Subject: Animal Nutrition

1. Gross energy of feed and fodder can be measured using
   a) Spectrophotometer
   b) Rusitec
   c) Bomb calorimeter
   d) Hot air oven

2. ME =_____x DE
   a) 0.92
   b) 0.94
   c) 0.84
   d) 0.82

3. The physiological fuel value of CHO, protein and fat is
   a) 4,5 and 9 kcal/g respectively
   b) 4,4 and 9 kcal/g respectively
   c) 4,9 and 4 kcal/g respectively
   d) 9,4 and 4 kcal/g respectively

4. Direct calorimetry is measuring the heat lost from body in the form of
   a) Radiation and conduction
   b) Conduction and convection
   c) Convection and evaporation
   d) Radiation, conduction, convection and evaporation

5. Respiratory quotient for carbohydrates is
   a) 0.50
   b) 0.75
   c) 1.00
   d) 1.25

6. The major polysaccharide present in plant cell wall is
   a) Cellulose
   b) Hemicellulose
   c) Pectins
   d) Lignin

7. The neutral polysaccharide present in plant cell wall is
   a) Cellulose
   b) Pectins
   c) Hemicellulose
   d) Lignin

8. Protein evaluation method based on weight gains of rats is
   a) Protein efficiency ratio
   b) Gross protein value
   c) Protein replacement value
   d) Net protein utilisation.

9. The proportion of the absorbed nitrogen that is retained by the body
   a) Biological value
   b) Gross protein value
   c) Protein efficiency ratio
   d) Net protein retention

10. Activation of trypsinogen to trypsin is by
   a) Enterokinase
   b) Elastase
   c) Carboxypeptidase
   d) Chymotrypsin

11. In monogastric animals pancreatic amylase acts on
   a) β 1-6 linkages
   b) β 1-4 linkages
   c) α 1-6 linkages
   d) α 1-4 linkages

12. Method of protein evaluation in which amino acid pattern of lean muscle protein serves as the reference pattern
   a) Chemical Score
   b) Ideal Protein
   c) Metabolisable Protein
   d) Essential amino acid index

13. Method of protein evaluation based on Gross amino acid composition
   a) Gross protein value
   b) Chemical score
   c) Biological value
   d) Protein replacement value

14. Feeding of high grain diets to ruminants cause
   a) Increase protozoal population
   b) Increase bacterial population
   c) Increase fungal population
   d) Increase both bacterial and protaozoal population

15. Inulin is a polymer of
   a) Glucose and fructose
   b) Glucose
   c) Fructose
   d) Glucose, fructose and galactose

16. Acid detergent solubles are
    a) Silica
    b) Cellulose
    c) Lignin
    d) Hemicelluloses

17. Determination of amino acids , fatty acids and certain vitamins by
    a) Gas liquid chromatography
    b) Atomic absorption spectroscopy
    c) Polarimetry
    d) Flame photometry

18. The vitamin which can be formed from Tryptophan
    a) Pantothenic acid
    b) Folic acid
    c) Nicotinic acid
    d) Pyridoxin

19. The enzyme, a amylase is absent in the saliva of
    a) Pig
    b) Horse
    c) Rat
    d) Poultry

20. In rumen, predominant pathway for propionate production in concentrate based diet is
    a) Succinate pathway
    b) Acetoacetyl CoA pathway
    c) Lactate acrylate pathway
    d) HMP pathway

21. The anti-sterility vitamin is
    a) Vitamin A
    b) Vitamin D
    c) Vitamin B12
    d) Vitamin E

22. Vitamin C is dietary essential for
    a) Cattle
    b) Guinea pig
    c) Goats
    d) Horse

23. Most critical amino acid for milk production is
    a) Methonine
    b) Lysine
    c) Threonine
    d) Arginine

24. Volatile fatty acid, whose rumen concentration is least affected by type of diet is
    a) Acetic acid
    b) Propionic acid
    c) Valeric acid
    d) Butyric acid

25. Vitamin which is essential for methanogenesis is
    a) Thiamine
    b) Folic acid
    c) Pantothenic acid
    d) Niacin

26. Pyruvate will accumulate by the dietary deficiency of vitamin
    a) Riboflavin
    b) Thiamine
    c) Pyridoxine
    d) Vitamin C

27. Most limiting amino acid in cereal feeds and most severely affected by heating
    a) Methionine
    b) Leucine
    c) Lysine
    d) Tryptophan

28. A constituent of crude fibre not digested by microbial activity in the rumen
    a) Pectin
    b) Cellulose
    c) Lignin
    d) Hemicellulose

29. The most active form of vitamin D_3
    a) dehydro cholesterol
    b) 1-25 dihydroxy cholecalciferol
    c) 25-Hydroxy-cholecalciferol.
    d) Cholecalciferol

30. Which of the following animal species can tolerate high level of tannin in feed
    a) Cattle
    b) Sheep
    c) Goat
    d) Horse

31. In the ration of dairy cattle, green forages help to meet the requirement of
    a) Vitamin A
    b) Calcium
    c) Protein
    d) Vitamin B12

32. Level of xanthurenic acid excretion has been used as an indicator of
    a) Niacin
    b) Pyridoxine
    c) Riboflavin
    d) Pantothenic acid

33. Microbe in rumen capable of breaking lignocellulosic bond?
    a) Bacteria
    b) Protozoa
    c) Fungi
    d) Bacteria and protozoa

34. The olive green discoloration in egg yolk is caused due to
    a) Tannin
    b) Saponin
    c) Gossypol
    d) Aflatoxin

35. The gross energy value of methane is (kcal/g)
    a) 2.74
    b) 5.65
    c) 13.34
    d) 2.53

36. Anti-nutritional factor present in cassava leaves is
    a) Tannin
    b) HCN
    c) Saponin
    d) Mowrine

37. Nitrogen to sulphur ratio that has to be maintained in ruminants for supplementing urea is
    a) 6:1
    b) 10:1
    c) 1:10
    d) 1:6

38. Major toxic factor present in castor meal is
    a) Ricin
    b) Tannins
    c) HCN
    d) Saponins

39. The chemical that is used for protection of protein from rumen degradation is
    a) NaOH
    b) HCI
    c) Formaldehyde
    d) Urea

40. As per BIS standard, the minimum crude protein content of pig starter feed is
    a) 16%
    b) 18%
    c) 20%
    d) 22%

41. The NEm requirement (BW (kg) $^{0.75}$ kcal/day) of an adult hen is
    a) 83
    b) 70
    c) 183
    d) 110

42. Manganese deficiency in chicken causes
    a) Perosis
    b) Nutritional myopathy
    c) Crazy chick disease
    d) Nutritional roup

43. Steely wool or stringy wool in sheep is due to deficiency of
    a) Sulphur
    b) Chromium
    c) Selenium
    d) Copper

44. As per BIS recommendation, the maximum permitted level of urea in concentrate mixture for cattle is
a) 2%
b) 1%
c) 4%
d) 3%

45. The maximum level of inclusion (%) of common salt in poultry rations as per BIS is
a) 0.25
b) 0.60
c) 0.40
d) 0.50

46. Fleig index is used for quality evaluation of
a) Urea
b) Straw
c) Hay
d) Silage

47. In Dairy cows, maintenance of negative DCAB is important for prevention of
a) Ketosis
b) Milk fever
c) Fatty liver
d) Grass staggers

48. Zinc deficiency causes infertility in males because it is a component of the enzyme
a) Glutathione peroxidise
b) Alcohol dehydrogenase
c) Thymidine kinase
d) Carbonic anhydrase

49. Chief acid of silage is
a) Acetic acid
b) Propionic acid
c) Butyric acid
d) Lactic acid

50. Harmful antinutritional factor present in cottonseed cake is
a) Gossypol
b) Tannin
c) Dicoumarol
d) HCN

51. A rate limiting enzyme involved for purine metabolism is
    a) Pyruvate carboxylase
    b) Carbonic anhydrase
    c) Alcohol dehydrogenase
    d) Xanthine dehydrogenase

52. Net gain of ATP per mole of acetate
    a) 4 ATP
    b) 10 ATP
    c) 6 ATP
    d) 8 ATP

53. The microbial degradation of which antinutritional factor yield 3,4 DHP (dihydroxypyridone)?
    a) Saponin
    b) Gossypol
    c) Ricin
    d) Mimosin

54. Recommended Metabolizable energy (ME) for broiler finisher feed as per BIS 2007
    a) 3200 Kcal/kg
    b) 3000 Mcal/kg
    c) 2900 KJ/kg
    d) 3300KJ/kg

55. Average percent of nitrogen in protein is
    a) 2%
    b) 6.25%
    c) 16%
    d) 22%

56. A nitrogen source which is 100% degradable in the rumen is
    a) Fish meal
    b) Urea
    c) Salseed meal
    d) Meat meal

57. Common anti-nutritional factor in tree leaves responsible for lowered utilization of protein
    a) Oxalates
    b) Gossypol
    c) Mycotoxins
    d) Tannins

58. Diets prepared for laboratory animals with refined ingredients such as sugar, starch, casein, soybean protein isolate, vegetable oil, animal fat, cellulose, inorganic salts and vitamins are called
    a) Natural Ingredient Diet
    b) Purified Diets
    c) Chemically Defined Diet
    d) Balanced diet

59. Nutritive ratio is wider when the ration contain _____
    a) High Legume
    b) High Straw
    c) High Green grass
    d) High Oilcake

60. The mineral which is essential for maintaining the normal serum vitamin A level is
    a) Magnesium
    b) Cobalt
    c) Zinc
    d) Chromium

61. Zinc deficiency in pigs is known as
    a) Thumps
    b) Perosis
    c) Parakeratosis
    d) Nutritional roup

62. Mineral which is associated enzyme Xanthine oxidase is
    a) Calcium
    b) Molybdenum
    c) Manganese
    d) Zinc

63. "Goose stepping" in pigs is related to deficiency of
    a) Folic acid
    b) Riboflavin
    c) Manganese
    d) Pantothenic acid

64. Maximum permissible crude fibre in compounded Type II cattle feed as per BIS 2023
    a) 7
    b) 3
    c) 5
    d) 12

65. Live microbial feed supplements which will beneficially affect the host animals by improving its intestinal microbial balance are known as
   a) Prebiotics
   b) Chelates
   c) Probiotics
   d) Arsenicals

66. The two stage *in vitro* techniques for determining digestibility of feeds was developed by
   a) P. J. Vansoest
   b) Tilly and Terry
   c) Atwater
   d) O. Kellner

67. In horses, coffee coloured urine is observed during
   a) Founder
   b) Rickets
   c) Laminitis
   d) Azoturia

68. The condition, 'Lechsucht' occurs in cattle due to
   a) Copper deficiency
   b) Cobalt deficiency
   c) Molybdenum deficiency
   d) Phosphorus deficiency

69. Pelleting of hays and straws will
   a) Reduce DMI
   b) Reduce palatability
   c) Reduce digestibility
   d) Reduce dustiness

70. Natural rumen degradable protein content is highest in
   a) Cottonseed cake
   b) Coconut cake
   c) Groundnut cake
   d) Fish meal

71. Which of the following is common in nature?
   a) D sugars and L amino acids
   b) L sugars and L amino acids
   c) D sugars and D amino acids
   d) L sugars and D amino acids

72. Colostrum should be fed to calves at the rate of
   a) $1/5^{th}$ of calves body weight
   b) $1/10^{th}$ of calves body weight
   c) $1/15^{th}$ of calves body weight
   d) $1/20^{th}$ of calves body weight

73. Low milk fat in dairy animals is due to
   a) Underfeeding of Concentrates
   b) Underfeeding of Roughages
   c) Poor milk yield
   d) Aged animals

74. Feeding concentrates above 60% in ration of dairy cows will lead to
   a) Acidosis
   b) Ketosis
   c) Milk fever
   d) Alkalosis

75. The amino acid which is essential to cats but not dogs
   a) Methionine
   b) Lysine
   c) Threonine
   d) Taurine

76. The unsaturated fatty acid which is essential to cats but not dogs
   a) Oleic acid
   b) Lenolenic acid
   c) Alfa-lenolenic acid
   d) Arachidonic acid

77. Reduction in destruction of peroxide molecules (antioxidant properties) due to deficiency of
   a) Vitamin A
   b) Vitamin D
   c) Vitamin E
   d) Vitamin K

78. Zinc involved enzyme in metabolic functions is
   a) Catalase
   b) Succinate dehydrogenase
   c) Pyruvate carboxylase
   d) Carbonic anhydrase

79. Which of the following Iron salt have 100% relative bioavailability value for livestock
    a) Ferrous sulphate heptahydrate
    b) Ferric chloride
    c) Ferric orthophosphate
    d) Ferrous carbonate

80. When compared to stall fed animals, the milk of grazing animals contain
    a) Increased Saturated fatty acids
    b) Increased polyunsaturated fatty acids
    c) Reduced conjugated linolenic acid
    d) Alpha linolenic acid

81. The Melatonin and Serotonin can be synthesized by amino acid
    a) Methionine
    b) Tryptophan
    c) Arginine
    d) Threonine

82. High blood calcium stimulates release of hormone in livestock
    a) Calcitonin
    b) PTH
    c) ADH
    d) GH

83. Coenzyme responsible for single carbon transfer is
    a) Flavin coenzyme
    b) Biocytin
    c) Coenzyme A
    d) Tetrahydrofolate

84. The optimum feed mixing time in horizontal mixer is
    a) 15 minutes
    b) 5 minutes
    c) 10 minutes
    d) 20 minutes

85. The maximum permissible levels of aflatoxins in poultry feed as per BIS is
    a) 20 ppb
    b) 15 ppb
    c) 10 ppb
    d) 25 ppb

86. The process of expansion and rupture of endosperm of the seed due to heat
    a) Grinding
    b) Popping
    c) Flaking
    d) Extrusion

87. The toxin specifically affects kidneys of all animal species
    a) Zearalenone
    b) T-2 toxin
    c) Citrinin
    d) Ochratoxin

88. The average feed mixing time in vertical mixer is
    a) 5 minutes
    b) 10 minutes
    c) 15 minutes
    d) 30 minutes

89. The fodder crop suitable for hay making is
    a) Maize
    b) Hybrid Napier
    c) Hedge lucerne
    d) Lucerne

90. The fatty acid responsible for synthesis of milk fat
    a) Propionic acid
    b) Acetic acid
    c) Butyric acid
    d) Lactic acid

91. Bypass protein and bypass fat is required for high milk yielding animals during
    a) III phase of lactation (200-305days)
    b) II phase of lactation (70-200days)
    c) I phase of lactation (0-70days)
    d) IV phase of lactation (60-14 days before calving)

92. The mineral required for activation of Vitamin D in liver is
    a) Copper
    b) Iron
    c) Magnesium
    d) Zinc

93. The ionophores monensin supplementation in cattle increases the proportion of VFA
    a) Acetate
    b) Propionate
    c) Butyrate
    d) Lactate

94. In general the pH of good quality silage is less than
    a) 7.2
    b) 5.2
    c) 6.2
    d) 4.2

95. In general the water requirement in poultry is _____ times the DMI
    a) 8 times
    b) 4 times
    c) 6 times
    d) 2 times

96. In cattle the higher percent of voluntary feed intake observed for
    a) Silage
    b) Hay
    c) Dry fodder
    d) Green fodder

97. As per thumb rule, the DMI of adult cattle is
    a) 2.5 % of body weight
    b) 1.5% of body weight
    c) 4% of body weight
    d) 3.5% of bodyweight

98. Respiratory quotient for fat is
    a) 0.50
    b) 0.70
    c) 0.90
    d) 1.00

99. Feeding of excess nitrogen source to ruminants causes
    a) Positive energy balance
    b) Equilibrium energy balance
    c) Improve animal production
    d) Negative energy balance

100. The volatile fatty acids that promote development of ruminal papillae
   a) Acetate and propionate
   b) Propionate and butyrate
   c) Butyrate and lactate
   d) Lactic acid and acetate

101. Loss of gross energy in the form of methane is
   a) 8-10%
   b) 16-18%
   c) 12-14%
   d) 4-6%

102. Ciliate protozoa is completely eliminated at pH
   a) 6-7
   b) 5-6
   c) <5
   d) >7

103. Higher digestibility of fodder observed in
   a) Leguminous dry fodder
   b) Leguminous green fodder
   c) Non-Leguminous green fodder
   d) Non-Leguminous dry fodder

104. The moisture content of chopped fodder for silage making should be
   a) 35-45%
   b) 65-75%
   c) 55-65%
   d) 45-55%

105. The vitamins used for preservation of fats and oils
   a) Vitamin K and C
   b) Vitamin A and E
   c) Vitamin C and E
   d) Vitamin A and C

106. The predominant amino acid present in azolla
   a) Tryptophan
   b) Lysine
   c) Cysteine
   d) Methionine

107. As per FSS act 2006, the tolerance limit of deltamethrin in milk is
   a) 0.05 ppm
   b) 0.03 ppm
   c) 0.01 ppm
   d) 0.07 ppm

108. As per FSS act 2006, the tolerance limit of cypermethrin in meat and milk
   a) 0.1 ppm
   b) 0.3 ppm
   c) 0.2 ppm
   d) 0.4 ppm

109. _____mineral called as fertility mineral
   a) Phosphorus
   b) Calcium
   c) Magnesium
   d) Sodium

110. Excess consumption of lucerne fodder in cattle cause
   a) Bloat
   b) Frothy bloat
   c) Acidosis
   d) Alkalosis

111. The percent of urea recommended for urea ammonation of dry fodder is
   a) 5.0 percent
   b) 2.5 percent
   c) 7.5 percent
   d) 10.0 percent

112. Excess feeding of highly fermentable carbohydrates to ruminants causes
   a) Ketosis
   b) Gross tetany
   c) Alkalosis
   d) Acidosis

113. Grains with dry heat results in expansion of grains and increase digestibility
   a) Popping
   b) Roasting
   c) Micronization
   d) Exploding

114. Out of the following , which is not internal or natural indicator
   a) N-alkanes
   b) Lignin
   c) AIA
   d) Chromic oxide

115. The absorbent used to absorb carbon dioxide in closed circuit respiration chamber
    a) Silica gel
    b) Sulphuric acid
    c) Soda lime
    d) Nitric acid

116. The part of dietary protein undegraded in the rumen and the microbial protein which are absorbed, together forms the _____protein
    a) Bypass protein
    b) Soluble protein
    c) Rumen Undegradable protein
    d) Metabolizable protein

117. 1kg TDN=
    a) 2.2 Mcal DE
    b) 4.4 Mcal DE
    c) 4.0 Mcal DE
    d) 3.0 Mcal DE

118. Total digestible nutrients of a feed stuff indicates the
    a) Digestibility of protein
    b) Mineral content
    c) Energy content
    d) Digestibility of crude fibre

119. Equine metabolic syndrome (EMS) is due to
    a) Electrolyte imbalance
    b) Amino acid imbalance
    c) Vitamin-mineral interaction
    d) Insulin resistant

120. Oxalate content is relatively high in
    a) African tall maize fodder
    b) Green oats fodder
    c) Young growing super napier grass
    d) Multicut sorghum fodder

Key

1.	C
2.	D
3.	B
4.	D
5.	C
6.	A
7.	C
8.	A
9.	A
10.	A
11.	D
12.	B
13.	B
14.	A
15.	C
16.	D
17.	A
18.	C
19.	B
20.	C
21.	D
22.	B
23.	A
24.	D
25.	B
26.	B
27.	C
28.	C
29.	B
30.	C

31.	A
32.	B
33.	C
34.	C
35.	C
36.	B
37.	B
38.	A
39.	C
40.	C
41.	A
42.	A
43.	D
44.	B
45.	D
46.	D
47.	B
48.	C
49.	D
50.	A
51.	D
52.	B
53.	D
54.	A
55.	C
56.	B
57.	D
58.	B
59.	B
60.	C

61.	C
62.	B
63.	D
64.	D
65.	C
66.	B
67.	D
68.	A
69.	D
70.	C
71.	A
72.	B
73.	B
74.	A
75.	D
76.	D
77.	C
78.	D
79.	A
80.	B
81.	B
82.	A
83.	D
84.	B
85.	A
86.	B
87.	D
88.	C
89.	D
90.	B

91.	C
92.	C
93.	B
94.	D
95.	D
96.	D
97.	A
98.	C
99.	D
100.	B
101.	A
102.	C
103.	B
104.	B
105.	C
106.	B
107.	A
108.	C
109.	A
110.	B
111.	A
112.	D
113.	B
114.	D
115.	C
116.	D
117.	B
118.	C
119.	D
120.	C