?  
a. **Calcium**  
b. Potassium  
c. Sodium  
d. Iodine
171. The most concentrated source of kcals of the following is:  
a. Starch  
b. Protein  
c. **Alcohol**  
d. Sugar
172. Which of the following foodstuffs has a shortage of lysine?  
a. **Cereals**  
b. Meat  
c. Milk  
d. Egg white
173. What is the working principle of radiation in the killing of microbes?  
a. **Mutation in DNA**  
b. Heat effect  
c. Breakdown of cell wall  
d. Dehydration
174. Which of the following are major responsible for food spoilage?  
a. Microorganisms  
b. Enzymes  
c. **Microbes and enzymes**  
d. Insects and pests
175. Continual recycling of compounds between the small intestine and liver is called\_\_\_\_\_.  
a. Facilitated diffusion  
b. Phagocytosis  
c. **Enterohepatic circulation**  
d. Gluconeogenesis
176. Which of the following is the example of prebiotics?  
a. Bifidobacteria  
b. Lactobacilli  
c. **Fructo-oligosaccharide**  
d. Sorbitol
177. Most of the fat stored in the human body is in the form of -----  
a. **Triglycerides**  
b. Phospholipids  
c. Cholesterol  
d. HDL
178. Enriched grain products can be fortified with:  
a. Fiber, folate, iron, niacin, and zinc.  
b. Thiamin, iron, calcium, zinc, and sodium.  
c. **Iron, thiamin, riboflavin, niacin, and folate.**  
d. Folate, magnesium, vitamin B6, zinc, and fiber
179. Which strategy would not help an underweight person to gain weight?  
a. Exercise.  
b. Drink plenty of water.  
c. **Eat snacks between meals.**  
d. Eat large portions of food.
180. Functional foods  
a. Are rich sources of vitamins, therefore, very functional  
b. **Provide health benefits beyond those supplied by the traditional nutrients**  
c. Are foods that contain one main functional ingredient  
d. Are only available from animal food sources
181. Which of the following can be categorized as one of the best functional foods?  
a. **Egg**  
b. Breast meat  
c. Pulses  
d. Cereal grains
182. An increased requirement for which nutrients during pregnancy is related to their roles in the synthesis of red blood cells.  
a. Vitamin E and vitamin C

- b. Niacin and copper  
c. **Folate and vitamin B-12**  
d. Protein and calcium
183. Do eggs contain folate and vitamin B12?  
a. **Yes**  
b. No  
c. If fed on enriched diets  
d. If injected with steroids
184. The B vitamins generally function as -----  
-----  
a. Antioxidants  
b. **Coenzymes**  
c. Emulsifiers  
d. Reducing agents
185. What causes the sliced apple to turn brown  
a. Caramelization  
b. **Enzyme activity**  
c. Protein degradation  
d. Microbial activity
186. A malnourished patient has just begun to eat after days without significant amounts of food. Which of the following blood tests would change most quickly as the patient's nutrition status improves?  
a. Albumin  
b. Transferrin  
c. Serum electrolyte  
d. **Retinol-binding protein**
187. Folic acid RDA for pregnant women is ---  
-----
192. The serving size for Sugar exchange is  
a. 1 Tsp.  
b. 2 Tsp.  
c. **1 Tbsp.**  
d. 2 Tbsp.
193. The mineral associated with skin health is  
a. Potassium  
c. Bread/cereal  
d. Leafy vegetables
195. Does the poultry industry use intestines in making nuggets?  
a. Yes  
b. **No**
- a. 200 µg  
b. 400 µg  
c. **600 µg**  
d. 800 µg
188. To conduct complete nutrition assessments, dietitians rely on several sources of information, which include the following except:  
a. **Nutrition care plans.**  
b. Body measurements.  
c. Medical, medication, and social histories.  
d. clinical signs and symptoms
189. A person on a gluten-free diet must avoid products containing.  
a. **Wheat, barley, and rye.**  
b. Barley, soybeans, and corn.  
c. Wheat, corn, and rice.  
d. Eggs and Meat products
190. Which of these amino acids is unavailable in chicken eggs?  
a. Lysine  
b. Methionine  
c. Phenylalanine  
d. **None of the Above**
191. RDA of Sodium for healthy adults is  
a. 500 mg  
b. 1000 mg  
c. 1200 mg  
d. **1500 mg**  
b. **Zinc**  
c. Selenium  
d. Iron
194. The Legumes (dry beans) are in which Food Guide Pyramid group?  
a. Fruit/vegetable  
b. **Meat/protein**  
c. Always  
d. Optional
196. The body energy that can be stored in almost unlimited amounts is  
a. Glycogen  
b. Protein

- c. Glucose  
**d. Triglyceride**
197. Punjab food authority recommends the use of \_\_\_\_\_ g monosodium glutamate (MSG) in chicken and other food products.  
a. **0**  
b. 5  
c. 10  
d. 50
198. MSG is used to enhance the \_\_\_\_\_ of meat.  
a. Weight  
**b. Flavor**  
c. Quality  
d. Safety
199. If a fat contains mostly saturated fatty acids, it is likely to be  
a. **Solid at room temperature**  
b. Soft at room temperature  
c. Rancid at room temperature  
d. Liquid at room temperature
200. Which of the following is a major source of lactose?  
a. **Buttermilk**  
b. Broccoli  
c. Honey  
d. Table sugar
201. What is the major monosaccharide found in the body?  
a. Fructose  
**b. Glucose**  
c. Galactose  
d. Sucrose
202. The RDA for nutrients generally is  
a. **Designed to be adequate for almost all healthy people.**  
b. More than twice the requirements.  
c. The minimum amounts the average adult male requires.  
d. Designed to prevent deficiency disease in half the population
203. The major chloride source in the diet is  
a. Milk  
**b. Salt**  
c. Eggs  
d. Cheese
204. Nutritional anemia means  
a. **Tiredness**  
b. Swollen joints  
c. Tooth decay  
d. Bone deformation
205. A major portion of undigested matter is made up of  
a. Cholesterol  
**b. Cellulose**  
c. Galactose  
d. Stearic acid
206. Energy balance refers to the  
a. equation of rate of oxidation  
b. amount of starch intake  
**c. equilibrium between energy intake and energy expenditures**  
d. equilibrium of rate of reduction



### Section 3

## POULTRY PRODUCTION

207. Birds used for the production of meat are called
- Broilers**
  - Layers
  - Breeders
  - Pullets
208. Birds used for the production of eggs are called
- Broilers
  - Layers**
  - Breeders
  - Pullets
209. Birds used for the production of fertile eggs are called
- Broilers
  - Layers
  - Breeders**
  - Pullets
210. The term “table egg” means
- Egg made of plastic
  - Egg kept on the table for the show
  - Infertile eggs that can be used only for consumption**
  - Fertile eggs used for hatching
211. Which of the following egg will be haram?
- Eggs produced from hens kept without males
  - Egg produced from hens kept with males
  - Eggs of commercial layer birds
  - Eggs of haram avian species (Crow, eagle)**
212. Can we eat fertile eggs?
- Yes**
  - No
  - Depends on age
  - Depends on the shell color
213. A mature male chicken is called as
- Rooster**
  - Cockerel
  - Pullet
  - Hen
214. An immature male chicken is called as
- Rooster
  - Cockerel**
  - Pullet
  - Hen
215. A mature female chicken is called as
- Rooster
  - Cockerel
  - Pullet
  - Hen**
216. An immature female chicken is called as
- Rooster
  - Cockerel
  - Pullet**
  - Hen
217. The father of commercial broiler chicken is birds of \_\_\_\_\_ breed.
- White Cornish**
  - White Leghorn
  - White Plymouth Rock
  - Rhode Island Red
218. The mother of commercial broiler chicken is birds of \_\_\_\_\_ breed.
- White Cornish
  - White Leghorn
  - White Plymouth Rock**
  - Rhode Island Red
219. White Cornish is \_\_\_\_\_ breed.
- American
  - English**
  - Mediterranean
  - Asiatic
220. White Plymouth rock is \_\_\_\_\_ breed.
- American**
  - English
  - Mediterranean
  - Asiatic
221. The parents of the commercial layer (White shell eggs) are from \_\_\_\_\_ breed.

- a. White Cornish  
**b. White Leghorn**  
c. White Plymouth Rock  
d. Rhode Island Red
222. White leghorn is \_\_\_\_\_ breed.  
a. American  
b. English  
**c. Mediterranean**  
d. Asiatic
223. What is meant by Desi bird?  
**a. Breeds indigenous to every country**  
b. Some highly nutritious extraordinary birds of Pakistan  
c. Bird with high growth potential  
d. Bird selected for better nutritional profile
224. A normal broiler farm having an automatic control system has \_\_\_\_\_ broilers in one shed.  
a. 15000  
b. 20000  
c. 25000  
**d. 30000**
225. A normal commercial layer farm with cages has \_\_\_\_\_ layers in one shed.  
a. 10000  
b. 30000  
c. 50000  
**d. 100000**
226. What is the basis of the high growth rate of present-day broiler chicken;  
a. Genetic modification  
b. Injections of Hormones  
**c. Selective breeding**  
d. Use of Steroids
227. Did the breeding companies use genetic modification (GMO) in broiler chickens at any stage?  
a. Yes  
**b. No**  
c. Sometimes  
d. Under requirements
228. It took \_\_\_\_\_ years for the broiler to reach the current genetic potential through selective breeding.  
a. 1 Year  
b. 10 Years  
c. 50 Years  
**d. 100 Years**
229. UVAS has also developed an improved breed of Quails (Batair) through selective breeding. What is its name?  
**a. UVAS Jumbo Quail**  
b. UVAS Meat Quail  
c. UVAS Bravo  
d. UVAS Super Alpha
230. UVAS has increased the 4-week body weight of quail through selective breeding from 100 grams to \_\_\_\_\_ grams.  
a. 175  
b. 200  
c. 225  
**d. 250**
231. Selective breeding is selecting \_\_\_\_\_ birds for future generations.  
a. Population Average  
**b. Superior to average**  
c. Lower than average  
d. Genetically modified
232. A female commercial layer requires \_\_\_\_\_ for starting egg production.  
a. Male  
b. Oxytocin Injection  
**c. Photo-stimulus**  
d. Steroidal hormones
233. According to WHO the major reason for antibiotic resistance is.  
a. Antibiotics residues in poultry meat  
**b. Unchecked and un-prescribed use by humans**  
c. Eating poultry liver  
d. Gene editing of broiler
234. How much time a broiler bird takes to attain more than 2 kg weight?  
a. 25 Days



- b. **35 Days**  
c. 42 Days  
d. 50 Days
235. If we extend the broiler market age from 35 days. It will \_\_\_\_\_.
- More nutritious
  - More healthy
  - Only increase the cost of production making it an unprofitable business**
  - Economical
236. Which of the following is the cheapest protein source in Pakistan
- Egg**
  - Chicken Meat
  - Mutton
  - Daal Cahnna
237. The most economical protein source based on protein per rupee basis is
- Egg**
  - Fish
  - Mutton
  - Chicken meat
238. How much time do desi birds take to attain 1.5 kg weight?
- 1 month
  - 2 months
  - 3 months**
  - 4 months
239. The desi birds take more time to attain weight due to
- Poor nutrition of birds
  - Poor genetic potential
  - Poor housing and management
  - All of the above**
240. Why we cannot mix growth hormones in broiler feed?
- Protein in nature so the stomach will break them down
  - High feed formulation temperature will denature them
  - Too costly to add
  - All of the above**
241. Use of hormones in broiler will
- Increases the cost of production without improving growth
  - Waste of hormones as they are ineffective
  - It May affect chicken negatively
  - All of the above**
242. Giving anabolic steroids to broiler is not effective \_\_\_\_\_.
- Cannot be absorbed in broiler body
  - Need exercise to increase muscle mass
  - Too costly
  - All of the above
243. The production of natural growth hormones in broilers has pulsated production and peak after every \_\_\_\_\_.
- 30 minutes
  - 90 minutes**
  - 60 minutes
  - 120 minutes
244. What is injected into broilers often in their life?
- Antibiotic
  - Vaccines**
  - Anabolic steroids
  - Growth promoter
245. Commercial layers can lay \_\_\_\_\_ eggs per year.
- 50
  - 100
  - 200
  - 300**
246. Which is the biggest organ of a Chicken?
- Eyes
  - Heart
  - Liver**
  - Lungs
247. The higher egg production in commercial layers is due to \_\_\_\_\_.
- Oxytocin injection
  - Steroids hormones
  - Selective Breeding**
  - Genetic Modification

248. Which one of the following factors is not involved in the hardness of desi chicken as compared to the softness of broiler meats
- Collagen fibers
  - Age factors
  - More movements
  - Nutritional profile**
249. Factors responsible for the high price of desi chicken
- Long period rearing
  - More feed consumption
  - Poor growth rate
  - All of the above**
250. A factor not responsible for the high price of desi chicken
- Long period rearing
  - More feed consumption
  - High resource utilization
  - Nutritional profile**
251. Factors responsible for stronger bones of desi chicken as compared to weaker bones of broiler
- Age factors
  - More movements
  - Calcification
  - All of the above**
252. Organic farming of birds is considered when \_\_\_\_\_.
- Medicine is used for the treatment of birds
  - No use of fertilizers, insecticides, or pesticides for the rearing of birds**
  - Using Desi birds
  - Commercial feeding but living in an open space
253. The process of a hen sitting on eggs for producing chicks is called \_\_\_\_\_.
- Brooding
  - Incubation**
  - Regurgitation
  - Dubbing
254. The egg shell will be \_\_\_\_\_ during the summer season than the rest of the years.
- Weak**
  - Strong
  - Equal
  - Variable
255. A higher meat-to-bone ratio present is
- Desi chicken
  - Broiler**
  - Organic Chicken
  - All
256. Desi chicken meat has a higher concentration of \_\_\_\_\_ than broilers.
- Proteins and amino acids
  - Minerals and Vitamins**
  - Carbohydrates
  - Fats
257. Desi chicken has a higher concentration of minerals and vitamins due to
- Diet having fresh leaves and insects**
  - Genetics
  - No hormones
  - No antibiotics
258. Desi chicken has a better aroma than broiler which may be due to.
- Low energy diet
  - Production of volatile compounds**
  - Reared in cages
  - Better nutritional profile
259. The raw meat of a dead bird may be differentiated from the slaughtered bird based on color as
- Reddish brown with yellowish patches**
  - Reddish brown with bluish patches
  - pale with yellowish patches
  - White with bluish patches
260. Which one of the following gasses is not produced by the breakdown of poultry bird feces
- NH<sub>3</sub>
  - H<sub>2</sub>S
  - O<sub>2</sub>**
  - SO<sub>2</sub>

261. The source of the Nipah virus may be
- Fruit bat and poultry birds
  - Poultry birds and pigs
  - Pig and Fruit bat**
  - Desi poultry birds
262. The broiler present in the market has a foul smell and cringe appearance. Why?
- Natural appearance
  - Harsh environment
  - Poor management**
  - Feed problem
263. Broiler present in markets have a very lazy appearance. Can they make humans lazy too?
- Yes
  - No**
  - Sometimes
  - Depends on conditions
264. Broilers show laziness due to \_\_\_\_\_.
- Higher body weights than bone strength
  - Low area to walk reduces walking behavior
  - Less activity will preserve the calories
  - All of the above**
265. Can broiler lay eggs?
- No, it is a sterile bird
  - Yes, if injected hormones
  - Yes, if genetically modified
  - Yes, if kept till 24 weeks under proper light duration**
266. The reddish color of bones of cooked broiler is due to \_\_\_\_\_.
- Blood
  - Disease
  - Over Cooking**
  - Genetics
267. The broiler is inactive and unable to jump due to
- Diseases
  - Low energy
  - Low nutritional profile
  - Higher body weight relative to bones growth and age**
268. The higher and faster body weight of broilers relative to bone growth and age is required for
- Profitability of farmer**
  - Hormone injection
  - Reduce sickness
  - Higher meat production
269. Egg yolks are produced inside the \_\_\_\_ of the birds.
- Uterus
  - Ovary**
  - Isthmus
  - None
270. Keeping eggs for longer periods during summer can cause the breakdown of:
- Albumen**
  - Egg yolk
  - Egg shell
  - All
271. Commercial Layers birds start laying an egg as they reach \_\_\_\_ weeks of their age.
- 10
  - 12
  - 16**
  - 8
272. Desi birds start laying an egg as they reach \_\_\_\_ weeks of their age.
- 20
  - 24
  - 26**
  - 35
273. Can injection of hormones reduce the time of maturity of commercial layer?
- Yes
  - No**
  - In case of specific breeds
  - If injected repeatedly
274. We import commercial broilers due to \_\_\_\_\_.
- The poor growth rate of local breeds

- b. Higher genetic potential of imported stocks  
c. Higher Economic benefits from imported stocks  
**d. All of the above**
275. The stinky Smell coming from the poultry farm is due to\_\_\_\_\_.
- a. Use of haram ingredients in feed  
b. Use of dead animals and blood  
**c. Higher density of birds and production of waste gases**  
d. Disease outbreaks
276. Can air coming from a poultry farm can make us sick?
- a. No  
b. Yes  
c. Sometimes  
**d. Yes, in case of extremely long exposure**
277. Do the processing plants in Pakistan slaughter birds automatically?
- a. Yes  
**b. No**  
c. Sometimes  
d. They do but tell a lie
278. Do the processing plants in Pakistan stun their birds?
- a. Yes  
**b. No**  
c. Sometimes  
d. They do but tell a lie
279. Does the meat is properly washed in a processing plant?
- a. Yes**  
b. No  
c. Depends on the mood of the owner  
d. Sometimes
280. Is there any monitoring authority in processing plants?
- a. Yes**  
b. No  
c. Sometimes  
d. Not Active
281. The monitoring authorities of the processing plants are
- a. Internal  
b. External  
c. Government  
**d. All of the above**
282. If broilers are safe to eat, why do doctors instruct us to avoid them?
- a. Based on scientific evidence  
b. Based on personal experiments  
**c. Based on myths**  
d. Based on the literature available
283. Can eating broiler meat cause a polycystic ovarian syndrome in girls?
- a. Yes  
**b. No**  
c. Sometimes  
d. Depends on conditions
284. Can we say that broiler meat is non-nutritious compared to other meats?
- a. Yes  
**b. No**  
c. Depends on Age  
d. depends on size
285. Broiler meat is a source of coronavirus.
- a. Yes**  
**b. No**  
c. Sometimes  
d. Yes, in poor conditions
286. Eating the \_\_\_\_\_of the broiler can cause cancer.
- a. Liver  
b. Kidney  
c. Meat  
**d. None of these**
287. The variations in the price of chicken are due to
- a. Political reasons  
b. Industry monopoly  
**c. Demand-Supply cycle**  
d. Global Prices

288. Do broilers and pigs have some similarities in their genetics?
- Yes
  - No**
  - Sometimes
  - Depends on the country of import
289. Does selective breeding is used in other animals and plants like broilers?
- Yes**
  - No
  - Sometimes
  - Depends on situation
290. If we raise broilers at home, they do not grow at the same speed, even at commercial feed, they used to grow on farms. Why?
- We do not supply hormones at home
  - We do not give them blood and pig fat in homes
  - We do not have optimum environmental conditions in homes**
  - We do not inject steroids at home
291. Broilers often have bloody wings. Why?
- Joint dislocation during catching**
  - They are given blood in diets
  - Vein ruptures due to steroidal injections
  - High temperature
292. Most of the bacteria on the surface of broiler meat comes from
- Already present
  - Cross-contamination from Butcher's equipment**
  - Air
  - The feed of the birds
293. Washing chicken before storing it in the fridge will
- Increase the microbial count**
  - Increase shelf life
  - Increase the weight
  - Increase the appearance
294. For proper cooking of meat, the core temperature of \_\_\_\_\_ is required.
- 50°C
  - 72°C**
  - 100°C
  - 120°C
295. The difference in the color of the chicken egg shell is due to
- Genetic breed difference**
  - Nutritional difference
  - Minerals difference
  - Energy difference
296. The brown color of the egg shell is due to
- Porphyrin**
  - Cellulose
  - Carotenoids
  - Xanthophylls
297. Why eggs of desi chicken are smaller than commercial eggs?
- Nutrition difference
  - Vitamin difference
  - Genetic potential**
  - Hormones injection
298. Can a bird lay an egg without a male?
- Yes**
  - No
  - Sometime
  - If given hormones
299. Presently we can classify the chickens in \_\_\_ major geographical classes.
- 2
  - 6
  - 8
  - 4**
300. Only the birds of class \_\_\_\_\_ can lay white shell eggs.
- Mediterranean**
  - Asiatic
  - English
  - American
301. Which classes of birds lay brown eggs:
- English
  - American
  - Asiatic
  - All**



302. Too much cooling just after the slaughtering can increase the \_\_\_ of the meat.
- Toughness**
  - Flexibility
  - Taste
  - Tenderness
303. In artificial incubation machines, chicks hatch after \_\_\_ days
- 21**
  - 28
  - 14
  - 35
304. In natural incubation, chicks hatch after \_\_\_ days
- 21**
  - 28
  - 14
  - 35
305. The commercial hatchery machines are used to
- Provide electricity to the eggs for hatching
  - Mass production of eggs at one time**
  - Produce chicks artificially without parents
  - Producing GMOs broilers
306. An integral part of the processing plant's operation are/is:
- Cleaning of meat
  - Disinfection
  - Both**
  - None
307. Which of the following is not practiced in chicken processing plants in Pakistan?
- Hanging of birds
  - Evisceration
  - Stunning of birds**
  - Chilling
308. Which of the following is not practiced in chicken processing plants in Pakistan?
- Scalding
  - Neck Cropping
  - Automatic slaughtering of birds**
  - Freezing
309. The products produced in processing plants are passed through \_\_\_\_\_ to prevent any kind of metal piece in meat.
- Scalder
  - Lie detector
  - Metal Detector**
  - Freezer
310. The share of the commercial processing sector in total chicken meat production is \_\_\_\_\_.
- 1-3%
  - 3-5%
  - 5-7%**
  - 10-12%
311. Pakistan is \_\_\_\_\_ largest poultry producer in the world.
- 7<sup>th</sup>
  - 9<sup>th</sup>
  - 11<sup>th</sup>**
  - 13<sup>th</sup>
312. The cocks are kept with the hen for
- Production of eggs
  - Production of fertile eggs**
  - For protection
  - For assisting in incubation
313. The egg prices are higher this year than many of the previous years due to
- Low production potential of strains
  - A lower number of birds** and higher feed cost
  - Monopoly of farmers
  - Political instability
314. One carton of eggs has \_\_\_\_\_ number of eggs.
- 12
  - 30
  - 240
  - 360**
315. One tray has \_\_\_\_\_ number of eggs.
- 12
  - 20
  - 24

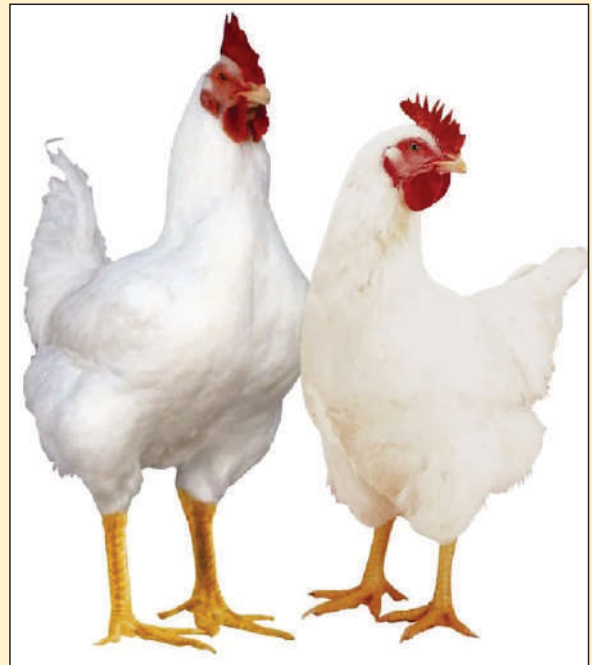
- d. **30**
316. \_\_\_\_\_ is the major factor affecting egg consumption in Pakistan during summer.
- Price
  - Smell
  - Misconception of heat**
  - Sweeting
317. A 2 kg broiler will yield \_\_\_\_\_ kg carcass.
- 1.0
  - 1.3**
  - 1.6
  - 1.9
318. The \_\_\_\_\_ birds are also called as Misri bird in villages.
- Fayomi**
  - Rhode Island Red
  - Aseel
  - Australorp
319. The \_\_\_\_\_ birds are also called as Golden in villages.
- Fayomi
  - Rhode Island Red**
  - Aseel
  - Australorp
320. Fayoumi and Rhode Island Red are \_\_\_\_\_
- Indigenous breeds of Pakistan
  - Imported breeds just like broilers**
  - Made in Pakistan
  - Genetically modified breeds
321. Rhode Island Red birds are often considered Desi birds in Pakistan. What is their role in the global market?
- Brown egg shell layers**
  - High nutritious egg birds
  - High nutritious meat birds
  - High egg number birds
322. Breakdown of poultry feces generates which gas/s:
- NH<sub>3</sub>
  - H<sub>2</sub>S
  - SO<sub>2</sub>
  - All**
323. Broilers are kept at which temperature (°C) on the farm.
- 35
  - 20
  - 24-28**
  - 35-40
324. \_\_\_\_\_ of bone is an age-dependent process.
- Sulphation
  - Magnification
  - Calcification**
  - None
325. Taste qualities in chicken meat are affected by:
- Genotype
  - Age
  - Gender
  - All**
326. With the increase in the age of chicken, the egg weight increases up to \_\_\_grams.
- 65-70**
  - 50
  - 40-50
  - 80
327. Injection/ supplementation of which hormone can increase egg production in poultry:
- Oxytocin
  - Progesterone
  - Estrogen
  - None**
328. The incubation period of a Quail egg is
- 11 days
  - 14 days
  - 17 days**
  - 20 days
329. The incubation period of the Pheasant egg is
- 14 days
  - 21 days
  - 28 days**
  - 35 days

330. The incubation period of a Duck egg is
- 14 days
  - 28 days**
  - 42 days
  - None of these
331. The incubation period of the Peacock egg is
- 14 days
  - 28 days**
  - 42 days
  - None of these
332. The incubation period of the Ostrich egg is
- 11 days
  - 21 days
  - 31 days
  - 42 days**
333. The bones of cooked young birds are often redder or pinkish due to....
- Improper slaughtering
  - Improper cooking method
  - Oozing of Bone marrow pigment**
  - Diseased bird
334. Bones of broiler birds lack strength and calcification due to...
- Poor feed ingredients
  - More age
  - Genetic abnormality
  - Less age**
335. Select the main reason for more incidence of diseases in broiler birds
- High stocking density**
  - More intake of protein diet
  - Weak immune system
  - Low carbohydrate contents in the diet
336. Why broiler birds are more heat sensitive?
- Weak immune system
  - Low water intake
  - Fast growth rate**
  - More use of vaccines
337. In Punjab, monitoring authorities to monitor chicken meat processing plants include;
- ISO
  - Halal
  - Punjab Food Authority**
  - HACCP
338. The media reports the sale of artificial eggs in the market for human consumption.
- Do not exist
  - Higher cost of production than natural eggs**
  - Plant origin eggs
  - Made with the addition of plastic beads/ pellets
339. Red spots (blood) in eggs shows
- Hormone injection
  - Dead embryo
  - Capillary fell accidentally from the ovary**
  - Dead egg
340. Can eating broiler meat or layer eggs results in the growth of facial hairs?
- Yes
  - No**
  - Sometimes
  - Depends on the eating quantity
341. In Pakistan, commercial poultry was started in?
- 1990s
  - 1980s
  - 1950s
  - 1960s**
342. At the start of selective breeding experiments, broiler has a life span of \_\_\_\_\_.
- 35 days
  - 50 days
  - 90 days
  - 120 days**
343. In the 1920s, a normal broiler flock has \_\_\_\_\_% mortality which now reduces to less than 3%.

- a. 5
- b. 10
- c. 15
- d. 20

344. Which breed of chickens lays blue-green shelled eggs naturally?

- a. None
- b. All breeds when Sick
- c. **Ameraucana**
- d. White Leghorn



## Section 4

### POULTRY NUTRITION

345. Antibiotics are given to broilers as a
- Growth promotor
  - Medicine in case of disease**
  - Balanced diet
  - All of the above
346. Is there possibility of antibiotic residues in poultry products?
- Yes
  - No
  - Yes, if not fed controlled diets**
  - Always
347. The antibiotic residues in poultry products are controlled by giving \_\_\_\_\_.
- Hormone injection
  - High cooking temperature
  - Antibiotic withdrawal time before selling**
  - No antibiotic
348. Which one of the following is not the alternative to antibiotics in poultry farming
- Neomycin**
  - Pre and pro-biotic
  - Phytochemicals
  - No antibiotic
349. Organic acidse withdrawal time of antibiotics from broiler meat is
- 7 days
  - 10-14 days
  - 3-5 days**
  - 7-14 days
350. Where does mostly antibiotics residue remain in poultry?
- Kidney
  - Gizzard
  - Liver**
  - Meat
351. The percentage of various combinations of proteins in broiler feed should be
- 5%
  - 10%
  - 15%
  - 20%**
352. The total energy of various combinations of proteins in broiler feed should be
- 4000kcal/kg
  - 2800kcal/kg**
  - 1000kcal/kg
  - 200kcal/kg
353. The amount of blood added to poultry feed is \_\_\_\_\_?
- 0%**
  - 1%
  - 2%
  - 3%
354. The amount of pig fat (lard) added in poultry feed is \_\_\_\_\_?
- 0%**
  - 1%
  - 2%
  - 3%
355. Do the dead chickens are added to poultry diets?
- No**
  - Always
  - Sometimes
  - Never
356. \_\_\_\_\_ % molasses is added in Poultry feed.
- 0
  - 2-5%**
  - 5-10%
  - 15-20%
357. The amount of intestines/ intestinal products of different animals in poultry feed?
- 0%**
  - 1%
  - 2%
  - 3%
358. Calcium absorption ..... with increased protein intake.
- Increase**
  - Decreases
  - No change
  - None



359. Do the vaccines given to broiler have their residue in meat?
- Yes
  - No**
  - Sometimes
  - Depends on vaccine
360. Can we make poultry feed at home that can give the same results as commercial?
- Yes**
  - No
361. The major ingredient used to make poultry feed is \_\_\_\_\_.
- Corn**
  - Rice
  - Dead birds
  - Wheat
362. The amount of corn in poultry feed is \_\_\_\_\_.
- 20-30 %
  - 30-40%
  - 40-50%
  - 50-60%**
363. Corn is added to the poultry diet to providing
- Energy**
  - Protein
  - Calcium
  - Phosphorus
364. What is the major source of protein for poultry?
- Pulses
  - Soya bean meal**
  - Animal byproducts
  - Wheat bran
365. What is the share of soya bean meals in the poultry diet?
- 1-5%
  - 5-10%
  - 15-30%**
  - 30-50%
366. The percentage of rice tips in poultry feed is \_\_\_\_\_.
- 1-3%
  - 3-5%
  - 5-15%**
  - 30-35%
367. Which ingredient is used for the provision of calcium and phosphorus for commercial poultry?
- Dead animals bones
  - Calcium carbonates chips**
  - Rocks
368. Does the commercial poultry industry use Arsenic as a growth promoter in poultry?
- No**
  - Yes
  - Sometime
  - Depends on requirements
369. Which ingredient is never used in poultry feed for growth promotion in Pakistan?
- Zinc
  - Arsenic**
  - Manganese
  - Iron
370. Which compounds were used in American poultry in 1940 and are now banned? However, Pakistani media still use its name to mislead the audience
- Depo-Provera
  - 3-Nitro**
  - Steroid
  - Rexabcarb
371. The electronic media reported a product named "Roxarson" used by the poultry industry for growth promotion that is the source of arsenic. Do the Pakistan Poultry industry also use this product?
- No**
  - Yes
  - Sometime
  - Depends on requirements
372. The "Desi Chicken" does not grow at the same speed as the broiler if fed a broiler ration. Why?
- We are unable to inject steroids

- b. Commercial farmers use some hidden techniques to grow fast
  - c. **Growth will be better but Desi birds do not have the genetic potential**
  - d. Broilers are GMOs that's why they grow fast
373. Which of the following feed component imparts yellow pigmentation to egg yolk
- a. Chlorophyll
  - b. Carotene
  - c. Cryptoxanthin
  - d. **Xanthophyll**
374. DCP is a rich source of calcium that contains approximately
- a. **29 %**
  - b. 20 %
  - c. 35 %
  - d. 15 %
375. Which of the following is responsible for olive-colored yolks in chicken egg
- a. Xanthophyll
  - b. Gossypol
  - c. **Cottonseed cake**
  - d. Sesame cake
376. Higher quantities of poultry by products addition in feed can results in \_\_\_\_\_.
- a. Higher weight gain
  - b. **Deterioration of feed**
  - c. Higher bone density
  - d. Less use of antibiotics
377. The major end product of nitrogen metabolism in chicken is
- a. Ammonia
  - b. Urea
  - c. **Uric acid**
  - d. Creatinine
378. Loss of appetite and weight occur due to Aflatoxin level in feed (ppm) @
- a. 0.055
  - b. 0.065
  - c. **0.075**
  - d. 0.085
379. Severe drop in growth and production along with mortality occurs due to Aflatoxin level in feed (ppm) @
- a. **10.00**
  - b. 20.00
  - c. 30.00
  - d. 40.00
380. Loss in weight and emaciated flocks occur due to Ochratoxin level in feed (ppm) @
- a. **0.50**
  - b. 1.00
  - c. 1.50
  - d. 2.00
381. Mortality starts, emaciated flocks, and production drop occur due to Ochratoxin level in feed (ppm) @
- a. **10.00**
  - b. 20.00
  - c. 30.00
  - d. 40.00
382. Loss in weight with liver damage occurs due to Citrinin level in feed (ppm) @
- a. 10
  - b. 20
  - c. **30**
  - d. 40
383. Pronounced hemorrhages in the intestine occur due to Citrinin level in feed (ppm) @
- a. 100
  - b. **150**
  - c. 200
  - d. 250
384. Fat on the liver, ulcers in the mouth, drop in production occur due to Trichothecenes level in feed (ppm) @
- a. **05**
  - b. 10
  - c. 15
  - d. 20
385. Ulcers in the gizzard, swollen kidneys, pale comb, and mortality occur due to Trichothecenes level in feed (ppm) @
- a. 05

- b. **10**
  - c. 15
  - d. 25
386. Loss in weight and production, anemia, and pale comb occur due to Zearalenone level in feed (ppm) @
- a. 050
  - b. **100**
  - c. 150
  - d. 200
387. Steroid hormones are used for growth and muscle mass in humans, Name one steroid hormone that is used in broilers.
- a. Progesterone
  - b. Testosterone
  - c. Estrogen
  - d. None
388. A broiler consumes almost \_\_\_\_\_ kg feed in its life of 35 days.
- a. **3.5**
  - b. 5
  - c. 10
  - d. 50
389. The price of 1 kg broiler feed is almost RS. \_\_\_\_\_.
- a. 40
  - b. 60
  - c. 80
  - d. **100**
390. \_\_\_\_\_ % of total cost of production of broiler is feed cost.
- a. 40
  - b. 50
  - c. **75**
  - d. 90
391. The others factors adding to the cost of broiler production \_\_\_\_\_.
- a. Vaccines and medicine
  - b. Electricity and diesel
  - c. Chicks
  - d. **All of above**
392. Sulfur-containing vitamins are .....
- a. Thiamine & Riboflavin
  - b. **Thiamine & biotin**
  - c. Biotin & cyanocobalamin
  - d. Thiamine & cyanocobalamin
393. Cereal grains have \_\_\_\_\_ g vitamin C.
- a. **0**
  - b. 1
  - c. 2
  - d. 5