

Chattogram Veterinary and Animal Sciences University

MS in Animal Breeding and Genetics

(July- December semester) Final Examination-2022

Course: Poultry Breeding; Course code: PBR- 602

Full Marks- 40; Time- 2.00 hours

Date- 06/12/2022

Answer any **four** questions. Figures in the right margin indicate the full marks.

1. a. How soon after mating may egg be saved for hatching? From a breeding standpoint what factors affect hatchability? 5
- b. Briefly discuss the breed structure of poultry production. 5
2. a. What is the selection criterion? Write down the effects of selection. 3
- b. What is the best selection method considering more than one trait at a time? Give your justification according to your statement. 7
3. a. What is nicking? Briefly discuss with example the general and specific combining ability. 6
- b. Briefly discuss about genotype by environment interactions in poultry breeding programs. 4
4. a. How will you design a breeding program for the production of commercial broiler? Discuss briefly. 6
- b. Describe about the mating system of poultry. 4
5. Write down the importance of indigenous chicken for rural economy. How you can improve them genetically for higher production performance? 10

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MS in Animal Breeding and Genetics

(July- December semester) Final Examination-2022

Course: Molecular Genetics; Course code: MGN- 602

Full Marks- 40; Time- 2.00 hours

Date- 04/12/2022

Answer any **four** questions. Figures in the right margin indicate the full marks.

1. a. What do you mean by molecular genetics? Write down the scope of molecular genetics in the field of animal improvement. 5
b. How gene is express and regulate in the cell? Discuss in brief. 5
2. a. What do you mean by RNA splicing? How protein is formed from DNA? Discuss in brief. 5
b. Write down the application of DNA finger printing and what are major problems encounter using this technology? Discuss in brief. 5
3. a. Write down the purpose and principle of PCR. 4
b. What are the factors affect gel electrophoresis? How do you interpret and analyse the following DNA gel electrophoresis results? 6



4. a. What do you mean by gene sequencing and genome sequencing? Write down the application of DNA sequencing. 5
b. What is molecular phylogenetic? What are the software's are being used for construction of phylogenetic tree? Write down the application of molecular phylogenetic. 5
5. Write short notes on (any two): 10
 - (i) Restriction enzymes
 - (ii) Complimentary DNA
 - (iii) Southern blot analysis

Chittagong Veterinary and Animal Sciences University
Department of Genetics and Animal Breeding
MS in Animal Breeding and Genetics
(July-December semester) Final examination- 2022
Subject: Wildlife Breeding and Management
Course Code: WBM-602
Full marks: 40; Time: 2 hour

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

1. How you will Reintroduce Indian Peafowl in Bangladesh? 10
2. Write a short note about conservation of Royal Bengal Tiger in Bangladesh. 10
3. What are the features and activities of a modern wildlife conservation center? 10
4. How you will do prevention and control of wildlife diseases. 10
5. Write a short note about ecotourism and conservation. 10
6. Write down the importance of wildlife. Discuss about the process of wildlife management. 10

Chittagong Veterinary and Animal Sciences University
Department of Genetics and Animal Breeding
MS in Animal Breeding and Genetics
(July-December semester) Final examination- 2022
Subject: Reproductive Biotechnology
Course Code: RPB-602
Full marks: 40; Time: 2 hour

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

1. What do you mean by reproductive biotechnology? Write down its importance and uses in animal production. 10
2. How you will separate X and Y chromosome bearing spermatozoa. Write down its application. 10
3. Write a short note about AI. 10
4. What are the several steps in MOET? Discuss about any tow steps. 10
5. Write a short note about IVF. 10
6. Discuss about embryo slicing. 10

Chattogram Veterinary and Animal Sciences University

M S in Animal Breeding and Genetics

July-December Semester Final Examination 2022

Course Title: Problems on Quantitative Genetics & Animal Breeding

Course Code: PQB-602

Total marks: 40

Time: 2 hour

(Answer any 2 (one) from the following question. Values are shown in the right margin in each question)

1. a) What is breeding objective? How will you develop the breeding objective from an 8.0 dairy herd consisting of 20 cows having an average live weight is 325 kg and each cow produces 2500 liter milk and 120 kg fat per lactation. The per unit price for milk, fat and meat is Taka 70/=, 650/= and 550/=, respectively.

b) State the equation used for predicting the rate of genetic gain per year given the 12.0 following information; the selection criterion is one record from each individual.

$$h^2 = 0.25, \quad \sigma_p^2 = 80$$

Sires to breed sires:

- choose 50 out of 1000
- first progeny born when the sires are 2.5 years old.
- sires used for 2 years with 60% of the sires having progeny in the second year

Sires to breed dams:

- choose top 160 out of 2000
- first progeny born when the sires are 2 years old
- Sires used for 2 years with 60% of the sires having progeny in the second year and 20% having progeny in the third year.

Dams to breed sires:

- choose top 1000 out of 7500
- first progeny born when the dams are 2 years old
- dams used for 3 years with 50%, 30% and 20% in the youngest to the oldest age groups, respectively.

Dams to breed dams:

- no selection
- first progeny born when the dams are 2 years old
- dams used for 5 years with 30%, 20%, 20%, 15% and 10% in the youngest to oldest age groups, respectively.

2. In an attempt to breed cattle that will provide a greater quantity of meat and quality of 20.0 leather 25 years from now, the KARR company decided to develop its own bird selection programme. Their economists forecast that the net present value of an extra unit of leather quality is \$5 while the value of an extra kilogram of meat will be worth \$12. Given the difficulty of measuring both of these two traits directly, KARR geneticists decided to use skin pliability as an indirect predictor of leather quality and live-weight as an indirect predictor of meat quantity, both measured at 2.5 years of age.

	Std. dev.	Leather	Meat	Pliability	Live-weight
Leather (units)	0.43	0.32	-0.50	0.45	-0.30
Meat (kg)	2.79	-0.30	0.45	0	0.20
Pliability (mm/cm)	1.53	0.60	-0.10	0.24	0.10
Live-weight (kg)	3.20	-0.40	0.40	-0.20	0.28

Std. dev. is the phenotypic standard deviation. Heritability's are on the diagonal, genetic correlations below the diagonal and phenotypic correlations above the diagonal.

Assume that selection of new parents is based on a single record of their own performance. Given the above information:

- State the selection objective and selection index in terms of a linear equation.
- Derive the index weighting factors using the Best Liner equation.
- One particular bird has a pliability deviation of +3 and a live-weight deviation of -1.6 what is the aggregate genetic merit?
- Predict the rate of genetic gain in leather quality and skin pliability.
- Assume that 5 repeated observations for pliability are available on each animal are available for selection, and that they each also have 20 offspring assessed for live-weight, derive the normal equations that require solution to obtain BLPs for the index weighting factors,

3. (a) Suppose the profit function for a commercial lamb production unit is as follows: **18.0**

$$\text{PROFIT} = (\text{EWES} \times \text{CR} \times \text{NLB} \times \text{SUR}) \times [\text{BW} + 120 \text{ ADG}] \times \text{DO} \times \text{VALUE} - \text{COSTS}$$

Where

EWES = number of ewes;

CR = conception rate;

NLB = number of lambs born;

SUR = survival lambing to sale;

BW = birth weight;

120 = slaughter at 120 days;

ADG = average daily gain;

DO = dressing out %;

VALUE = carcass value per kg;

Note no allowance has been made for replacement females (all slaughtered)

Suppose a client has a 1000- ewe flock and can sell lambs at a carcass value of \$2.3/kg. Given the following crossbreeding parameters.

Trait	A	B	C	Indiv%	Mat%
CR	0.43	0.72	-	-	6
NLB	1.4	1.2	-	-	12
SUR	0.68	0.82	0.88	12	7
BW	3.2	2.76	3.25	6	3
ADG	0.22	0.193	0.21	9	11
DO	0.45	0.45	0.45	2	-

Indiv% = percentage individual hybrid vigor

Mat% = percentage maternal hybrid vigor

Figures in columns A, B and C refer to the average performance of 3 different breeds

- Calculate the profit for a flock of straightbred animals of breed A
- Calculate profit for an AB rotational flock
- Calculate profit for an AB x C flock

- b) If an allele, A, mutates to a with a frequency of 1 in 10,000 and back-mutates with a frequency of 1 in 100,000, and if the three genotypes have equal fitness, what will be the genotype frequencies at equilibrium in a random-mating population? **2.0**