

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

Test Booklet No. :

Series

00433

**TEST BOOKLET**  
**ANIMAL HUSBANDRY AND**  
**VETERINARY SCIENCE**



Time Allowed : 2 Hours

Full Marks : 200

**Read the following instructions carefully before you begin to answer the questions :**

1. The name of the Subject, Roll Number as mentioned in the Admission Certificate, Test Booklet No. and Series are to be written legibly and correctly in the space provided on the Answer-Sheet with Black/Blue ballpoint pen.
2. **Answer-Sheet without marking Series as mentioned above in the space provided for in the Answer-Sheet shall not be evaluated.**
3. All questions carry equal marks.

**The Answer-Sheet should be submitted to the Invigilator.**

*Directions for giving the answers :* Directions for answering questions have already been issued to the respective candidates in the 'Instructions for marking in the OMR Answer-Sheet' along with the Admit Card and Specimen Copy of the OMR Answer-Sheet.

*Example :*

Suppose the following question is asked :

The capital of Bangladesh is

- (A) Chennai
- (B) London
- (C) Dhaka
- (D) Dhubri

You will have four alternatives in the Answer-Sheet for your response corresponding to each question of the Test Booklet as below :



In the above illustration, if your chosen response is alternative (C), i.e., Dhaka, then the same should be marked on the Answer-Sheet by blackening the relevant circle with a Black/Blue ballpoint pen only as below :



**The example shown above is the only correct method of answering.**

4. Use of eraser, blade, chemical whitener fluid to rectify any response is prohibited.
5. Please ensure that the Test Booklet has the required number of pages (16) and 100 questions immediately after opening the Booklet. In case of any discrepancy, please report the same to the Invigilator.
6. No candidate shall be admitted to the Examination Hall/Room 20 minutes after the commencement of the examination.
7. No candidate shall leave the Examination Hall/Room without prior permission of the Supervisor/Invigilator. No candidate shall be permitted to hand over his/her Answer-Sheet and leave the Examination Hall/Room before expiry of the full time allotted for each paper.
8. No Mobile Phone, Electronic Communication Device, etc., are allowed to be carried inside the Examination Hall/Room by the candidates. Any Mobile Phone, Electronic Communication Device, etc., found in possession of the candidate inside the Examination Hall/Room, even if on off mode, shall be liable for confiscation.
9. No candidate shall have in his/her possession inside the Examination Hall/Room any book, notebook or loose paper, except his/her Admission Certificate and other connected papers permitted by the Commission.
10. Complete silence must be observed in the Examination Hall/Room. No candidate shall copy from the paper of any other candidate, or permit his/her own paper to be copied, or give, or attempt to give, or obtain, or attempt to obtain irregular assistance of any kind.
11. This Test Booklet can be carried with you after answering the questions in the prescribed Answer-Sheet.
12. Noncompliance with any of the above instructions will render a candidate liable to penalty as may be deemed fit.
13. No rough work is to be done on the OMR Answer-Sheet. You can do the rough work on the space provided in the Test Booklet.

**N.B. : There will be negative marking @ 0.25 per 1 (one) mark against each wrong answer.**

1. Which of the following bones forms the foramen magnum in the cranium?
  - (A) Temporal
  - (B) Occipital
  - (C) Zygomatic
  - (D) Pterygoid
  
2. During embryogenesis, the Rathke's pouch gives rise to which of the following structures?
  - (A) Pituitary
  - (B) Tongue
  - (C) Tooth
  - (D) Pharynx
  
3. Laminae are characteristics of the interior surface of which of the following chambers of complex stomach?
  - (A) Rumen
  - (B) Reticulum
  - (C) Omasum
  - (D) Abomasum
  
4. Which of the following is unpaired skeletal muscle present in the animal body?
  - (A) Diaphragm
  - (B) Biceps brachii
  - (C) Popliteus
  - (D) Quadriceps femoris
  
5. In which part of the cloaca in birds, the bursa of fabricius opens?
  - (A) Urodeum
  - (B) Proctodeum
  - (C) Coprodeum
  - (D) Vent
  
6. Which of the following is the space between right and left pleural cavities?
  - (A) Omentum
  - (B) Mediastinum
  - (C) Serous sac
  - (D) Pleural sac
  
7. Which one of the following veins is called as milk vein in cow?
  - (A) External jugular vein
  - (B) Subcutaneous abdominal vein
  - (C) Umbilical vein
  - (D) None of the above
  
8. The foramen ovale in the fetal heart is located in the
  - (A) right atrium
  - (B) left atrium
  - (C) interventricular septum
  - (D) interatrial septum

9. Which of the following is a ventricle of hindbrain?
- (A) Third ventricle
  - (B) Fourth ventricle
  - (C) Lateral ventricle
  - (D) None of the above
10. Visceral skeleton present in pigs is
- (A) os penis
  - (B) os phrenic
  - (C) os cordis
  - (D) os rostri
11. Which of the following species presents single occipital condyle in skull?
- (A) Cattle
  - (B) Horse
  - (C) Dog
  - (D) Poultry
12. Which of the following is **not** a feature of humerus bone of dog?
- (A) Deltoid tuberosity
  - (B) Olecranon fossa
  - (C) Musculospiral groove
  - (D) Trochlear notch
13. Which of the following is a complex carbohydrate?
- (A) Glucose
  - (B) Lactose
  - (C) Cellulose
  - (D) Galactose
14. Which of the following nitrogenous bases is **not** present in DNA?
- (A) Adenine
  - (B) Guanine
  - (C) Cytosine
  - (D) Uracil
15. Which of the following fatty acids is the precursor in the biosynthesis of prostaglandins?
- (A) Arachidonic acid
  - (B) Palmitic acid
  - (C) Oleic acid
  - (D) Stearic acid
16. Net gain of ATPs from one molecule of glucose during glycolysis is
- (A) 2
  - (B) 4
  - (C) 18
  - (D) 36



17. Which of the following is a sulfur-containing amino acid?
- (A) Serine
  - (B) Lysine
  - (C) Methionine
  - (D) Histidine
18. The non-translated DNA segments in genes are called
- (A) exons
  - (B) introns
  - (C) transposons
  - (D) None of the above
19. The location of urea cycle in the body is
- (A) kidney
  - (B) liver
  - (C) lungs
  - (D) intestine
20. Which of the following enzymes is the first enzyme to appear in the blood after myocardial infarction and is of diagnostic value?
- (A) Pyruvate kinase
  - (B) Aldolase
  - (C) Creatine kinase
  - (D) Glutamate oxaloacetate transaminase
21. Land-grant colleges came into existence as a part of the
- (A) Smith-Lever Act
  - (B) Morrill Acts
  - (C) Hatch Act
  - (D) Extension Act
22. The degree to which individual involved in communication differs in certain characteristics is
- (A) homophily
  - (B) credibility
  - (C) empathy
  - (D) heterophily
23. The decision to make full use of an innovation is known as
- (A) interest
  - (B) desire
  - (C) adoption
  - (D) satisfaction
24. The SMCR model of communication is given by
- (A) Berlo
  - (B) Lasswell
  - (C) Roger
  - (D) Leagan
25. The process by which the effectiveness of extension is assessed is
- (A) plan of work
  - (B) evaluation
  - (C) programme execution
  - (D) written programme statement

26. The principles of cooperation imply that a cooperative society must maintain non-alignment to any political body and observe neutrality. This is a fundamental aspect under the principle of
- economic independence
  - political neutrality
  - cultural neutrality
  - cultural dependence
27. The mathematical model of communication was given by
- the Osgood-Schramm model
  - the Shannon and Weaver model
  - the Lasswell's model of communication
  - the Westley and MacLean model
28. Krishi Vigyan Kendra concept was given by the
- Abhijit Sen Committee
  - Shanta Kumar Committee
  - Mohan Singh Mehta Committee
  - National Advisory Committee on Agriculture
29. A research study aims to explore the outcomes of various factors influencing the organization of effective mid-day meal interventions. Which research method would be the most appropriate?
- Experimental method
  - Historical method
  - Descriptive survey method
  - Ex-post facto method
30. The fractions of proximate analysis of feed include
- dry matter, crude protein, ash, ether extract and crude fibre
  - moisture, ash, crude protein, ether extract, crude fibre and nitrogen-free extracts
  - dry matter, crude protein, crude fibre, ash and moisture
  - None of the above
31. Which one among the following is **not** a desirable property of good quality silage?
- pH range of 3.5-4.2
  - Higher Flieg index
  - >75% lactic acid in silage
  - >40% butyric acid in silage
32. On a roughage-based diet, the concentrations of volatile fatty acids produced in the cow's rumen follow in which of the following orders?
- Propionic acid > Acetic acid > Butyric acid
  - Acetic acid > Butyric acid > Propionic acid
  - Propionic acid > Butyric acid > Acetic acid
  - Acetic acid > Propionic acid > Butyric acid

33. How much concentrate feed is typically needed for producing 1 kg of milk in cows above their maintenance requirement?
- (A) 1 kg  
(B) 0.5 kg  
(C) 1.5 kg  
(D) 2 kg
34. Methylene blue is most commonly used in the treatment of \_\_\_\_\_ poisoning in animals.
- (A) oxalic acid  
(B) nitrate  
(C) mimosine  
(D) gossypol
35. \_\_\_\_\_ is the essential amino acid required for wool production in sheep.
- (A) Threonine  
(B) Methionine  
(C) Tryptophan  
(D) Sulfur
36. 'African tall' is a variety of \_\_\_\_\_ fodder.
- (A) maize  
(B) sorghum  
(C) hybrid Napier  
(D) Napier
37. According to BIS (2007), what is the maximum permissible level of aflatoxin B1 in poultry feed?
- (A) 10 ppb  
(B) 10 ppm  
(C) 20 ppb  
(D) 20 ppm
38. The good characteristics of probiotics include which of the following?
- (A) It should be Gram-positive  
(B) It should be acid- and bile-resistant  
(C) It should be non-pathogenic  
(D) All of the above
39. The minimum recommended level of calcium in layer feed is
- (A) 1%  
(B) 2%  
(C) 3%  
(D) 0.4%
40. Assume that you are the implementing officer of a government scheme to distribute 10-layer hens and cage each to selected rural beneficiaries. The minimum cage floor space allowance for 10-layer hens is calculated as
- (A)  $450 \text{ cm}^2 \times 10$   
(B)  $900 \text{ cm}^2 \times 10$   
(C)  $1800 \text{ cm}^2 \times 10$   
(D)  $3600 \text{ cm}^2 \times 10$

41. A farmer purchased ducks from a supplier who identified them as 'emperor ducks'. This meat-type duck has creamy white plumage, orange bills and legs, yellow flesh and a long broad body. Identify the breed of duck.

- (A) Khaki Campbell
- (B) Indian Runner
- (C) Pekin
- (D) Muscovy

42. Assume that you are the farm manager of a semen station. A breeding bull was found positive for brucellosis. Some points of action are provided below :

1. Proper therapeutic management before the next semen collection
2. Castrate immediately
3. Cull/remove the bull within 48 hours
4. Discard the frozen semen doses since the last negative test

Which of the above actions suit(s) the best for semen station?

- (A) Point 1 only
- (B) Point 2 only
- (C) Points 1 and 4
- (D) Points 2, 3 and 4

43. Which of the following is **not** an National Bureau of Animal Genetic Resources (NBAGR)-registered breed belonging to Assam?

- (A) Miri
- (B) Siri
- (C) Daothigir
- (D) Doom

44. Assume that you are the certifying veterinary authority to issue a transit certificate under the Rule 96 of Transportation of Animal Rules, 2001. Which of the following conditions **does not** comply with the requirements for on-road cattle transportation by vehicle?

- (A) All animals are apparently healthy and free from infectious diseases
- (B) Animals that have given birth within the preceding 24 hours or are likely to deliver during the transit are kept in the vehicle for transportation
- (C) None of the animals is injured, blind, emaciated, lame or fatigued
- (D) A clearly visible 'Animal Carrier' board is installed on the front and back sides of the vehicle



45. Swine farmers reported heavy neonatal mortality due to the crushing by large white Yorkshire dams. They require your advice regarding the installation of guard rails along the walls of the farrowing pen. Suggest the recommended height of guard rails.

- (A) 10 cm above floor level
- (B) 25 cm above floor level
- (C) 50 cm above floor level
- (D) 100 cm above floor level

46. A goat farmer recently had triplets born on his farm. However, the mother goat developed mastitis, significantly reducing her milk production during the first week after giving birth. The farmer approached you for a suitable substitute for milk. Which of the following feeding management strategies would you recommend to ensure the optimal growth of the kids?

- (A) Milk replacer
- (B) Creep feeding
- (C) Steaming up
- (D) Flushing

47. The dental formula (permanent teeth) of a livestock species is given below :

$$3/3, 1/1, 4/4, 3/3$$

Identify the livestock species.

- (A) *Bos taurus*
- (B) *Capra hircus*
- (C) *Ovis aries*
- (D) *Sus scrofa*

48. If all the individuals are regarded homozygous for one allele, then the particular locus is said to be

- (A) polymorphic
- (B) dimorphic
- (C) monomorphic
- (D) None of the above

49. The transfer of small segment of DNA from donor to recipient via bacteriophage is known as

- (A) transfection
- (B) transformation
- (C) transduction
- (D) conjugation

50. To check whether a population is in Hardy-Weinberg equilibrium, which of the following statistical tests is used?

- (A) Student *t*-test
- (B) *F*-test
- (C) Chi-square test
- (D) ANOVA



51. Statement A :

The degree of correspondence between phenotypic value and breeding value is measured by heritability.

Statement B :

The ratio of phenotypic variance to additive genetic variance is heritability.

Which of the following is correct?

- (A) Statement A is correct, but Statement B is incorrect
- (B) Both Statement A and Statement B are correct
- (C) Statement B is correct, but Statement A is incorrect
- (D) Both Statement A and Statement B are incorrect

52. Correlated traits can be selected by

- (A) progeny testing
- (B) sib selection
- (C) indirect selection
- (D) BLUP

53. Holding of carcasses or meat at refrigeration temperatures for extended periods following initial chilling is called

- (A) aging
- (B) conditioning
- (C) Both (A) and (B)
- (D) None of the above

54. If meat is frozen prior to rigor onset and subsequently thawed, it will shorten dramatically and be extremely tough. This phenomenon is known as

- (A) thaw shortening
- (B) rigor mortis
- (C) blooming
- (D) double muscling

55. Which of the following conditions restricts effective blood removal during exsanguination of animals?

- (A) Subjecting to preslaughter stress
- (B) Extended time between stunning and exsanguination
- (C) Improper suspension of carcass during exsanguination
- (D) All of the above

56. \_\_\_\_\_ refers to the degree Celsius (or Fahrenheit) by which the temperature must be raised in order to obtain a 10-fold (one  $\log_{10}$ ) increase in the death rate of bacterial cells in meat.

- (A) D-value
- (B) Z-value
- (C) F-value
- (D) 12-D concept

57. 'Giblets' consists of
- (A) lungs, oesophagus, trachea and intestine
  - (B) pineal gland, lungs, adrenal gland and intestine
  - (C) neck, liver, heart and gizzard
  - (D) bile duct, trachea, intestine and gallbladder
58. Gonadotropin-releasing hormone secretion can be inhibited by the following hormones, **except**
- (A) testosterone
  - (B) progesterone
  - (C) estrogen
  - (D) adrenocorticotrophic hormone
59. The 'P wave' of ECG represents which of the following electrical activities of the heart?
- (A) Atrial depolarization
  - (B) Atrial repolarization
  - (C) Ventricular depolarization
  - (D) Ventricular repolarization
60. The circle of Willis supplies blood to which of the following organs?
- (A) Heart
  - (B) Liver
  - (C) Lungs
  - (D) Brain
61. Which of the following hormones is primarily involved in development of lobulo-alveolar system in mammary gland?
- (A) Estrogen
  - (B) Progesterone
  - (C) Thyroxine
  - (D) Cortisol
62. Which one of the following hormones promotes the tubular reabsorption of sodium ions in kidney?
- (A) Antidiuretic hormone
  - (B) Secretin
  - (C) Aldosterone
  - (D) Oxytocin
63. In which of the following conditions a cow sits on sternum and the head rests on the flank?
- (A) Bilateral hip dysplasia
  - (B) Milk fever
  - (C) Traumatic pericarditis
  - (D) Peritonitis
64. All of the following are constituents of Ringer's solution, **except**
- (A) water
  - (B) calcium chloride
  - (C) sodium lactate
  - (D) potassium chloride
65. Van den Bergh test is used for the diagnosis of dysfunction of
- (A) kidney
  - (B) liver
  - (C) heart
  - (D) spleen

66. Pathognomonic post-mortem lesion 'button ulcer' is found in
- bovine viral diarrhoea
  - foot-and-mouth disease in cattle
  - porcine circovirus infection
  - classical swine fever
67. The characteristic temperature reaction known as 'diphasic reaction' is observed in
- rabies in dog
  - canine distemper
  - canine parvoviral infection
  - infectious canine hepatitis
68. The fundamental obstetrical manoeuvre to all intrauterine measures required to rectify defects of presentation, position and posture is
- extension
  - traction
  - retropulsion
  - rotation
69. The sigmoid flexure is pre-scrotal in
- bull and ram
  - ram and boar
  - boar and camel
  - camel and buck
70. The most common tumour in old dogs is
- Sertoli cell tumour
  - Leydig cell tumour
  - seminoma
  - All of the above
71. Pyometra is defined as a progressive accumulation of purulent material within the uterus in the presence of
- small follicles
  - large follicles
  - active corpus luteum
  - inactive corpus luteum
72. The protective value of the egg yolk is largely due to
- lecithin and lipoprotein
  - arachidonic acid and lipoprotein
  - lecithin and arachidonic acid
  - None of the above
73. Diffuse, epitheliochorial-type placenta is found in
- cattle, mare and sheep
  - mare, goat and sow
  - sow, camel and mare
  - camel, cattle and sheep
74. Pre-implantation stage of immunological pregnancy diagnosis in cattle, sheep and pigs can be done using \_\_\_\_\_ during pregnancy test.
- estrone sulfate
  - early pregnancy factor
  - equine chorionic gonadotropin
  - progesterone

75. Viborg's triangle is the anatomical site for access to
- (A) cornual nerve block
  - (B) guttural pouches
  - (C) rumenotomy
  - (D) mandibular nerve block
76. Which of the following structures passes through foramen orbito-rotundum?
- (A) Maxillary nerve
  - (B) Optic nerve
  - (C) Hypoglossal nerve
  - (D) Internal carotid artery
77. The larvae of trichostrongyloids and strongyloids nematodes can survive severe dessication by entering into a state of
- (A) metabiosis
  - (B) hypobiosis
  - (C) anhydrobiosis
  - (D) dehydrobiosis
78. The most common causative agent of 'winter coccidiosis' in calves is
- (A) *Eimeria zuernii*
  - (B) *Eimeria alabamensis*
  - (C) *Eimeria ellipsoidalis*
  - (D) *Eimeria bovis*
79. Belfast, Brisbane and Manley strains are different strains associated with which of the following parasitic protozoa?
- (A) *Trypanosoma evansi*
  - (B) *Tritrichomonas foetus*
  - (C) *Sarcocystis bovi-hominis*
  - (D) *Neospora caninum*
80. Ringworm lesion in abomasum of calves is due to infection with
- (A) *Trichostrongylus axei*
  - (B) *Ostertagia ostertagi*
  - (C) *Haemonchus placei*
  - (D) *Nematodirus battus*
81. 'Wet feather' condition among ducks is caused by
- (A) *Menopon phaeostomum*
  - (B) *Trinoton anserinum*
  - (C) *Holomenopon leucoxanthum*
  - (D) *Heterodoxus longitarsus*
82. Transformed muscle cells parasitized by *Trichinella spiralis* are known as
- (A) mother cells
  - (B) feeder cells
  - (C) parent cells
  - (D) nurse cells



83. Adenoma is

- (A) benign tumour of squamous epithelium
- (B) benign tumour of glandular epithelium
- (C) malignant tumour of squamous epithelium
- (D) malignant tumour of glandular epithelium

84. The macrophage in the central nervous system is

- (A) microglia
- (B) Schwann cells
- (C) oligodendroglia
- (D) astrocytes

85. Icterus, anaemia, haemoglobinuria, abortion, petechiae on mucous membrane and demonstration of organism by Levaditi's strain are diagnostic points for

- (A) anaplasmosis
- (B) IBRT
- (C) listeriosis
- (D) leptospirosis

86. Tuberculosis is the best example for

- (A) coagulative necrosis
- (B) caseation necrosis
- (C) liquefactive necrosis
- (D) fat necrosis

87. Heart failure cells are found in

- (A) heart
- (B) lungs
- (C) spleen
- (D) pulmonary artery

88. Drugs mentioned below are all adrenergic drugs, **except**

- (A) epinephrine
- (B) dopamine
- (C) carbachol
- (D) norepinephrine

89. The reduction in response to the drug after repeated administration is called

- (A) drug resistance
- (B) tachyphylaxis
- (C) desensitization
- (D) tolerance

90. Abnormal immunological reaction initiated by previous exposure to the drug against the drug-generated antigen is known as

- (A) down-regulation
- (B) anaphylaxis
- (C) cumulative action
- (D) cross-tolerance

91. Basophilic stippling of RBC is observed in

- (A) nitrate poisoning
- (B) mercury poisoning
- (C) lead poisoning
- (D) cyanide poisoning

92. Alkali disease is caused by toxicity due to

- (A) arsenic
- (B) zinc
- (C) copper
- (D) selenium

93. Point-of-care test used for rapid diagnosis of African swine fever is

- (A) enzyme-linked immunosorbent assay
- (B) immunochromatographic lateral flow assay
- (C) real-time polymerase chain reaction
- (D) haemagglutination inhibition assay

94. Lumpy skin disease in cattle is caused by lumpy skin disease virus (LSDV) of which family?

- (A) Coronaviridae
- (B) Asfarviridae
- (C) Poxviridae
- (D) Paramyxoviridae

95. Which of the following are true about Kyasanur Forest Disease (KFD)?

- 1. KFD is a viral disease.
- 2. KFD has also been reported from Northern India.
- 3. *Haemaphysalis spinigera* (ticks) are responsible for transmission of this virus to humans.

Choose the correct option from the answers given below.

- (A) Only 1 and 2 are correct
- (B) Only 2 and 3 are correct
- (C) Only 1 and 3 are correct
- (D) All of the above are correct

96. Which of the following are true for pasteurization of milk?

- 1. The term 'pasteurization' means the process of heating every particle of milk to at least 63 °C for 30 minutes.
- 2. The term 'pasteurization' means the process of heating every particle of milk to at least 72 °C for 15 seconds.
- 3. Any other temperature-time combination, sufficient to give a microbicidal effect equivalent to the above defined temperature-time combination.

Choose the correct option from the answers given below.

- (A) Only 1 and 2 are correct
- (B) Only 2 and 3 are correct
- (C) Only 1 and 3 are correct
- (D) All of the above are correct

97. In which type of sampling method, the choice of the sample is left to the investigator?
- (A) Probability sampling
  - (B) Simple random sampling
  - (C) Stratified random sampling
  - (D) Non-probability sampling
98. An N95 respirator is a respiratory device designed to achieve a very close facial fit and very efficient filtration of airborne particles. What does 'N' denote in N95 masks?
- (A) The 'N' stands for 'normal' and indicates that the mask is suitable for everyday use.
  - (B) The 'N' stands for 'nasal' and indicates that the mask is specifically designed for nasal protection.
  - (C) The 'N' stands for 'neutral' and implies that the mask offers balanced protection against all types of particulates.
  - (D) The 'N' stands for 'non-oil' or 'not resistant to oil' and indicates that the mask is not resistant to oil-based particulates.
99. Causality (causation) deals with the relationship between cause and effect and is addressed in both science and philosophy. Alfred Evans (1976) produced a set of 10 rules that are consistent with the modern concepts of disease causality. Below are four such rules out of the 10 rules. Identify the **incorrect** one.
- (A) The proportion of individuals with the disease should be significantly higher in those exposed to the supposed cause than in those who are not.
  - (B) Exposure to the supposed cause should be present more commonly in those with than those without the disease, when all other risk factors are held constant.
  - (C) The number of new cases of disease should be significantly higher in those exposed to the supposed cause than in those not so exposed, as shown in prospective studies.
  - (D) Temporally, the exposure to the supposed cause should follow the disease with a distribution of incubation periods on a bell-shaped curve.
100. A zoonosis is any disease or infection that is naturally transmissible from vertebrate animals to humans. Infection with which of the following viruses is considered non-zoonotic?
- (A) Monkeypox
  - (B) Buffalopox
  - (C) Chickenpox
  - (D) Orf virus

**SPACE FOR ROUGH WORK**

**SEAL**

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