

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

23-0009-AD

TEST BOOKLET
ANIMAL HUSBANDRY AND VETERINARY SCIENCE

Time Allowed: 3 hours

PAPER – I

Maximum Marks: 300

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. This Test Booklet consists of **12(twelve)** pages and has **75 (seventy-five)** items (questions).
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET *DOES NOT* HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Please note that it is the candidate's responsibility to fill in the Roll Number and other required details carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet and the Separate Answer Booklet. Any omission/discrepancy will render the OMR Answer Sheet and the Separate Answer Booklet liable for rejection.
4. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
5. Use **only Black Ball Point Pen** to fill the OMR Answer Sheet.
6. This Test Booklet is divided into 4 (four) parts - **Part - I, Part - II, Part - III and Part - IV.**
7. All three parts are **Compulsory.**
8. **Part-I consists of Multiple Choice-based Questions.** The answers to these questions have to be marked in the **OMR Answer Sheet** provided to you.
9. **Part-II, Part-III and Part-IV consist of Conventional Essay-type Questions.** The answers to these questions have to be written in the separate **Answer Booklet** provided to you.
10. In Part-I, each item (question) comprises of 04 (four) responses (answers). You are required to select the response which you want to mark on the OMR Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
11. After you have completed filling in all your responses on the OMR Answer Sheet and the Answer Booklet(s) and the examination has concluded, you should hand over to the Invigilator **only the OMR Answer Sheet and the Answer Booklet(s).** You are permitted to take the Test Booklet with you.
12. **Penalty for wrong answers in Multiple Choice-based Questions:**
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third** of the marks assigned to the question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to the question.
 - (iii) If a question is left blank. i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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PART - I
(Multiple Choice-based Questions)

Instructions for Questions 1 to 50:

- *Choose the correct answers for the following questions.*
- *Each question carries 3 marks.*

[3x50=150]

1. Lymph nodes are absent in _____
a. Pigs
b. Camel
c. Poultry
d. Horse
2. The first successful experiment with artificial insemination in animals was performed by -
a. Lazzaro Spallanzani
b. Elias Ivanoff
c. Sampath Kumar
d. Antoni van Leeuwenhoek
3. The anti-nutritional factor mimosine is present in _____
a. Subabul
b. Sudan grass
c. Cabbage
d. Lucerne
4. Enzootic ataxia in goat is due to deficiency of _____ mineral.
a. Cobalt
b. Zinc
c. Copper
d. Manganese
5. Breeding value (BV) is -
a. Equal to the TA
b. Twice the TA
c. 1/2 of TA
d. 1/4 of TA
6. Albumin is synthesized in the liver as _____ and secreted as albumin.
a. Proalbumin
b. Prealbumin
c. Preproalbumin
d. Postalbumin
7. Nucleated RBC is seen in - _____
a. Dog
b. Sheep
c. Goat
d. Poultry
8. Crossing over occurs in the _____ stage of meiosis.
a. Zygotene
b. Leptotene
c. Pachytene
d. Diakinesis
9. Frozen semen is stored at _____ by using liquid helium.
a. -100 °C
b. -196 °C
c. -296 °C
d. -396 °C
10. Optimum pH of silage is _____
a. 3.0-3.8
b. 3.8-4.2
c. 4.2-4.8
d. 4.8-5.4

11. According to Esminger (1957), extension is education and that its purpose is to change the _____ and practice of people with whom the work is done.
- | | |
|--------------|---------------|
| a. System | b. Behaviours |
| c. Attitudes | d. Culture |
12. The classical test cross ratio in dihybrid is -
- | | |
|------------|-----------------|
| a. 7:1:1:7 | b. 1:7:7:1 |
| c. 1:1:1:1 | d. both a and b |
13. Which of these glands is also known as the third eye?
- | | |
|------------|--------------|
| a. Pineal | b. Pituitary |
| c. Adrenal | d. Thyroid |
14. Congenital Erythropoietic Porphyria (CEP) is a very rare inherited metabolic disorder resulting from the deficient function of the enzyme _____
- | | |
|-----------------------------------|----------------------------------|
| a. 5-Aminolevulinic acid synthase | b. Succinyl Co-A |
| c. Porphobilinogen deaminase | d. Uroporphyrinogen III synthase |
15. The possible number of phenotype and genotype for “n” no. of gene are -
- | | |
|-------------------------------|-------------------------------|
| a. n^2 and n^3 respective | b. n^3 and n^2 respective |
| c. 2^n and 3^n respective | d. 3^n and 2^n respective |
16. The best time for insemination in sow is _____ hours after the onset of estrus.
- | | |
|----------|----------|
| a. 4-8 | b. 8-14 |
| c. 16-24 | d. 24-48 |
17. What % of crude protein on dry matter basis should calf starter concentrate feed contain?
- | | |
|-------|-------|
| a. 16 | b. 18 |
| c. 20 | d. 24 |
18. What is the ability of a given gene or gene combination to be expressed phenotypically to any degree called?
- | | |
|-----------------|-----------------|
| a. Penetrance | b. Expressivity |
| c. Pleiotropism | d. Prepotency |
19. GnRH is secreted from which of the following?
- | | |
|-----------------|---------------|
| a. Hypothalamus | b. Hypophysis |
| c. Ovary | d. Uterus |
20. ‘tensio’ appearing in the word ‘extension’ is derived from the Latin root meaning which of the following?
- | | |
|-------------|---------------|
| a. Reaching | b. Stretching |
| c. Transfer | d. Education |
21. The innermost cell layer of Graafian follicle is -
- | | |
|------------------|-------------------|
| a. Theca externa | b. Theca interna |
| c. Granulosa | d. Corona radiate |

22. Muscular dystrophy in lamb is due to deficiency of which of these?
 a. Copper
 b. Iron
 c. Cobalt
 d. Selenium
23. Which of the following is the correct sequence of species in increasing order of haploid chromosome number?
 a. Pig<Sheep<Goat<Buffalo<Horse
 b. Goat<Sheep<Pig<Buffalo<Horse
 c. Pig<Buffalo<Sheep<Goat<Horse
 d. Buffalo<Pig<Sheep<Horse < Goat
24. Urea supplementation is not recommended if CP content of ruminant diet is above -
 a. 18%
 b. 25%
 c. 7%
 d. 13%
25. Voltage-Dependent Anion Channel 2 (VDAC2), a freezability marker for cryopreservation of semen has been identified in which animal?
 a. Goat
 b. Cattle
 c. Sheep
 d. Pig
26. Haemoglobin occupies _____ % of the RBC volume.
 a. 11
 b. 22
 c. 33
 d. 44
27. α -Fetoprotein (AFP) is synthesized in the _____ by the parenchyma cells of the liver.
 a. Foetus
 b. Young animals
 c. Adult animals
 d. Both a & b
28. Descent of the testes from the site of origin to scrotum occurs because of an apparent shortening of which ligament?
 a. Gubernaculum
 b. Diaphragmatic
 c. Scrotal
 d. Inguinal
29. An extra concentrate mixture of 1 kg should be given for every _____ litres of milk produced by a lactating cow.
 a. 1-1.5
 b. 2-2.5
 c. 3-3.5
 d. 4-4.5
30. What is the normal range of haemoglobin in cattle?
 a. 10-16 gm/100 ml of blood
 b. 25-30 gm/100 ml of blood
 c. 4-10 gm/100 ml of blood
 d. 15-20 gm/100 ml of blood
31. Principle of extension education is a statement of policy to guide _____ and _____ in a proper manner.
 a. Decisions, actions
 b. Decisions, implementation
 c. Actions, development
 d. Communication, education
32. Small spherical, crescentic nuclear remnant in young erythrocyte is called -
 a. E.R. bodies
 b. Heinz bodies
 c. Howell Jolly bodies
 d. None of the above

33. Gas_urin hormones are secreted by which of these cells?
a. M-cells
b. T-cells
c. G-cells
d. ECL cells
34. The condition of a species having only one sex chromosome (X0) is called -
a. Klinefelter's Syndrome
b. Edward's Syndrome
c. Turner syndrome
d. Down Syndrome
35. Maturation of spermatozoa takes place in _____
a. Spermatic cord
b. Epididymis
c. Vas deferens
d. Vesicular gland
36. The floor space requirement of a cow under covered area is _____ sq. metre.
a. 1.5
b. 2.5
c. 3.5
d. 4.5
37. What is the part of the peritoneum that covers the fallopian tube with abdominal cavity termed as?
a. Mesometrium
b. Mesosalphinx
c. Mesoovarium
d. Broad ligament
38. For the early embryo to become an established pregnancy, which of these must be prevented?
a. Luteolysis
b. Implantation
c. Gastrulation
d. Cleavage
39. Urea treatment of straw increases
a. CP and DCP
b. TDN
c. Dry matter digestibility and feed intake
d. All of the above
40. What is the desirable concentration of actively motile spermatozoa per dose of frozen bull semen?
a. 1-5 million
b. 5-9 million
c. 10-15 million
d. 20-30 million
41. The gestation period of pig is _____ days.
a. 99
b. 114
c. 129
d. 150
42. Corpus luteum of pregnancy is also known as:
a. Corpus luteum spurium
b. Corpus luteum verum
c. Corpus haemorrhagicum
d. Corpus albicans
43. All the blood group ABO system may be present in children when -
a. Both the parents belongs to blood group A
b. Both the parents belongs to blood group AB
c. One parent belongs to blood group A other to B
d. One parent belongs to blood group O other to AB

44. Which deficiency causes perosis in poultry?
 a. Iron
 b. Selenium
 c. Manganese
 d. Copper
45. Which cells of the pancreas secrete insulin?
 a. Chief
 b. Principal
 c. Alpha
 d. Beta
46. The fraction of the semen which is made up by spermatozoa is known as -
 a. Spermatocrit
 b. Spermatozoon
 c. Spermatia
 d. Acrosomal cap
47. A gene having two allele in which one allele has complete dominance over the other, then the proportion of the gene frequency is -
 a. $a(p-q)+2dpq$
 b. $a(p-2q^2)$
 c. $a(1-2q^2)$
 d. $a(1-2q)$
48. Follicle stimulating hormone is secreted by which of these glands?
 a. Pineal gland
 b. Pituitary gland
 c. Adrenal gland
 d. Thyroid gland
49. A list of genetic predictions, accuracy values, and other useful information about sires in a breed is called -
 a. Sire value
 b. Sire model
 c. Sire summary
 d. Sire genes
50. Sigma factor of transcription is present and functional till the completion of which of the following stages?
 a. Initiation
 b. Elongation
 c. Termination
 d. Post-transcriptional modifications

PART - II
(Short Answer-type Questions)

Instructions for Questions 51 to 63:

- *Write the answers in short for any 10 (TEN) out of the thirteen questions.*
- *Each question carries 5 marks.* **[5x10=50]**

51. Discuss the classification of anti-nutritional factors based on their chemical properties and the nutrients that are affected directly or indirectly.
52. Describe scientific feeding and management of a pregnant sow.
53. Explain the mechanism of blood coagulation.
54. Write a note on adaptation mechanism of animal to heat stress.
55. Analyse the factors that influence the growth and development of meat animals.

56. Discuss the inter-relationship minerals and vitamins.
57. Enumerate the constraints faced by extension personnel in transfer of technologies to the farmers.
58. Discuss the classification of anoestrus in cattle and buffalo.
59. Write a note on the molecular basis of Mendelian inheritance patterns.
60. Enumerate the applications of Hardy Weinberg Equilibrium.
61. Explain the procedure of silage making.
62. Write about the selection of combining abilities in animal breeding.
63. Discuss the role of proteins in animal nutrition.

PART - III
(Long Answer-type Questions)

Instructions for Questions 64 to 71:

- *Answer any 5 (FIVE) out of the eight questions.*
- *Each question carries 10 marks.*

[10x5=50]

64. Explain the process of spermatogenesis and oogenesis.
65. What are the strategies for year-round supply of green fodders for dairy farm?
66. Discuss the different types of extension methods based on their use, form and function.
67. Write in detail about the care and management of animals during natural disaster.
68. Explain the role of hormones in persistency of lactation in dairy animal.
69. Formulate a ration for a cow weighing 400 kg body weight, yielding 10 litres of milk with 4.5% fat using the following feed stuffs
 - i. Wheat straw (90% DM, 0% DCP, 44%TDN)
 - ii. Hybrid Napier (25% DM, 1.5% DCP, 15%TDN)
 - iii. Groundnut cake (90% DM, 42% DCP, 71%TDN)
 - iv. Deoiled rice bran (90% DM, 6% DCP, 60%TDN)
70. With the help of a neat diagram, explain the physiology of reproductive system of cow.
71. Describe the different types of chromosomal aberrations with suitable examples.

PART - IV
(Essay-type Questions)

Instructions for Questions 72 to 75:

- *Answer any 2 (TWO) out of the four questions.*
- *Each question carries 25 marks.*

[25x2= 50]

72. With a neat diagram, explain the morphology of spermatozoa. Describe about the semen collection in bull by using artificial vagina. Explain the procedure for artificial insemination in cow by recto-vaginal technique and factors influencing fertility during AI.
73. What are feed additives? Describe the different feed additives used in animal feed and its roles in animal health and production.
74. Explain the impacts of stress on health and performance of animals. What are the different types of stress responses in an animal in response to stressors? What are the strategies for alleviating stress in farm animals?
75. Describe the application of biotechnology in genetic improvement of livestock. Discuss in detail about the different methods of estimation of heritability along with its advantages and disadvantages.
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