

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2015
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALIZATION PAPER for *Veterinary Science*

Date	: 11 October 2015
Total Marks	: 100
Examination Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to examination time)

GENERAL INSTRUCTIONS:

1. Write your Roll 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 and SECTION B:
 - **SECTION A** has two parts: Part I - 30 Multiple-Choice Questions
Part II - 4 Short Answer QuestionsAll questions under SECTION A are COMPULSORY.
- **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions under your choice.
4. 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 any or correct Section, Part and Question Number will NOT be evaluated and no marks would be awarded.
5. Begin each Section and Part in a fresh page of the Answer Booklet.
6. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
7. Use of any other paper including paper for rough work is not permitted.
8. You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.
9. This paper has 10 printed pages in all, 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 the correct answer chosen in the Answer Booklet against the question number. E.g. 31 (c). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. What is the drug of choice for treatment of Haemorrhagic Septicaemia (Pasteurellosis) in cattle?
 - a. Streptopenicillin
 - b. Gentamycin
 - c. 33.3% Sulphadimidine
 - d. Erythromycin

2. The act of parturition in cats is called as
 - a. Whelping
 - b. littering
 - c. queening
 - d. kidding

3. Which of the following animals would be the most likely to serve as a source of *Trichinella* spp. infection to humans in Bhutan?
 - a. Cattle
 - b. Dogs
 - c. Pigs
 - d. Poultry

4. The term "**Measly Beef**" refers to the presence of:
 - a. metacestodes of *Taenia solium* in muscle tissue
 - b. tissue cysts of *Toxoplasma gondii* in muscle tissue
 - c. eggs of *Taenia saginata* in muscle tissue
 - d. metacestodes of *Taenia saginata* in muscle tissue

5. The technical term that describes the spread of malignant tumours across different organs and systems in the body is called:
 - a. Transmigration
 - b. Metastasis
 - c. Haemoptysis
 - d. Benignation

6. Which of the following plants is associated with Chronic Obstructive Pulmonary Disease in horses in Bhutan commonly called as *Adha Rukha* Horse Disease:
 - a. *Eupatorium Adenophorum* (*Ageratina Adenophora*)
 - b. *Lantana Camara*
 - c. *Quercus Griffithi*
 - d. *Salix Babylonica*

7. If a clinician bases his diagnosis depending on the classical clinical signs and lesions exhibited by the sick/dead animals for that disease, then such clinical signs/lesions observed are termed as:
 - a. Presumptive
 - b. Authoritative
 - c. Pathognomonic
 - d. Suspected

8. One of the classical features seen in the urine of a cow affected with Brackern fern (*Pteridium aquilinum*) poisoning is:
 - a. Haematuria
 - b. Haemoglobinuria
 - c. Oliguria
 - d. Anuria

9. For diagnosis of rabies disease in a cow using fluorescent antibody test (FAT), brain samples should be preserved in:
 - a. 10% Formalin
 - b. 50% glycerol phosphate buffered saline
 - c. Absolute alcohol
 - d. 2% Citric Acid

10. One of the following poultry diseases has never been reported in Bhutan:
 - a. Infectious Bursal Disease
 - b. Highly Pathogenic Avian Influenza H5N1
 - c. Avian Influenza H7N9
 - d. Lymphoid Leukosis (Avian Leucosis Complex)

11. The drug of choice to treat a case of acid indigestion (acidosis) in cattle would be:
 - a. Sodium acid phosphate
 - b. Sodium citrate
 - c. Sodium bicarbonate
 - d. Sodium chloride

12. Foot and Mouth Disease is an endemic viral disease in Bhutan. Which of the following species of animal act as the main reservoir/carrier for the FMD virus in Bhutan?
- Goats
 - Cattle
 - Sheep
 - Wild Gaur
13. One of the exotic swine diseases that was introduced into Bhutan following the import of pigs from abroad in the early 2000s.
- Classical Swine Fever
 - Swine Influenza
 - Porcine Reproductive and Respiratory Syndrome
 - Foot and Mouth Disease
14. GID or Coenurosis is a common parasitic disease of Yaks in Bhutan caused due to the larval stage (*Coenurocerebralis*) of which dog tapeworm:
- Dipillydium Caninum*
 - Multiceps Multiceps*
 - Taenia Taeniformis*
 - Echinococcus Granulosus*
15. Over the years, prevention and control of zoonotic diseases are increasingly being considered under the umbrella of a new concept termed as:
- One World One Health
 - One World One Ecosystem
 - Wildlife and Human Health
 - Public and Animal Health
16. As per the manufacturer (Indian Immunologicals), the inactivated tissue culture rabies vaccine used in Bhutan confers immunity up to:
- 1 year
 - 5 years
 - 3 years
 - 10 years
17. Choose the **CORRECT** statement below for Avian Influenza H5N1 and Avian Influenza H7N9 virus:
- H5N1 is Influenza type A whereas H7N9 is type B
 - H5N1 do not cause mortality in humans whereas H7N9 does

- c. H5N1 produces clinical signs in poultry whereas infection with H7N9 is largely asymptomatic in poultry
 - d. Both H5N1 and H7N9 can be diagnosed at field level using rapid tests
18. The apex body that is mandated to coordinate the veterinary clinical services in the country is:
- a. National Centre for Animal Health, Serbithang
 - b. National Dairy Development Centre, Yusepang
 - c. National Animal Hospital, Chubachu
 - d. Regional Livestock Development Centre, Tsimasham
19. Stacking of red blood cells, a phenomenon termed as *Rouleaux* is observed in the blood of which species:
- a. Bovine
 - b. Avian
 - c. Equine
 - d. Porcine
20. Which of the following best describes a "clutch" in poultry husbandry?
- a. A group of eggs laid by hen in a year
 - b. A group of eggs laid by hen in a single season
 - c. A group of eggs laid by hen during her life time
 - d. A group of eggs laid by a hen on consecutive days
21. For diagnosis of Anthrax disease in the laboratory, the encapsulated bacilli, usually in large numbers, can be visualised in a blood smear (M'Fadyean reaction) stained with the following chemical reagent:
- a. Methylene blue
 - b. Polychrome methylene blue
 - c. Gram's stain
 - d. Giemsa stain
22. The most commonly reported poisoning in **Yaks** in Bhutan is:
- a. *Lantana camara* poisoning
 - b. *Pyrrolizidine* poisoning
 - c. *Aflatoxin* poisoning
 - d. Insecticide poisoning

23. Fenbendazole is available as 25% w/w powder and is used @ 5mg per kg body weight for deworming of animals. If a cow weighing 250 Kg needs to be dewormed once, calculate the **total dose of fenbendazole in grams** to be dispensed for that animal:
- 6 grams
 - 8 grams
 - 5 grams
 - 10 grams
24. Veterinary drugs such as Buparvaquone, Quinapyramine salts and Diminazine acetate are classed as:
- Analgesics
 - Antibiotics
 - Antiprotozoals
 - Anthelmintics
25. The **field diagnostic test** for mastitis that is based on the detection of leucocytosis in milk is termed as:
- AGID
 - CMT
 - Udder test
 - Milk ring test
26. The vitamin that is closely associated with infertility in animals is:
- Vitamin B₁₂
 - Vitamin C
 - Vitamin D
 - Vitamin A
27. A farmer reports to you that his cow has been bellowing repeatedly in spite of recent artificial insemination. The cow is reportedly displaying signs of nymphomania with frequent attempts to mount on other animals. On rectal palpation, a thumb-sized cyst could be felt on the right ovary. What would be your choice of drug to treat such case:
- Prostaglandin (PGF₂α)
 - Buserelin acetate (Receptal)
 - Oxytocin
 - Estrogen
28. All of the following fish species were introduced into Bhutan except:
- Common Carp
 - Brown Trout

- c. Rainbow Trout
- d. Golden Mahaseer

29. Metabolic acidosis results from the excessive ingestion of:

- a. Starch-rich grains
- b. Fruits
- c. Root crops
- d. All of the above

30. For treatment of Bovine Enzootic Haematuria (Bracken fern poisoning) in cattle, we normally first dose the cattle with sodium acid phosphate at least 4 hours before giving hexamine as urinary antiseptic. This is done to:

- a. To kill the microbes in the urinary tract
- b. To alkalisate the urine
- c. To acidify the urine
- d. No specific action as such

PART II – Short Answer Type Questions (20 Marks)

Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.

1. You are recently posted to the Dzongkhag Veterinary Hospital Thimphu and called upon to attend to a case in a jersey cross cow belonging to a farmer at Rama village, Chang geog. The cow showed clinical signs such as diarrhoea, off-feed, weakness and bottle-jaw condition (edema at inter-mandibular region). Faecal samples were tested at NCAH laboratory and showed presence of 900 EPG *Fasciola* eggs. In this scenario,

- a) Diagnose the disease/condition exhibited by the animal? (1 mark)
- b) What will be your line of treatment including the name of drug (s) and doses (2 marks)
- c) What advice can you give the farmer to further prevent and control this disease in other animals in the same herd? (2 marks)

2. The municipal authority in Mongar town has informed you about several stray dogs being sick and requests you to investigate the matter. As the veterinarian at DVH Mongar, you immediately visit the area and find that at least 10 stray dogs of various ages are found with clinical signs such as off-feed, muco-purulent oculo-nasal discharges and bi-phasic fever. On closer

examination, three pups had pustules on the inner parts of the abdomen and one pup showed signs of fits and twitching of muscles (chorea).

- a) What is your tentative diagnosis of this disease in question (1 mark)
- b) Outline the line of treatment for such a case including the drug (s) and their dosage (2 marks)
- c) How would you ensure that the disease do not spread to other dogs (including the pets) in the town area? (1 mark)
- d) Comment on the type of vaccine and vaccination schedule in order to prevent this disease in the pet dogs of Mongar town area in the future? (1 mark)

3. As the Regional Veterinary Officer of Tsimasham, you are mandated to provide technical backstopping on both animal health and production matters to the central farms in your region. As per recent survey conducted by NCAH Serbithang, the incidence of sub-clinical as well as clinical mastitis was alarmingly high (> 25%) in the Jersey cows at the National Jersey Breeding Centre, Samtse. The farm uses machine milking twice a day.

- a) How do you differentiate clinical mastitis from sub-clinical mastitis, clinically? (1 mark)
- b) List out the possible factors and aetiological agents that could contribute to occurrence of mastitis in such organised farms in general (2 marks)
- c) List out preventive measures in general that the farm management could use to prevent such high incidences of mastitis in the farm in the future. (2 marks)

4) Mr Gopilal Acharya, a poultry farmer at Samtenling village, Sarpang calls the Satellite Veterinary Laboratory Gelephu about unusual poultry mortality in his layer farm since 4 days. The veterinarian on visiting the farm observes that several birds (aged 5 weeks) are found with clinical signs such as droopiness, ruffled feathers, whitish diarrhoea (soiled vents) and off-feed. Post mortem examination reveals lesions such as petechial haemorrhages on skeletal musculature of breast and thigh; swollen and haemorrhagic bursa of fabricious. The farmer reported that he had bought new drinkers from a local supplier about 4 days before the first bird showed clinical signs. In this context, answer the following:

- a) What would be your tentative diagnosis of this poultry disease based on above evidences? (1 mark)
- b) What samples and tests would be most appropriate to further confirm this suspected disease? (2 marks)
- c) What immediate control measures would you advise the farmer to control the disease in the farm? (1mark)
- d) Comment on the vaccination schedule of this disease in a layer farm? (1 mark)

SECTION B

Choose either Case 1 or Case 2 from this Section. Each Case carries 50 marks. Mark for each sub-question is indicated in the brackets.

Case 1:

In order to mitigate the negative trade balance and rupee crunch, the government has launched the economic stimulus plan (ESP) with around 5 billion Ngultrums to be injected into the economy. The department of livestock is mandated to facilitate setting up of livestock farms under this ESP so as to contribute towards self sufficiency in livestock products as well as alleviate poverty, especially in rural areas. Under the ESP, the government supports proposals for setting up livestock farms through Business Opportunity and Information Centre (BOIC) for which farmers can avail funds/loans at very minimum interest rates. As the newly appointed veterinary officer at Lhuentse Dzongkhag, you are approached by some farmers to advise them technically on their proposal for setting up poultry layer farms (500-1000 bird capacity). You are now required to review and analyse all technical requirements in setting up poultry layer farms so that the farmers understand in detail the technical requirements in setting up and operating a poultry farm before they decide to venture into poultry business. In this context, answer the following questions.

- i. Describe the factors to be considered in determining location of a poultry farm (10 marks)
- ii. Describe the critical factors to be considered in building a deep litter system of housing including aspects such as floor space; design of house; ventilation; insulation and lighting. (10 marks).
- iii. Describe the various inputs required including equipments for setting up a layer farm and their dimensions/specifications/spacing relevant for a layer farm (10 marks)
- iv. What are the biosecurity and sanitary measures you would recommend so as to prevent occurrence of diseases in the farm. Also comment on the vaccination schedule that you would recommend for a layer farm (10 marks)
- v. Artificial brooding is a vital component of any organised poultry farm. Describe how you will prepare the brooder house before the arrival of the day-old-chicks in the farm (5 marks).
- vi. Describe the clinical signs, post mortem lesions, and prevention measures for coccidiosis and Newcastle disease (5 marks).

OR

Case 2:

Foot and Mouth disease (FMD) is one of the most economically important diseases in Bhutan that affects the cloven-footed domestic animals and have serious socio-economic implications. As about 90% of the Bhutanese livestock farmers rear cattle for their sustenance and income, the government accords high importance to its prevention and control. Therefore, as a veterinarian working in the district veterinary hospital, you are required to spearhead the FMD prevention and control program in the district in accordance to the National FMD control plan developed by the department.

In this context answer the following questions.

- (i) Describe in detail the clinical signs, morbidity/mortality patterns, post mortem lesions and common sequelae observed in a population of cattle affected with FMD in an endemic setting. (10 marks).
- (ii) Describe in detail the types of samples that you would collect including the preservatives for laboratory confirmation of the disease. Also comment on the laboratory diagnostic tests available (with test principles) both in the field and at the National Centre for Animal Health Serbithang to confirm the disease. (10 marks)
- (iii) Comment on the types of serotypes of FMD virus prevalent globally and the common serotypes identified in Bhutan (5 marks).
- (iv) Of all cloven-hoofed species in Bhutan, which species play an important role in the transmission of FMD in Bhutan. Explain the reasons. (5 marks)
- (v) Recommend a vaccination schedule for prevention of FMD in the cattle at the National Jersey Breeding Centre, Samtse using an oil adjuvant trivalent FMD vaccine (Raksha Ovac) produced by Indian Immunologicals. (5 marks)
- (vi) As per research undertaken by NCAH Serbithang, FMD is found to be more prevalent in the sub-districts bordering India and in those districts where cattle migration is very active. What could be the possible reasons for this and what preventive measures do you recommend to mitigate this issue? (5 marks)
- (vii) Compare and contrast the control measures undertaken in the event of an outbreak of FMD in an endemic country such as Bhutan versus an FMD-free country such as the UK (5 marks).
- (viii) In spite of the prevention and control measures undertaken, FMD continues to occur in the country at the rate of 12-15 outbreaks in a year. What are the possible factors that pose major challenges in the prevention and control of FMD in Bhutan?. (5 marks)