

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2019
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALISATION PAPER FOR ANIMAL SCIENCE

Date	: October 13, 2019
Total Marks	: 100
Writing Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to examination time)

GENERAL INSTRUCTIONS:

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is being provided to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
 - **SECTION A** has two parts: Part I - 30 Multiple Choice Questions
Part II - 4 Short Answer Questions
All questions under SECTION A are COMPULSORY.
 - **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the correct Section, Part and Question Number will NOT be evaluated and no marks will be awarded.
6. Begin each Section and Part in a fresh page of the Answer Booklet.
7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
8. Use of any other paper including paper for rough work is not permitted.
9. **You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
10. This paper has **8 printed pages**, including this instruction page.

GOOD LUCK

SECTION A

PART I: Multiple Choice Questions (30 marks)

Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. Sequence of ruminant stomachs from anterior to posterior end are
 - a) omasum, rumen, reticulum and abomasum
 - b) rumen, reticulum, omasum and abomasum
 - c) rumen, omasum, reticulum and abomasum
 - d) abomasum, omasum, reticulum and rumen

2. Maintenance of luteal cyst is due to the prolonged production of:
 - a) Oestrogen
 - b) Testosterone
 - c) Progesterone
 - d) Prostaglandin

3. Which of the following Tuber fodder species is cultivated for winter feeding of livestock?
 - a) Radish
 - b) Carrot
 - c) Swede
 - d) Potato

4. Which is the agency under Ministry of Agriculture and Forests responsible for disseminating information on agriculture practices to relevant stakeholders?
 - a) Bhutan Agriculture and Food Regulatory Authority
 - b) Department of Agriculture Marketing Cooperatives
 - c) Information and Communication Technology Division
 - d) Department of Livestock

5. Genetic gain expressed in F1 generation in cross breeding between two different breeds is called
 - a) Hybrid rigour
 - b) Mutant
 - c) Hybrid vigour
 - d) Runt

6. High roughage content feed is suitable for
 - a) Cattle
 - b) Fish
 - c) Birds
 - d) Pigs

7. Improved pasture mixture species for temperate region is
 - a) Napier-Guatemala-Lucerne-Kikyu
 - b) Italian rye-Tall fescue-Cocks foot-White clover
 - c) Ruzi-Paspalum-Molasses-Styleo
 - d) Green leaf desmodium-Silver leaf desmodium-Fodder peanut

8. What is the temperature and time combination of HTST milk pasteurization?
 - a) 63°C for 30 min
 - b) 72°C for 15 sec
 - c) 115°C for 20 min
 - d) 138°C for 2 sec

9. The term “orchitis” defines the inflammation of
 - a) Penis
 - b) Joint capsule
 - c) Testes
 - d) Ear

10. Bhutan is self-sufficient in
 - a) Milk
 - b) Beef
 - c) Pork
 - d) Egg

11. Removal of uterus from a dog in a surgical procedure of sterilization is called
 - a) Tubectomy
 - b) Ovariectomy
 - c) Hysterectomy
 - d) Vasectomy

12. Which disease in the following list is not covered under livestock vaccination and poultry programme in Bhutan?
 - a) Foot and mouth disease
 - b) Fowl pox
 - c) Marek’s disease
 - d) African swine fever

13. What percentage of pork consumption in Bhutan is domestically produced?
 - a) 75%
 - b) 65%
 - c) 45%
 - d) 35%

14. Which of the following is used to sustain pregnancy to full term in the cases of recurrent abortion in cows?
- Oxytocin
 - Estrogen
 - Prolactin
 - Progesterone
15. Which of the following is not an official vaccination programme in Bhutan for poultry?
- Infectious bursal disease
 - Fowl pox
 - Avian influenza
 - Newcastle disease
16. In 2019, highly pathogenic avian influenza (HPAI) was reported in
- January 2019
 - April 2019
 - June 2019
 - August 2019
17. Every year around the world, World Rabies Day (WRD) is observed on
- August 28
 - September 28
 - October 28
 - November 28
18. Commonly used agent in dogs for the treatment of mange caused by Demodex mange is
- Mebendazole
 - Praziquintal
 - Ivermectin
 - Piperazine
19. Penicillin was discovered in
- 1918
 - 1928
 - 1938
 - 1948
20. In animal husbandry, FCR is the efficiency measurement with which the bodies of livestock convert feed into the desired output. What is the full form of FCR?
- Feed consumption rate
 - Feed conversion ratio
 - Feed concentrate reserve
 - Feed capacity rate

21. Gid in young yaks is caused by the intermediate stage of parasite
- Echinococcus granulosus*
 - Taenia multiceps*
 - Fasciola hepatica*
 - Hypoderma bovis*
22. What is the average age of layers to start laying eggs?
- 12 weeks
 - 15 weeks
 - 20 weeks
 - 25 weeks
23. The most common predator of bee is
- Butterfly
 - Hornet
 - Beetle
 - Birds
24. Which one of the following is the common viral disease that affects goat?
- Newcastle disease
 - Peste des petit ruminant
 - Distemper
 - Herpes
25. Which type of fish is reared in cold water fishery in Haa?
- Tilapia
 - Rainbow trout
 - Barramundi
 - Carp
26. Commonly used microorganism for fermenting milk into yogurt is
- Staphylococcus aureus*
 - Lactobacillus bulgaricus*
 - Pseudomonas aeruginosa*
 - Escherichia coli*
27. Which one of the following is recommended in animal slaughter process?
- Stunning
 - Gun shot
 - Hanging
 - Axing

28. The Centre which produce pork sausage, ham and bacon is
- National Dairy Research and Development Centre
 - National Pig Research and Development Centre
 - Livestock Product Value Addition Centre
 - Regional Livestock Development Centre
29. An adult cow behaves like a bull: shows enhanced sexual behaviour, mounts on other cows and comes back to heat time and again. What is the condition called?
- Silent heat
 - Pica
 - Anoestrus
 - Follicular cyst
30. Milk fever in recently calved high yielding cow is caused by
- Increased body temperature
 - Decreased blood phosphorus
 - Decreased blood calcium
 - Decreased blood cobalt

PART II – Short Answer Questions (20 marks)

This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.

- The following questions are from preventive veterinary medicine on vaccination programme in the country for different animal and poultry species:
 - What is the full form of DHPPi-L? (1 mark)
 - What are the three different serotypes present in the trivalent FMD vaccine that is used for vaccination for the disease in Bhutan? (1 mark)
 - Name four poultry vaccines used in Bhutan. (1 mark)
 - Name two vaccines that are used in pig husbandry in Bhutan. (1 mark)
 - What is the dose (ml) of anti-rabies vaccine in dog? (1 mark)
- The following questions are from dairy husbandry and dairy technology:
 - Name different constituents of milk. (1 mark)
 - Name two dairy products indigenously produced. (1 mark)
 - Name two dairy products produced with improved technology. (1mark)
 - What is the feed dry matter content (%) required for a milking cow? (1 mark)
 - What is mastitis? (1 mark)

3. The following questions are from basics of veterinary surgery:
 - a) Name seven tenets of surgery. (2 marks)
 - b) Name one anaesthetic used in dogs to sedate and prepare for surgery. (1 mark)
 - c) Name one type of suture material for skin and one for soft tissue. (1 mark)
 - d) Name one inhalation anaesthetic (1 mark)

4. Following questions are from animal welfare areas:
 - a) Which system of poultry housing is banned in Bhutan? (1 mark)
 - b) Name four animal welfare groups established in Bhutan. (2 mark)
 - c) Recently, some sign posts on road side are seen with pictures of car and animal. What are these sign post meant for? (1 mark)
 - d) What method is used for stunning chicken? (1 mark)

SECTION B: Case Study

Choose either Case I or Case II from this Section. Each case carries 50 marks. Mark for each sub-question is indicated in the brackets.

Case I

You are an ambassador for livestock production and bringing in positive socio-economic changes for improving livelihood of our farmers. You are requested by concerned agency to develop a business plan for a dairy enterprise of 10 milking cows. Below are the components you would consider in your plan. Describe in details of the activity that you would consider under each component. Do not go into the details of costing and economy.

1. Pasture development and concentrate feed. (8 marks)
2. Housing (office, feed store, medicine store, sheds). (8 marks)
3. Veterinary care (preventive and curative). (5 marks)
4. Human resource and daily labour. (5 marks)
5. Animal breeding practices. (5 marks)
6. Marketing and product diversification. (5 marks)
7. Animal welfare. (5 marks)
8. Taking care of farm waste/manure. (4 marks)
9. Disposal of excess animal stock (bulls, old cows). (5 marks)

Case II

Present yourself as a successful poultry entrepreneur with 500 layers and 500 broilers. Assume that you already have an established poultry farm with housing and adequate manpower to operate the business. Describe in detail the answers to the following questions. Give details of ~~economics~~ **economics** in terms of expenditure, income and net profit for **ONE** cycle of production for both eggs and chicken meat.

1. Economics of egg and chicken production with 500 birds each:
 - a) Source of DOC, cost of DOC and transportation cost. (5 marks)
 - b) Types of feed and cost. (5 marks)
 - c) Staff payment. (5 marks)
 - d) Other miscellaneous cost. (5 marks)
 - e) Total product produced and sold. (5 marks)
 - f) Income and net profit. (5 marks)
 - g) Poultry waste management. (5 marks)
 - h) Anticipated constraints in your business operation. (5 marks)

2. Describe the details of following aspects of poultry health that you would consider in your farm?
 - a) Farm biosecurity (5 marks)
 - b) Vaccination against major poultry diseases (5 marks)

TASHI DELEK