

**Chittagong Veterinary and Animal Sciences University**  
**MS in Poultry Science**  
**January-June Semester Final Examination-2018**  
**Course title: Poultry Breeding**  
**Course Code: PBR 601**  
**Full marks-40.0, Time-2hr**

Answer any 2 (two) question from the followings. Figure in the right margin indicate full marks.

- 1
  - a) State the term poultry breeding? What is the importance's of poultry breeding study in Bangladesh with the goal of poultry improvement? **3.0**
  - b) What are mating system usually practiced in poultry? Which one is suitable for development of crossbred in Bangladesh? **4.0**
  - c) What are the assessment criteria of birds for the development of meat type chicken? **5.0**
  - d) CVASU has a vision to establish a nucleus herd for egg production. What are the points should be considered? Explain in details? **8.0**
- 2
  - a) Explain recurrent selection, Effective population size and idealized population? **3.0**
  - b) What are the assessment criteria of birds for egg purpose? **5.0**
  - c) State Osborne Index? Egg production of 65 weeks pullets is given below. These are offspring's of 3 sire mated with two dams having 4 progeny from a single hatch. Calculate Osborne index of each birds and rank them assuming flock average 245 eggs. ( $b_1=1.455$  and  $b_2=1.745$ ) **12.0**

Sire	Dam	Performance of egg production			
		1	2	3	4
Sire 1	1	239	242	231	239
	2	255	253	231	225
Sire 2	1	284	293	269	234
	2	299	279	296	248
Sire 3	1	233	252	278	250
	2	235	221	277	288

- 3
  - a) Describe different theory of modern chicken development? **3.0**
  - b) How general combining ability differ from specific combining ability? **3.0**
  - c) How will you develop a layer strain using breeding tools? **8.0**
  - d) Write down short note on **6.0**
    - i) Family selection
    - ii) Reciprocal recurrent selection



Department of Dairy and Poultry Science  
Chittagong Veterinary and Animal Sciences University

M.Sc Poultry Science

Session: January-June, Final examination 2018,

Course: Poultry Farm Planning and Management

(Answer any four. All questions are of equal marks)

Full marks: 40

Time: 2 hours

Questions:

1. Describe the main points to be considered for poultry farm planning.
2. Mention the types of poultry housing. Write construction and management of housing of 500 layer flock.
3. Give a farm plan for 2000 commercial broiler.
4. Write importance of lighting in commercial layer farm. Describe different systems and management of lighting in layer farm.



TABLE-3 X<sup>2</sup> DISTRIBUTION\*

v	Values of X <sup>2</sup> <sub>α, v</sub>									
	0.99	0.975	0.95	0.05	0.025	0.01	0.005			
1	0.000	0.001	0.004	3.841	5.024	6.635	7.879			
2	0.010	0.051	0.103	5.991	7.378	9.210	10.597			
3	0.072	0.216	0.352	7.815	9.348	11.345	12.838			
4	0.207	0.484	0.711	9.488	11.143	13.277	14.860			
5	0.412	0.831	1.145	11.070	12.832	15.086	16.750			
6	0.676	1.237	1.635	12.592	14.449	16.812	18.548			
7	0.989	1.690	2.167	14.067	16.013	18.475	20.278			
8	1.344	2.180	2.733	15.507	17.535	20.090	21.955			
9	1.735	2.700	3.325	16.919	19.023	21.666	23.589			
10	2.156	3.247	3.940	18.307	20.483	23.209	25.188			
11	2.603	3.816	4.575	19.675	21.920	24.725	26.757			
12	3.074	4.404	5.226	21.026	23.337	26.217	28.300			
13	3.565	4.107	5.892	22.362	24.736	27.688	29.519			
14	4.075	4.660	6.571	23.685	26.119	29.141	31.319			
15	4.601	5.229	7.261	24.996	27.488	30.578	32.801			
16	5.142	5.812	7.962	26.296	28.845	32.000	34.267			
17	5.697	6.408	8.672	27.587	30.191	33.409	35.718			
18	6.265	7.015	9.390	28.869	31.526	34.805	37.156			
19	6.844	7.633	10.117	30.144	32.852	36.191	38.582			
20	7.434	8.260	10.851	31.410	34.170	37.566	39.997			
21	8.034	8.897	11.591	32.671	35.479	38.932	41.401			
22	8.643	9.542	12.338	33.924	36.781	40.289	42.796			
23	9.260	10.196	13.091	35.172	38.076	41.638	44.181			
24	9.886	10.856	13.848	36.415	39.364	42.980	45.558			
25	10.520	11.524	14.611	37.652	40.646	44.314	46.928			
26	11.160	12.198	15.379	38.885	41.923	45.642	48.290			
27	11.808	12.879	16.151	40.113	43.194	46.963	49.645			
28	12.461	13.565	16.928	41.337	44.461	48.278	50.993			
29	13.121	14.256	17.708	42.557	45.722	49.588	52.336			
30	13.787	14.953	18.493	43.773	46.979	50.892	53.672			
40	20.706	22.164	24.433	55.759	59.342	63.691	66.766			
50	27.991	29.707	32.357	67.505	71.420	76.154	79.490			
60	35.535	37.485	40.482	79.082	83.298	88.379	91.952			
70	43.275	45.442	48.753	90.531	95.023	100.425	104.215			
80	51.172	53.540	57.153	101.879	106.629	112.329	116.321			
90	59.196	61.754	65.647	113.145	118.136	124.116	128.299			
100	67.328	70.065	74.222	124.342	129.561	135.807	140.169			

TABLE-4. t DISTRIBUTION

v	Values of t <sub>α, v</sub>				
	0.05	0.025	0.01	0.005	
1	6.314	12.706	31.821	63.657	
2	2.920	4.303	6.965	9.925	
3	2.353	3.182	4.541	5.841	
4	2.132	2.776	3.747	4.604	
5	2.015	2.571	3.365	4.032	
6	1.943	2.447	3.143	3.707	
7	1.895	2.365	2.998	3.499	
8	1.860	2.306	2.896	3.355	
9	1.833	2.262	2.821	3.250	
10	1.812	2.228	2.764	3.169	
11	1.796	2.201	2.718	3.106	
12	1.782	2.179	2.681	3.055	
13	1.771	2.160	2.650	3.012	
14	1.761	2.145	2.624	2.977	
15	1.753	2.131	2.602	2.947	
16	1.746	2.120	2.583	2.921	
17	1.740	2.110	2.567	2.896	
18	1.734	2.101	2.552	2.878	
19	1.729	2.093	2.539	2.861	
20	1.725	2.086	2.528	2.845	
21	1.721	2.080	2.518	2.831	
22	1.717	2.074	2.508	2.819	
23	1.714	2.069	2.500	2.807	
24	1.711	2.064	2.492	2.797	
25	1.708	2.060	2.485	2.787	
26	1.706	2.056	2.479	2.779	
27	1.703	2.052	2.473	2.771	
28	1.701	2.048	2.467	2.763	
29	1.699	2.045	2.462	2.756	
30	1.697	2.042	2.457	2.750	
40	1.684	2.021	2.423	2.704	
60	1.671	2.000	2.390	2.660	
120	1.658	1.980	2.358	2.617	
∞	1.645	1.960	2.326	2.576	



**Chittagong Veterinary and Animal Sciences University**  
**MS in Poultry Science Final Exam**  
**January-June Semester--2018**  
**Subject: Ducks and Specialized Fowl Production-(Theory)**  
**Course Code: DSF-601; Total marks: 40; Time: 2 hours**

**Answer any five of the following questions including 1;**  
**Figures in the right margin indicate full marks**

1. a). State the events of developing a duck breed 3  
b). Discuss one suitable method of raising duck to increase more protein for the people 3  
c). Mention the duck breeding farms available in the world 2
  
2. a) State the economic traits for meat type geese production 3  
b). Narrate the fattening process of geese & its home made ration formula 5
  
3. a) Discuss the hatching of duck egg without electricity 4  
b). Mentions the breed and varieties of Chinese fowl, Turkey and Quail 4
  
4. a). Discuss the strategies for lean/green meat production 4  
b). State the brooding management of keet & duckling 4
  
5. a) Give a comparative differences between avian and mammalian lactation 2  
b) What is pigeon milk? Discuss the economic traits of commercial importance for selection of Guinea fowl and quail 6
  
6. **Write short notes on any four of the following :** 4×2=8.0
  - a). Sterile duck
  - b). Laboratory animal
  - c). Hybrids of duck
  - d). Holiday bird
  - e). Integrated farming
  - f). Poor mother
  - g). Deshi duck



**Chittagong Veterinary and Animal Sciences University**  
**MS January-June Semester 2018 Final Examination**  
**M. S. in Dairy Science**

**Course Title: Functional Dairy Ingredients (Theory), Course Code: FDI-601**  
**Full Marks: 40, Time: 2 Hours**

(Figures in the right margin indicate full marks. Answer any **FOUR** questions of which question number 1 is compulsory)

1. a) Define functional dairy foods. Classify the functional foods. 3  
b) Briefly describe benefits of bioactive components in milk and dairy products. 3  
c) Sketch the major biologically active milk components and their functions. 4
2. a) Illustrate consumer group with varying health status & requirements regarding functional foods. 2  
b) Illustrate health benefits of functional foods. 3  
c) "Caseins as source of bioactive peptides"-explain it 3  
d) Illustrate the applications of major milk proteins. 2
3. a) Define probiotics, prebiotics and symbiotic with example. 3  
b) Briefly describe the health benefits of prebiotics 4  
c) Give a flow chart for the galactooligosaccharides manufacture 3
4. a) Enumerate the legislations and relevant regulations situation regarding health claims and functional foods. 2  
b) Briefly described about the disease reduction risk FOSHU and foods with nutrient function claims. 3  
c) Enumerate the genomic overview and biological functions of exopolysaccharide biosynthesis in bifidobacterium spp 5
5. a) Briefly described the immune enhancing ability of milk protein. 3  
b) Illustrate the mood of action of milk components against cancer. 3  
c) Illustrate the mechanisms of production of major bioactive peptides from milk proteins 4
6. Write short notes (**any 4**) on: 2.5 x 4 10  
a. Interactions between gut microbiota and host, b. Role of microbiota in inflammatory bowel disease, c. Enlist the immunomodulation bioactive components in milk and dairy products. d. Exopolysaccharides produced by LAB, e. Relationship between bioactive function and milk components.



Chittagong Veterinary and Animal Sciences University  
M.S. in Dairy Science Final Examination

January to June Semester 2018

Sub: Dairy Nutrition

Course Code: DNT-601

Full Marks: 40; Time: 2 Hours

Answer **any four** questions from the following. Figure in the right margin indicate full marks.

1. a) Describe about feeding system of dairy cattle 5  
b) Mention about the feeding standard followed in dairy ration 5
2. a) Describe about the production procedure of TMR 5  
b) Write down the production procedure of hydroponic fodder 5
3. a) Mention about the feed additives for dairy cattle. 5  
b) Describe about the vitamin required for dairy animal. 5
4. a) Describe about the metabolic disease and prevention of dairy cattle. 5  
b) Write down the mineral required for dairy cattle. 5
5. Formulate a dairy ration of 300 kg body weight with 12 liter milk production. 10



**Chittagong Veterinary and Animal Sciences University**

**Dept. of Dairy and Poultry Science**

**Final Examination January – June Semester/2018**

**MS in Dairy Science**

**Course: Quality Control of Dairy Products**

**Course Code: QCD-601; Total Marks: 40**

**Time: 2 hours**

You are a recent graduate of Chittagong Veterinary and Animal Sciences University & have been appointed as a Quality Control Officer in Bangladesh Standards and Testing Institution. At the 10<sup>th</sup> day of appointment you have assigned by your authority to investigate the quality of raw milk, HTST market milk, & ghee of different brands available in Bangladesh. Your controlling authority had remind you that being a employee of BSTI, you reserve the right to collect the samples either from any dairy processing unit or products marketing channels but remember processors also have the right to challenge your test results before the honourable court. You have collected market milk samples following the protocol of BSTI and after testing in the reference laboratory you got the following results:

a) Milk: You have collected the HTST market milk samples from Agora, Chittagong and raw milk from open market of Ratkhola, Dhaka.

Brands	BF%	SNF%	Protein%	Lactose%	Minerals%	Coliform/ml	TVC CFU/ml	Posphatage test
A	3.1	8.8	3.0	5.2	0.6	01	20000	-Ve
B	3.6	8.3	3.4	4.4	0.7	21	78000	+ve
C	3.6	8.2	3.21	4.5	0.7	2	15500	-ve
D	3.5	8.3	3.3	4.4	0.71	1	17000	-ve
E	3.5	9.0	3.01	5.40	0.71	31	67000	+ve

The taste, colour and appearance of all samples of market milk were normal but rancid flavour and granules/clots of FCMP were found in brand A & E but foamy appearance was seen in some bulk sources of raw milk and both formalin & sodium-bi-carbonate were detected in some of the samples of raw milk.

Answer the following questions in relation to the above scenario.

1. Critically analyse the quality of mentioned brands against the BSTI standards for market milk. 5
2. What test is mandatory for sample A & E and why? What could be the possible causes of presence of FCMP granules/clots in HTST market milk? 4
3. What could be the possible causes of being rancid flavour in brand A and E? 3
4. Mention the protocol you have followed for collecting samples of market milk form Agora, Chittagong? 3
5. Mention the possible causes of being foamy appearance and presence of two preservatives in a single source of milk. 3
6. Explain the procedure of quantifying the percentage of added water to milk. 5
7. Illustrate the procedure of confirmatory test of pasteurization of milk. 5

b) Ghee: You have collected the samples from different departmental stores at Chittagong

8. How you have collected the ghee samples from different stores? Can you explain any easy technique for identifying the pure ghee? 4
9. Mention the common defects, causes and remedies of ghee. 4
10. What are the common adulterants of Ghee and how will you detect those? 4



Department of Dairy and Poultry Science  
Chittagong Veterinary and Animal Sciences University  
M S January – June Semester Final Examination – 2018  
MS in Dairy Science  
Course title: Dairy Chemistry (theory)  
Course Code: DCH – 601

Time: 2 hours

Total marks: 40

**Answer any four (4) of the following questions. Split answers are 4X10=40 strongly discouraged**

1. a) State the principles of cream rising. Briefly describe the importance of size of milk fat globules. 5  
b) Tabulate the vitamin and mineral contents of milk. 5
2. a) Enumerate the enzymes present in milk. Briefly discuss their functions. 5  
b) Draw the chemical structure of lactose. State its nutritive value in terms of the chemical structure. 5
3. a) Illustrate the mechanism of citrate metabolism by lactic acid bacteria. 5  
b) Draw the chemical formula of casein. State the unique properties of casein. 5
4. a) Illustrate the chemical changes occurred during dahi preparation. 5  
b) State the King's modern theory of churning of cream during butter preparation. 5
5. a) Draw the chemical structure of milk fat. State the importance of milk fat in dairy industry. 5  
b) Classify fatty acids found in milk with examples. Enumerate the role of casein in the preparation coagulum based dairy products. 5



January to June Semester, 2018 Final Examination  
 Department of Dairy and Poultry Science  
**MS in Dairy Science**  
 Chittagong Veterinary and Animal Sciences University  
 Course Title: Advanced Biostatistics (Theory)  
 Course Title: ABS-601  
 Full Marks: 40                      Time: 2 hours

**Answer any 4 from the following questions. Values are shown in the right margin in each question**

- 1) a) Compare between simple correlation and rank correlation. Explain Rank correlation (when ranks are equal) with an example. 5
- b) The marks of 5 students (out of 7.5) in Dairy Science and Biostatistics are: 5

D	6.2	6.5	5.8	4	7
B	7.5	7	7.5	3.5	6.5

Compute Rank Correlation and comment.

- 2) a) Define treatment and block with an example each. 4
- b) 3 different kinds of hormone were applied to 5 blocks of chickens. Are the treatment and block statistically significant? (use 5% level of significance) 6

Block/Treatment	1	2	3
1	1.51	1.43	1.52
2	1.41	1.18	1.26
3	1.35	1.55	1.12
4	1.73	1.21	1.71
5	1.82	2.10	1.50

- 3) a) Define Z test with some of its application. Derive the formula to test a population variance with a specific value. 5
- b) Given a sample of 10 cows with an arithmetic mean for lactation milk yield of 3600 kg. Does this herd is greater than a population with a mean of 3500 kg and standard deviation of 700 kg? ( Use 5% level of significance). 5
- 4) a) Define Chi square test. Write some of its uses. 4
- b) A medicine company claims that there is no relationship between beef consumption and suffering from Heart disease of the employees of a farm. A random sample of the following employees was taken for the study.

Here is the data: 6

	Found Disease	No Disease
Consumer	55	105
Non consumer	35	70

From the above data can it be concluded that having beef leads to suffering from heart disease? Use 5% level of significance.

- 5) a) Explain LSD elaborately? When it is used? 4
- b) Define RBD with a practical example in your field and identify treatment, block, experimental unit and yield in that example. Compare between CRD and RBD. 6



**Answer any 4 from the following questions. Values are shown in the right margin in each question**

1. a) Define Regression with an example. What is Rank Correlation? 5

b) A study was made to determine the relation between weekly advertising expenditure and sales of a drug in your field and the data recorded are: 5

Expenditure (in tk)	40	20	25	20	30	50	40	20	50
Sales (in tk)	385	400	395	365	475	440	490	420	560

Draw a Scatter Diagram and fit the regression line to predict weekly sales from advertising expenditures.

2. a) Define Hypothesis and types of error in hypothesis. What is power of a test? 4

b) The given chickens of 15 days are fed with 5 different kinds of certain rations for one week and their weight scores are given below: 6

Treatments				
3.0	1.5	2.3	2.0	2.1
2.7	1.6	2.7	1.7	1.8
2.5	1.8	2.4	1.8	1.6
1.91	2.5	2.4	1.8	1.6
2.0	1.7	1.9	1.7	1.9
1.8		2.2	2.4	
1.92			2.2	

Are the treatments statistically different? Test at 5% level of significance.

3. a) What are the basis principles of experimental design/ Explain 4

b) Define RBD with a practical example in your field and identify treatment, block, experimental unit and yield in that example. Compare between CRD and RBD. 6

4. a) Define Simple correlation with an example. Derive the formula to test a population mean with a specific value in case of large samples. 5

b) Two groups of goats were fed two different feeds to determine the increase in body weight. At the end of the experiment the body weights were calculated. The mean and variance are given below: 5

	Feed A	Feed B
Mean	4.8	5.1
Variance	0.21	0.25
size	50	50

Which feed will increase the body weight of goats (Use 5% level of significance).

5. a) Define Rank Correlation with an example. When it can be used? 4

b) The marks of 5 students (out of 20) in Biostatistics and Histology are: 6

B	13	14	15	12	11
H	14	12	13	11	15

Compute Rank Correlation. In the above data when rank correlation will be +1?



**Chittagong Veterinary and Animal Sciences University**  
**Department of Dairy and Poultry Science**  
**MS in Poultry Science**  
**January-June Semester/ 2018**  
**Final exam-2018**  
**Sub: Poultry Processing and Product Technology**  
**Sub code: PPPT**  
**Total marks: 40**  
**Total time: 2 hours**

**Answer any of the five questions. Figures in the right margin indicate the marks.**

1. a) Describe the standards of quality criteria for live poultry. 4  
b) Outline the steps involved in poultry meat processing. Briefly describe the stunning and scalding method. 4
2. a) Write down the standards of quality criteria of table and hatching egg. 4  
b) Describe the methods of egg preservation 4
3. a) List the inedible by-product of poultry industry with their uses. 3  
b) Briefly describe the waste management of poultry industry. 5
4. a) What are the poultry meat hazards that affect the public health safety? 3  
b) What do you mean by spoilage bacteria? Briefly describe their importance in poultry meat. 5
5. a) What are the key parameters that use to determine the poultry meat quality? 1  
b) What factors influence the tenderness and flavor of poultry meat? 4  
c) Is there any effect of ante-mortem handling on poultry meat quality? 3
6. a) Write down the importance of meat packaging? 2  
b) Enlist different method of meat packaging. 2  
c) Briefly describe the vacuum and irradiation packaging? 4



7. a) What do you mean by HACCP and CCP. 3
- b) Indicates the CCPs for whole young chickens with their corrective action and monitoring. 3
- b) Outline a flow diagram of poultry processing indicating the CCP. 3
8. Write short notes any two (4 X2= 8)
- a) Water Holding Capacity
- b) Physical properties of egg
- c) Spoilage of egg
- d) Environmental pollution from poultry processing plant



**Chittagong Veterinary and Animal Sciences University**  
**Department of Dairy and Poultry Science**  
**MS in Poultry Science**  
**January-June Semester- 2018**  
**Final examination-2018**  
**Sub: Avian Health and Hygiene. Course code-AHH**  
**Total marks: 40**  
**Total time: 2 hours**

**Answer any of the five questions. Figure in the right margin indicates the mark.**

1. a) Enlist the factors that influence the poultry health and disease occurrence. 3  
b) Briefly describe the biosecurity measurements in a poultry farm. 5
  
2. An owner of a poultry hatchery reported that he introduced early vaccination program in the hatchery in order to increase the chick quality and also to decrease the mortality rate of hatched chicks. Despite of introduction of aforementioned strategy, he did not get expected level of hatchability as well as chick quality.  
a) What are the possible reason behind this low hatchability? 2  
b) Discuss your views and suggestion to prevent this problem. 6
  
3. A local poultry farm is experiencing sudden high mortality rate of birds. The birds showed sing of depression, ruffled feathers, and diarrhea. The gross lesions were primarily found in the small intestine (jejunum/ileum), which was ballooned, friable, and contained a foul-smelling, brown fluid. The mucosa was covered with a tan to yellow pseudo-membrane often referred to as a "Turkish towel".  
a) What is your diagnosis? 1  
b) Write down the predisposing factors which influence the occurrence of this disease? 2  
c) Describe the prevention and control of this disease. 5
  
4. The recent outbreak of highly pathogenic avian influenza causes significant economic loss in poultry industry. The consumption of poultry production drastically decreases during this period.  
a) Write down the public health threats arises from highly pathogenic avian influenza? 1



- b) What will be your suggestion for the consumer during this outbreak period? 3
- c) Briefly describe the prevention and control methods for this disease both in national and international level. 4
5. A broiler farmer reported that he is raising 1000 broiler birds which are now 25 days old. During grower period, he recorded that feed intake of birds was 30 % less than their usual intake and FCR was also affected negatively.
- a) What is the reason of decrease feed intake of this flock? 3
- b) What will be your advice to maximize the feed intake of this flock? 5
6. What is the influence of stress in a layer flock? How will you minimize it? 8
7. a) Write down the importance of poultry litter and carcass management from public health and environmental safety perspective. 3
- c) Describe the different methods of litter disposal? 5



**Chittagong Veterinary and Animal Sciences University**  
**MS January-June Semester 2018 Final Examination**  
**M. S. in Dairy Science**  
**Course Title: Dairy Technology (Theory), Course Code: DTL - 601**  
**Full Marks: 40, Time: 2 Hours**

(Figures in the right margin indicate full marks. Answer any **FOUR** questions of which question number 1 is compulsory)

1. a) What do you mean by Dairy Technology? Write down the importance of Dairy Technology. 3  
b) Illustrate manufacturing steps of Dairy Ice-Cream. Explain Overrun of Ice-Cream. 4  
c) Briefly describe the defects of Dairy Ice Cream 3
2. a) What is difference between Butter and Ghee? 2  
b) What are the various methods of manufacture of Butter and Ghee? Briefly describe which are suitable for commercial Butter operations. 3  
c) Briefly describe the physio-chemical properties of Ghee. 3  
d) How can you proceed for assessment of methods for detection of palm oil and/or coconut oil in ghee? 2
3. a) Define Cheese with Classification. 2  
b) Briefly describe the Cheddar Cheese manufacture. How can you estimate of Cheese yield? 3  
c) What are the bacterial cultures used in Cheese manufacture? Briefly describe it. 3  
d) State the action of Rennet in Cheese manufacture. 2
4. a) What is difference among Curd, Dahi and Yoghurt? 2  
b) Briefly describe manufacturing steps of Dahi. 3  
c) What are the biochemical change occur during preparation of Dahi? Briefly describe it. 3  
d) Shortly describe the nutritional and therapeutic properties of functional Yoghurt. 2
5. a) Define powder milk with classification. 2  
b) Briefly describe about manufacturing whole milk powder by spray-drying system. 3  
c) Compare the physical and sensory characteristics of drum and spray dried milk. 3  
d) What is Melamin? 2
6. Write short notes (**any 4**) on: 2.5 x 4 10
  - a. Packing material for dairy products,
  - b. Milk Vita Rossomalai,
  - c. Sweetened condensed milk.
  - d. Sandesh Preparation
  - e. Recommended storage times and temperatures for dairy products