

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2020
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALISATION PAPER FOR ANIMAL SCIENCE

Date	: February 27, 2021
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 the 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 on 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 must hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
10. This paper has **7 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. Popular layer bird breed in Bhutan is
 - a) White Leghorn
 - b) Hyline Brown
 - c) Australop
 - d) Plymouth Rock

2. What is the local bee species reared in Bhutan at commercial scale?
 - a) Apis cerena
 - b) Apis mellifera
 - c) Apis dorsata
 - d) Apis laborisa

3. Improved temperate pasture mix consists of
 - a) Italian rye, Tall fescue, Cocks foot, White clover.
 - b) Ruzi, Paspalum, Molasses, Stylo.
 - c) Napier, Guatemala, Kikyu.
 - d) Green leaf desmodium, Silver leaf desmodium, Fodder peanut.

4. Typical feature of symptoms of braken fern in cattle is
 - a) Bloody diarrhoea
 - b) Bloat
 - c) Haematuria
 - d) Haemoglobinurea

5. Antidote for organophosphate poisoning in animals is
 - a) Calcium chloride
 - b) Calcium gluconate
 - c) Atropine sulphate
 - d) Theophylline

6. What is the main ingredient in universal antidote for ingested poison in animals?
 - a) Calcium hydrochloride
 - b) Activated charcoal
 - c) Magnesium sulphate
 - d) Sodium bicarbonate

7. What is the recently introduced game (sports) fish species at National Centre for Riverine and Lake Fishery, Haa called?
 - a) Asla
 - b) Katla
 - c) Catfish
 - d) Siberian sturgeon

8. Intermediate host of Fasciola parasite is
 - a) Earthworm
 - b) Tick
 - c) Snail
 - d) Beetle

9. Final/definitive host of Taenia solium (pork tapeworm) is
 - a) Pig
 - b) Dog
 - c) Cat
 - d) Human

10. Intermediate host of Taenia saginata (beef tapeworm) is
 - a) Dog
 - b) Cattle
 - c) Humans
 - d) Horse

11. When does the chicken receive Marek's vaccine?
 - a) 0 day of age
 - b) 3 days of age
 - c) 7 days of age
 - d) 14 days of age

12. Best crop for making silage in sub-tropical area is
 - a) Wheat
 - b) Buckwheat
 - c) Maize
 - d) Paddy

13. Which one of the following is an example of typical Transboundary Animal Disease (TAD)?
 - a) Black quarter
 - b) Haemorrhagic Septicemia
 - c) Anthrax
 - d) Food and mouth disease

14. The Livestock Act of Kingdom of Bhutan was amended in the year
 - a) 1981
 - b) 1982
 - c) 2001
 - d) 2002

15. Which of the following cattle breed has the highest milk yield?
- Ayrshire
 - Great Dane
 - Guernsey
 - Holstein Fresian
16. What is the Jersey breed genetic composition of a progeny born out of mating 100% Jersey bull and 50% Jersey cow?
- 60% Jersey
 - 70% Jersey
 - 75% Jersey
 - 80% Jersey
17. Sequence of ruminant stomachs from anterior to posterior end is
- omasum, rumen, reticulum and abomasum.
 - rumen, reticulum, omasum and abomasum.
 - rumen, omasum, reticulum and abomasum.
 - abomasum, omasum, reticulum and rumen.
18. Maintenance of luteal cyst is due to the prolonged production of
- Oestrogen
 - Testosterone
 - Progesterone
 - Prostaglandin
19. Which is the agency under Ministry of Agriculture and Forests responsible for supporting marketing of agriculture products?
- Bhutan Agriculture and Food Regulatory Authority
 - Information and Communication Technology Division
 - Department of Livestock
 - Department of Agriculture and Marketing Cooperatives
20. Genetic gain expressed in F1 generation in cross breeding between two different breeds is called
- Hybrid rigour
 - Mutant
 - Hybrid vigour
 - Runt
21. What is the temperature and time combination of high temperature and short time (HTST) milk pasteurization?
- 63°C for 30 min
 - 72°C for 15 sec
 - 115°C for 20 min
 - 138°C for 2 sec

22. Removal of uterus along with ovary from a dog in a surgical procedure of sterilization is called
- Tubectomy
 - Hysterectomy
 - Vasectomy
 - Ovariohysterectomy
23. Which animal disease in Bhutan comes under vaccination coverage?
- Lumpy skin disease
 - Infectious bursal disease
 - African swine fever
 - African horse sickness
24. Which of the following poultry disease is not included in official vaccination programme in Bhutan?
- Infectious bursal disease
 - Fowl pox
 - Avian influenza
 - Newcastle disease
25. Who discovered penicillin?
- Gerhard Domagk
 - Robert Coghill
 - Howard Florey
 - Alexander Fleming
26. 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
27. In tropical and subtropical areas, bee keeping is challenged by predators. Which is the most common predator of bee in these areas?
- Butterfly
 - Hornet
 - Beetle
 - Birds
28. Cold water fishery in Haa rear which one of the following type of fish?
- Tilapia
 - Rainbow trout
 - Barramundi
 - Carp

29. Commonly used microorganism for fermenting milk into yogurt is
- Staphylococcus aureus*
 - Lactobacillus bulgaricus*
 - Pseudomonas aeruginosa*
 - Escherichia coli*
30. What is the full form of BLDCL, a State-Owned Enterprise engaged in livestock and livestock products business?
- Bhutan Livestock Development Corporation Ltd
 - Bhutan Livestock Department Cooperation Ltd
 - Breed and Livestock Development Corporation Ltd
 - Bhutan Livestock Development Centre Ltd

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.

- Name the government agencies for the following questions:
 - Dairy farm in Bumthang (1 mark)
 - Poultry farm in Paro (1 mark)
 - Animal nutrition in Bumthang (1 mark)
 - Native cattle farm in Trashiyangphu (1 mark)
 - Pig farm in Gelephu (1 mark)
- What are five different important parameters that you would consider in the analysis of animal feed? (5 mark)
- There are several disease conditions that are associated with poor meat hygiene.
 - Name one bacterial disease. (1 mark)
 - Name one parasitic disease. (1 mark)
 - Name one basic method for avoiding diseases from meat. (1 mark)
 - Name one safety measure that slaughter house workers should maintain while attending slaughter processes. (1 mark)
 - What is examination of animals before slaughter is called? (1 mark)
- Answer the following questions with regard to breeding:
 - A mule is born out of mating of horse and donkey. What is the sex of each parent? (2 marks)
 - What is the chromosome number of a mule? (1 mark)
 - What is the chromosome number of a horse? (1 mark)
 - What is the chromosome number of a donkey? (1 mark)

SECTION B: CASE STUDY [50 marks]

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

Poultry industry is booming in Bhutan despite strong resistance from religious sentiments. To achieve and sustain livestock product self-sufficiency, poultry is one of the most important components. As livestock entrepreneur to establish a broiler farm, describe the establishment and economics of completing a cycle of broiler business with the capacity of 500 birds.

1. Describe in detail the cost of constructing housings and other associated infrastructure. (20 marks)
2. Describe in detail the production and marketing: feed, salary, sale of dressed chicken, other associated costs and show the net profit. For calculating the net profit, do not include the cost of housing and other associated infrastructure. Include only the cost starting from the receipt of DOC. (20 marks)
3. In future, other than selling dressed broiler, describe your plans to diversify products from your broiler. (10 marks)

CASE II

Pork industry is still struggling to achieve the target of pork self-sufficiency in the country. Bhutan produces only about 1/3 of pork required for domestic consumption. In other sense, 2/3 of pork required every year is being imported. The following questions are on establishing and running 50 fatteners.

1. Describe in detail the cost of constructing housings and other associated infrastructure. (20 marks)
2. Describe in detail the production and marketing: feed, salary, sale of fattened pigs and other associated costs and show the net profit. For calculating the net profit, do not include the cost of housing and other associated infrastructure. Include only the cost starting from the receipt of piglet at subsidized rate. (20 marks)
3. Describe in detail about different pork products you would produce in future. (10 marks)

TASHI DELEK