ANN 121: Applied Animal Nutrition-I (2+1)

Objective Type Questions

I Fill in the blanks with suitable word (s)

1. End product of nitrogen metabolism in ruminants is _____.
2. _____ can be administered as a first aid in case of urea poisoning.
3. Bye-pass protein feed should contain _____ % UDP (min) and 9 % RDP.
4. _____ is used as a buffer in the ration of high yielding dairy cows.
5. A calf weighing 30 kgs requires _____ kg of milk per day at first week of age.
6. Energy requirement for maintenance is _____ kcal of ME per kg metabolic body weight.
7. The DM intake in cows is _____% of body weight.
8. A crossbreed cow in first lactation needs _____ % of nutrients as an extra allowance.
9. The practice of increasing the nutrient intake in ewes prior to mating (breeding season) is called as _____.
10. Urea is added in the concentrate mixture at a level of _____ %.

II State whether the following statements are TRUE or FALSE

1. Higher level of feeding decreases digestibility of nutrients ( )
2. TDN overestimates the energy content of roughages ( )
3. Negative energy balance during early lactation affects fertility of cows( )
4. Water economy is more efficient in sheep than goats. ( )
5. Goats digest poor quality roughages better than sheep. ( )
6. ARC is the feeding standard followed in USA. ( )
7. Goats are grazers and sheep are browsers. ( )
8. Activated Charcoal is used as a toxin binder ( )
9. Trace mineral mixture is generally added @ one kg per ton of feed ( )
10. Apparent digestibility of feeds is less than true digestibility ( )

III Match the following

1	Ammonium chloride	a	protected protein	
2	Propylene glycol	b	Cornell University, USA	
3	Metabolic faecal nitrogen	c	0.3 – 0.5 g / 100 DM intake	
4	CNCPS	d	ketosis	
5	Formaldehyde treated mustard cake	e	Urinary calculi	

IV Choose the best answer

1. In ruminant digestion trials, collection period (days) followed is

   a. 2 - 3 *b. 10 - 12*
   c. 5 - 7 *d. none* *( )*

2. Amount of gases (litres / day) produced in the rumen of a dairy cow is

   a. 150 - 200 b. 50 - 75
   c. 500 - 600 d. 10 - 20 ( )

3. As per BIS specifications, Type I mineral mixture contains

   a. 18 % Ca b. 9 % phosphorus
   c. Both a and b d. none ( )

4. External indicator / marker is

   a. lignin b. sand and silica
   c. chromic oxide d. both a & b ( )

5. In ruminants, the ME is calculated from DE by multiplying

   a. 0.99 b. 0.75
   c. 0.65 d. 0.82 ( )

<u>ANN 121 Applied Nutrition – I (Ruminants)</u>

I. Fill in the blanks with suitable word (s)

1. Urea
2. Diluted acetic acid / vinegar / cold water
3. 20 %
4. Sodium bicarbonate / magnesium oxide
5. 3.0 (10 % of body weight)
6. 122
7. 2.5 – 3.0 %
8. 20 %
9. Flushing
10. 3.0 %

II State whether the following statements are TRUE or FALSE

1. True
2. True
3. True
4. False
5. True
6. False
7. False
8. True
9. True
10. True

III Match the following

1	Ammonium chloride	Urinary calculi
2	Propylene glycol	ketosis
3	Metabolic faecal nitrogen	0.3 – 0.5 g / 100 DM intake
4	CNCPS	Cornell University, USA
5	Formaldehyde treated mustard cake	protected protein

IV Choose the best answer

1. C
2. A
3. C
4. C
5. D

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ANN 121 Applied Nutrition – I (Ruminants)

I. Fill in the blanks with suitable word (s)

1. RUSITEC means _____
2. One Kg TDN = _____ Mcal of DE.
3. Brewers' grain waste available after fermentation contains _____ % crude protein.
4. Ruminants get Vitamin A from _____ which is abundant in green fodders.
5. The dietary requirement of vitamin _____ increases if dairy cattle are not exposed to sun light.
6. Tamarind seed meal contains _____ % crude protein.
7. kellner and Armsby feeding standards were based on _____ energy system.
8. In Northern parts of India, the commonly used legume fodder along with wheat straw is _____.
9. Expand ICAR_____.

10 Maximum permissible level of moisture in mineral mixtures is _____ as per BIS.

II State whether the following statements are TRUE or FALSE

1. Particle size of feeds affects the digestibility in ruminants ( )
2. Fats and oils provide more energy than carbohydrates because they contain more carbon and hydrogen. ( )
3. Efficiency of utilization of feed energy for milk production is better in crossbred animals as compared to local breeds ( )
4. Nitrogen balance method can be used for estimating protein requirement of ruminants. ( )
5. Feeding of sugarcane tops to pregnant cattle leads to abortion ( )
6. Digestibility coefficient of nutrients of a feed will be lower on high level of feeding. ( )
7. Nutrient requirements of small ruminants of NRC was released in 2007 ( )
8. NE value of feeds depends on the purpose for which the energy is used ( )

9. Glycerol can be fed to dairy cattle suffering from ketosis ( )
10. Methionine hydroxyl analogs may be fed to high yielding dairy cows to meet out the methionine requirement. ( )

III Match the following

1	Sal seed meal	a	Animal proteins	
2	Monensin	b	Immunoglobulin	
3	Colostrum	c	Cows milk colour	
4	Beta carotenes	d	Feed additive	
5	Milk replacers & calf starters	e	tannins	

IV Choose the best answer

1 Application of nitrogen fertilizers in excess to forage crops leads to

a. nitrate poisoning *b. vitamin A deficiency*
c. Both a & b *d. none* *( )*

2 Amount of feed energy lost as methane in ruminants is

a. 5 – 8 % b. 20 – 25 %
c. 40 – 50 % d. 3 – 4 % ( )

3 Protected proteins contain

a. more RDP b. more UDP
c. more ADF d. none ( )

4 Bioavailability of minerals is high from

a. inorganic sources b. organic source
c. both a & b d. none ( )

5 Rice bran is a good source of

a. Calcium b. Vitamin B_{12}
c. Vitamin A d. Phosphorus ( )

<u>ANN 121 Applied Nutrition – I (Ruminants) 30 marks</u>

I. Fill in the blanks with suitable word (s)

1. Rumen simulation technique
2. 3.56 or 3.6
3. 24 – 28 %
4. Beta carotenes
5. Vitamin D
6. 14 – 17 %
7. Net / production value
8. Berseem
9. Indian Council of Agricultural Research
10. 5.0 %

II State whether the following statements are TRUE or FALSE

1. True
2. True
3. True
4. True
5. False
6. True
7. True
8. True
9. True
10. True

III Match the following

1	Sal seed meal	tannins
2	Monensin	Feed additive
3	Colostrum	Immunoglobulin
4	Beta carotenes	Cows milk colour
5	Milk replacers & calf starters	Animal proteins

IV Choose the best answer

1. C
2. A
3. B
4. B
5. D

ANN 121 Applied Nutrition – I (Ruminants)

Q.I Fill up the blanks with appropriate word (s)

11. EUN excretion depends on _____ in ruminants.
12. _____ can be administered as a first aid in case of urea poisoning.
13. Bye-pass protein feed should contain _____ % UDP (min) and 9 % RDP.
14. _____ is used as a buffer in the ration of high yielding dairy cows.
15. The DM intake in goats is _____% of body weight.
16. A crossbreed cow in first lactation needs _____ % of nutrients as an extra allowance.
17. The practice of increasing the nutrient intake in ewes prior to mating (breeding season) is called as _____.

18. Urea is added in the concentrate mixture at a level of _____ %.
19. Expand the term BIS _____.
20. one kg TDN = _____ Mcal of ME.
21. _____ requirement is more for wool growth in sheep.
22. Ether extract content of rice polish is _____.
23. _____ % of salt is added in the compounded feed of dairy cattle.
24. Efficiency of conversion of ME into NE in lactating cows is _____.
25. _____ is the feeding standard adopted in USA.
26. Feed blocks containing both roughage and concentrates are called as----.
27. Protein content of mulberry leaves is _____-.
28. _____ is an internal indicator used in digestion trials.
29. RUSITEC means _____.
30. Additional nutritional allowance for pregnancy is required during last _____ months of gestation in dairy cows.

Q II Choose the appropriate answer

6. In ruminant digestion trials, collection period (days) adopted is

   a. 2 - 3 *b. 10 - 12*
   c. 5 - 7 *d. none* *( )*

7. Total quantity of gases (litres / day) produced in the rumen of a dairy cow is

   a. 200 - 250 b. 50 - 75
   c. 500 - 600 d. 10 - 20 ( )

8. As per BIS specifications, Type I mineral mixture contains

   a. 18 % Ca b. 9 % phosphorus
   c. Both a and b d. none ( )

9. Antioxidant(s) used in the compounded feeds is

   a. ethoxyquin b. Vitamin E & selenium
   c. Both a & b d. None ( )

10. In ruminants, the ME is calculated from DE by multiplying

    a. 0.99 b. 0.75
    c. 0.65 d. 0.82 ( )

11. Efficiency of utilization of dietary calcium for milk production is

    a. 20 – 30 % *b. 55 – 65 %*
    c. 90 – 95 % *d. none* *( )*

12. DCP and TDN requirement (in grams) for one kg of 4.0 % FCM is

    a. 45 & 315 b. 2.84 & 35
    c. 65 & 450 d. 50 & 500 ( )

13. Fish meal is adulterated with

    a. salt b. urea
    c. sand d. all ( )

14. Indian Grassland and Fodder Research Institute (IGFRI) of ICAR is located in

a. New Delhi b. Bangalore
c. Hyderabad d. Jhansi ( )

15. As per BIS, acid insoluble ash content permitted in Type I compounded feed is

a. 3.0 % b. 5.0 %
c. 7.0 % d. 10.0 % ( )

Q.III Match the following

1	Ammonium chloride	a	protected protein	
2	Fats and oils	b	Cornell University, USA	
3	MFN in cattle	c	Low heat increment	
4	CNCPS	d	3.5 g per kg DM intake	
5	Formaldehyde treated mustard cake	e	Urinary calculi	
6	Nylon bag technique	f	Experimental designs	
7	CRD & RBD	g	bloat	
8	ARC	h	Glycerol, propylene glycol	
9	saponins	i	UK	
10	ketosis	j	In Sacco / semi invivo method	

I. Fill in the blanks with suitable word (s)

1. body weight / body size 2. acetic acid / vinegar / cold water 3. 20 % 4. Sodium bicarbonate / magnesium oxide 5. 4 – 6 % 6. 20 % 7. flushing 8. 2-3 %
9. Beauro of Indian Standard 10. 3.56 or 3.6 11. sulphur 12. 2.0 % 13. 12 – 14 % 14. 60 – 65 % 15. NRC 16. TMR / complete ration 17. 16 – 18 %
18. silica / acid insoluble ash / lignin 19. Rumen Simulation Technique 20. two

II. Choose the best answer

1. c	2. a	3. c	4. c	5. d
6. b	7. b	8. d	9. d	10. a

Q.III Match the following

1	Ammonium chloride		Urinary calculi
2	Fats and oils		Low heat increment
3	MFN in cattle		3.5 g per kg DM intake
4	CNCPS		Cornell University, USA
5	Formaldehyde treated mustard cake		protected protein
6	Nylon bag technique		In Sacco / semi invivo method
7	CRD & RBD		Experimental designs
8	ARC		UK
9	saponins		bloat
10	ketosis		Glycerol, propylene glycol

Q.I Fill up the blanks with appropriate word (s)

1. MFN excretion depends on _____ in ruminants.
2. _____ can be administered as a first aid in case of urea poisoning.
3. Bye-pass protein feed should contain _____ % UDP (min) and 9 % RDP.
4. _____ is used as a buffer in the ration of high yielding dairy cows.
5. The DM intake in sheep is _____% of body weight.
6. Urea is added in the concentrate mixture at a level of _____ %.
7. Expand the term NRC _____.
8. one kg TDN = _____ Mcal of DE.
9. _____ requirement is more for wool growth in sheep.
10. _____ % of salt is added in the compounded feed of dairy cattle.
11. Feed blocks containing both roughage and concentrates are called as _____.
12. Protein content of Agathi (Sesbania) leaves is _____-.
13. _____ is an internal indicator used in digestion trials.
14. RUSITEC means _____.
15. Body fat contains _____ % carbon.
16. RQ means _____--.
17. The other name for over eating disease in sheep is _____.
18. _____ g DCP and _____ g TDN are required for maintenance of goats.
19. Decorticated tamarind seed meal contains _____ crude protein.

Q II Choose the appropriate answer

1. The nutrient which is dietary essential and not metabolic essential for ruminants
   a. Vitamin K *b. cobalt*
   c. selenium *d. none* *( )*

2. Green house gas
   a. CO_2 b. CH_4
   c. Both a & b d. O_2 ( )

3. The trans fatty acid produced in the rumen which is shortly called as CLA
   a. Conjugated linoleic acid b. Conjugated linolenic acid
   c. Conjugated lactic acid d. none ( )

4. TDN is a measure of
   a. energy value b. protein quality
   c. digestibility of DM d. None ( )

5. Excess lipids / oils in the ration of ruminants affect the digestibility of
   a. trace elements b. fibre
   c. NFE d. none ( )

6. Efficiency of utilization of dietary calcium for milk production is

a. 20 – 30 % *b. 55 – 65 %*
c. 90 – 95 % *d. none* *( )*

7. DCP and TDN requirement (in grams) for one kg of 4.0 % FCM in cows is

a. 45 & 315 b. 2.84 & 35
c. 65 & 450 d. 50 & 500 ( )

8. Pellet binder is

a. Bentonites b. charcoal
c. Vegetable oils d. none ( )

9. Indian Grassland and Fodder Research Institute (IGFRI) of ICAR is located in

a. New Delhi b. Bangalore
c. Hyderabad d. Jhansi ( )

10. Normal level of inclusion of molasses in dairy cattle ration is

a. 3.0 % b. 50 %
c. 30.0 % d. 10.0 % ( )

Q.III Match the following

1	Protozoa	a	Protected protein	
2	Fats and oils	b	Urea & molasses	
3	MFN in cattle	c	Rancidity	
4	UMMB	d	3.5 g per kg DM intake	
5	Formaldehyde treated mustard cake	e	Defaunation	
6	Nylon bag technique	f	Experimental designs	
7	CRD & RBD	g	Bloat	
8	BIS	h	Alumino silicates	
9	saponins	i	Formerly ISI.	
10	Toxin binders	j	In Sacco / semi invivo method	

I. Fill in the blanks with suitable word (s)

1DM intake 2. acetic acid / vinegar / cold water 3. 20 % 4. Sodium bicarbonate / magnesium oxide 5. 3 – 5 % 6. 2 - 3 % 7. National Research Council (USA) 8. 4.4 9. sulphur 11. TMR / complete ration 12. 24- 28 % 13. . silica / acid insoluble ash 14. Rumen Simulation Technique 15. 72 – 75 % 16. Respiratory Quotient
17. Enterotoxemia 18. 3.0 & 30 19. 15 – 17 %.

II. Choose the best answer

1. b 2. c 3. a 4. a 5. b
6. b 7. b 8. a 9. d 10. d

Q.III Match the following

1	Protozoa	Defaunation
2	Fats and oils	Rancidity
3	MFN in cattle	3.5 g per kg DM intake
4	UMMB	Urea & molasses
5	Formaldehyde treated mustard cake	Protected protein
6	Nylon bag technique	In Sacco / semi invivo method
7	CRD & RBD	Experimental designs
8	BIS	Formerly ISI.
9	saponins	Bloat
10	Toxin binders	Alumino silicates

I. Fill in the blanks with suitable word (s)

1. In purified diet, carbohydrate and minerals are supplemented as _____and _____, respectively.
2. Basal heat production is related to _____ and is expressed by the equation _____ .
3. Sen and Ray feeding standard is based on _____ feeding standard.
4. The practice of increasing the nutrient intake in ewes prior to mating is called as _____.
5. A cross bred cow in first lactation needs _____ % of nutrients as extra allowance for body growth.
6. Chromic oxide is an example of _____ indicator.
7. The % of DCP in Calf starter should be _____ .
8. By-pass protein feed should contain _____ % UDP (min) and 9 % RDP.
9. _____ g of calcium is required per kg of 4% FCM in dairy cattle.
10. Efficiency utilization of microbial protein in dairy cattle is _____ %.

a. State whether the following statements are TRUE or FALSE

b. Urea can be supplement to ruminants up to 3 % of the compounded feed.
c. Apparent digestibility of feed is less than true digestibility.
d. Male animal are preferred to female for conducting digestion and metabolic trials.
e. High proportion of forage in the ration of dairy cattle result in low milk fat.
f. High level of feeding results in low digestibility.
g. NRC is an feeding standard followed in USA.
h. The TDN value of certain feedstuffs can exceed 100 %.
i. The quantity of milk, a calf may be allowed to drink or suckle is about 1/10th of its body weight during first month of age.
j. Crushing of grains is essential for the feeding of sheep and goats.
k. Vitamin D requirement is more for dairy cattle reared under intensive system without exposure to sunlight.
l. Goats digest poor quality roughages better than sheep.

m. Efficiency of use of ME for live weight gain during lactation is the same as that for milk production.

II. Match the following

1	Calcium requirement	Starch equivalent	
2	Endogenous urinary nitrogen	Enterotoxaemia	
3	Metabolic faecal nitrogen	Protected protein	
4	Kellner	Cornell University, USA	
5	Formaldehyde treated mustard cake	Unconventional feed	
6	CNCPS	Ketosis	
7	Overeating disease	2.2 g per kg FCM	
8	Tea waste	Urinary calculi	
9	Propylene glycol	0.02 – 0.03 g / kg BW	
10	Ammonium chloride	Grazer	
11	Goat	0.3 – 0.5 g / 100 DM intake	
12	Sheep	Browser	

V Fill in the blanks

1. Starch or glucose or sucrose, chemically pure salts 2. Metabolic body weight, 70 $W^{0.75}$
3. Morrison 4.Flushing 5. 20 % 6. External indicator 7. 19 -19.5%
8. 20 % 9. 2.2 – 2.4 10. 65 – 70 %.

VI TRUE or FALSE

a. True b. True c. True d. False e. True
f. True g. True h. True i. True j. True
k. True l. True

VII Match the following

1	Calcium requirement	Starch equivalent	4
2	Endogenous urinary nitrogen	Enterotoxaemia	7
3	Metabolic faecal nitrogen	Protected protein	5
4	Kellner	Cornell University, USA	6
5	Formaldehyde treated mustard cake	Unconventional feed	8
6	CNCPS	Ketosis	9
7	Overeating disease	2.2 g per kg FCM	1
8	Tea waste	Urinary calculi	10
9	Propylene glycol	0.02 – 0.03 g / kg BW	2
10	Ammonium chloride	Grazer	12
11	Goat	0.3 – 0.5 g / 100 DM intake	3

12	Sheep	Browser	11

1. The desirable ratio of N to S in ruminant feed is _____ for proper utilization of NPN compounds.
2. Animals fed paddy straw should be supplemented with extra _____ macro mineral because of the presence of oxalates.
3. Hormone thyroxin contains _____ mineral.
4. Removal of protozoa from the rumen is called as _____.
5. A good calf starter should contain _____% DCP and _____%TDN.
6. The experimental design wherein same animals are shifted from one ration to another for each treatment is called _____.
7. The thumb rule is to offer one kg of concentrate for every _____ kg of milk produced in buffaloes.
8. Chromic oxide is an example of _____ indicator
9. _____ is used as a buffer in the ration of high yielding dairy cows.
10. In Tilley and Terry (1963) method of *in vitro* digestibility technique _____ is used to treat the residue left after the first stage.
11. _____ is otherwise called as overeating disease in sheep due to the toxin produced by *Clostridium Perfringes*.

VII State whether the following statements are TRUE or FALSE

a. Indian feeding standards are based on productive value.
b. Urea is a useful supplement in a ruminant feed containing less protein.
c. Level of feeding influences the digestibility of nutrients.
d. In the 1st week, calf may be allowed to drink or suckle milk @ 25% of its body weight.
e. High proportion of concentrate in the ration of dairy cattle results in low milk fat.
f. The energy requirement for milk production depends only on the level of milk production.
g. Bye-pass protein feeding is essential for high milk yield animal.
h. ARC is the feeding standard followed in USA.
i. Goats are grazers and sheep are browsers.
j. Water use efficiency is better in goats than sheep.
k. Poultry droppings can be used as a source of protein for ruminants.
l. Neem leaves & neem cake are not recommended for feeding of breeding males.

VIII Match the following

1	Protein requirement of cattle for maintenance	0.4 + (0.15 x Fat % in milk)	
2	TDN requirement of cattle for	Starch equivalent	

	maintenance		
3	BIS & ICAR	1.9 + (0.4 x Fat % in milk)	
4	Kellner	Lactic acidosis	
5	FCM	Calcium salt of fatty acids	
6	Protein % in milk	Indirect method of digestibility	
7	Milk fever	Direct method of digestibility	
8	High starch diets	2.84 g / kg metabolic body weight	
9	Protected fat	Hypocalcaemia	
10	Protected protein	34 – 35 g / kg metabolic body weight	
11	Concentrate	Formaldehyde treatment	
12	Maintenance type roughages	Indian feeding standards	

VI Fill in the blanks

1. 12-15:1 2. calcium 3. Iodine 4.Defaunation 5. 19-19.5%, 75%
6. Latin Square Design (LSD) 7. two 8. external 9. Sodabicarb/ Magnesiumboxide 10. Acid Pepsin 11. Enterotoxaemia

VII TRUE or FALSE

a False b. True c. True d. False e.True f.False
g. True h. False i. False j. True k. True l. True

VIII Match the following

1	Protein requirement of cattle for maintenance	0.4 + (0.15 x Fat % in milk)	5
2	TDN requirement of cattle for maintenance	Starch equivalent	4
3	BIS & ICAR	1.9 + (0.4 x Fat % in milk)	6
4	Kellner	Lactic acidosis	8
5	FCM	Calcium salt of fatty acids	9
6	Protein % in milk	Indirect method of digestibility	11
7	Milk fever	Direct method of digestibility	12
8	High starch diets	2.84 g / kg metabolic body weight	1
9	Protected fat	Hypocalcaemia	7
10	Protected protein	34 – 35 g / kg metabolic body weight	2
11	Concentrate	Formaldehyde treatment	10
12	Maintenance type roughage	Indian feeding standards	3

<u>Question bank for online examinations</u>

Course : ANN 121 Applied Nutrition – I (Ruminants) 2 + 1

I State **true or false**

1. Wolff Lehmann standard considered the quality of milk produced also.
2. ARC standard is being commonly used in USA.
3. TDN system takes into account of nutrient losses through faeces and gases.

4. TDN system overestimates the energy value of poor quality roughages.
5. By-pass protein feed should contain 20% UDP (min) and 9 % RDP.
6. Colostrum contains 17 % protein.
7. Quantity of colostrum should be fed to calves during first two weeks is 10 % of body weight.
8. Calf starter should contain 23-26 % CP and 75 % TDN.
9. The ADG in crossbred calves is 500 – 700 g.
10. As per MAFF Technical Bulletin, DM requirement is 2.5 % of body weight plus 10 % of milk yield.
11. Germ free animals are free from contamination of bacteria alone.
12. In semi-*invivo* technique, feed samples are placed in a bag and immersed in the rumen of fistulated animals
13. Bulky rations are necessary for ruminants
14. Easily fermentable starchy diets can be fed to ruminants without restriction
15. Di calcium phosphate is a good source of calcium and phosphorus.
16. Nearly 50% of the phytate phosphorus are digested by ruminants.
17. Cotton bags can be used for conducting *semi invivo* degradability studies.
18. In vitro digestibility studies are carried out in fistulated animals.
19. Apparent digestibility values should be considered for practical feed formulation.
20. Urea can be fed to young calves at a level of 1 % of body weight.
21. Ground nut haulms is a good protein feedstuff for goats.
22. Sheep relish tree fodders better than pasture grasses.
23. The CP content of the plant increases as the plant matures.
24. Animal yielding as high as 7 litres of milk can be easily maintained on green fodder alone.
25. Indian feeding standards are based on productive value.
26. Legumes are rich in calcium but low in phosphorus.
27. Vegetable proteins are rich in vitamin B_{12}.
28. High level of lignin in feedstuff is suggestive of high digestibility.
29. Basal feeds are protein rich concentrates.
30. Compounded feeds are bulky feeds with more weight/unit volume.
31. Cereal grains are rich in starch.
32. Amino acid is a NPN compound.
33. Grinding of roughages reduces the digestibility in ruminant animals.
34. Molasses is rich in DCP.
35. Urea is a useful supplement in a ruminant feed containing low level of CP.
36. Good hay should have about 25% of moisture.
37. Feedstuffs rich in fat are not suitable for long storage.
38. Coconut cake contains high % of bye-pass protein.
39. Mixed hay contains more nutrients than cereal hay alone when fed to livestock.
40. Addition of 5% poultry droppings in ruminant ration increases microbial protein in the rumen.
41. Rubber seed cake can entirely replace groundnut cake in the ration of ruminants.
42. The nutritive value of soyabean cake can be improved by soaking in water rather than hot processing like autoclaving.
43. ARC requirement of various livestock is based on the T.D.N system.

44. Animals fed with paddy straw should be supplemented with mineral mixture.
45. Rice polish is rich in B complex vitamins.
46. Phosphorus from plant origin are highly available than inorganic sources.
47. TDN is a measure of energy content of feedstuffs.
48. The nutrient requirements depends on body surface of animals rather body weight.
49. Rice bran contains more phosphorus.
50. Oat hay poisoning is due to nitrates.
51. Cumbu / bajra & falx seeds are good sources of omega-3 fatty acids.
52. Tamarind seeds contain 14-18% protein.
53. The feed additives and supplements are same.
54. Deoiled rice bran contains 12-16% protein.
55. Mimosine toxicity can be alleviated by supplementing the ration with iron salts.
56. Castor bean contains ricins which are not harmful to ruminants.
57. Cereals generally has crude protein content ranging from 8 -12%.
58. Cassava meal good feed resource for small ruminants.
59. Liquid fed supplement is usually molasses, urea, minerals and vitamins.
60. Neem cake can be added in the cattle ration along with other conventional feeds at 10% level.
61. Tannin content of sal seed meal is around 5-7% which is good for the health of cattle.
62. Green fodders are excellent sources of carotene.
63. Urea contains 46% crude protein.
64. Solvent extracted cakes contain traces of oil.
65. Most limiting amino acid in cereals is lysine.
66. Urea treatment of straws increases nitrogen content.
67. Quality of protein is more important in ruminant diets.
68. Energy requirement is directly related to body weight.
69. Cereal grains have higher NFE value.
70. Oat is a good feed for ruminants.
71. Roughage is a bulky feed which has a high weight/unit volume.
72. The unconventional feeds are generally poor in nutritive value due to the presence of anti-nutritional factors.
73. The Indian feeding standards are based on Morrison feeding standards.
74. The concept of expressing the protein requirement in terms of DCP is acceptable under all circumstances.
75. The TDN value of certain feeds can exceed 100.
76. The gross energy value of a feed is the best estimate of the available energy to the animal.
77. The biological value of a mixed protein feed is higher than a diet containing a single source of protein.
78. The ‘Newer feeds’ are generally poor in nutritive value because of the presence of anti-nutritional factors and high fibre content.
79. Feeding roughage as fine particles in a complete feed may alter rumen fermentation resulting in low fat milk syndrome.
80. Grinding of feedstuffs in general improves digestibility and palatability.
81. Lucerne is an example of leguminous crop.

82. Antibiotics should not be used in ruminants animals feed.
83. Animal protein sources has to be incorporated in cattle ration to mitigate the deficiency of lysine and methionine.
84. Soaking of mustard cake reduce the glucosinolates content in them.
85. The calorific value of wheat is more than maize.
86. Straw contain more DCP and TDN than hay.
87. Grass cut and fed to animals is called silage.
88. Subabul contain a toxic principle cyanogenic glycoside in leaves.
89. Oats have higher crude fibre and low TDN than maize.
90. Alkali treatment of paddy straw will improve the nutritive value of straw by breaking the lignocellulose bond and make more cellulose available.
91. Raw soyabean contain gossypol which can be eliminated by heat treatment.
92. Kellner's and Armsby's feeding standards are based on production value type of the animal.
93. The protein,.mineral and vitamin content of roughages are highly variable.
94. In rice bran phosphorus is available in inorganic form which is easily assimilated by the animal system.
95. Cassava root contain an anti-nutritional factor known as Tannin.
96. Morrison feeding standard used involves a production value type.
97. Heat increment can be reduced somewhat by feeding higher levels of grains.
98. A complete feed is one which is a balanced concentrate feed set to meet the total dry matter and nutrient requirement of cattle.
99. The effective utilization of urea nitrogen by ruminants depends upon the level of inclusion of urea and the soluble carbohydrate content in the ration.
100. The adoption of challenge feeding practices providing a continuous supply of and excess of calcium and phosphorus for a period of 4-6 weeks prior to parturition may end up with 'Milk fever' in high yielding Cows.
101. A dietary deficiency of cobalt in ruminant animals may result in hypoglycemia.
102. Hydrated sodium calcium aluminosilicates is found to be an effective binder of aflatoxin, thus reducing the toxic effect.
103. Reduction in particle size by fine grinding decreases crude fiber digestibility and upsets acetate to propionate ratio.
104. Pelleting of mixed feed helps to improve palatability and digestibility while reducing feed wastage.
105. In ruminants phytase is not secreted.
106. The mimosine content of young subabul leaves are richer than matured leaves.
107. Dietary protein escaping rumen degradation is bye-pass protein.
108. Urea-ammoniation method increases voluntary intake and digestibility and nitrogen enrichment of low nitrogen fodders.
109. The dry matter requirement of adult cattle is 5% of its body weight.
110. Protein content in leguminous fodder is lower than non- leguminous fodder.
111. Zero-grazing is a method where animals are freely allowed into grassland for grazing.
112. All cereals are deficient in vitamin –D and calcium.
113. Roughage contain more amount of readily available carbohydrates.
114. Concentrate feed forms the bulk in ruminant ration.

115. Wheat bran contain 14% crude protein.
116. The heat given off by all warm blooded animals is directly proportional to its body surface area.
117. The performance of any given animal provided with same quality of feed from different sources need not be same.
118. Antibiotics are nutrient feed additives.
119. Calf starter is the feed meant for calves aged below one year.
120. Mimosine is present in alfalfa meal.
121. Work bullock fed soley on green fodder will drink less water.
122. Shell grit is a good source of calcium and phosphorus for calves.
123. Maize is prone to aflatoxin contamination.
124. The approximate yield of Co-1grass under irrigated condition per hectare is 300 tons per year.
125. Linseed meal is excellent for putting bloom on animals prepare for show.
126. Copra meal is low in protein and high in fibre but makes a good feed ingredient for cattle ration.
127. Raw soybean is high in protein and fat and makes a good feed ingredient for cattle ration.
128. Consumption of low levels of certain mycotoxins can lead to impairment of native and acquired resistance to infectious diseases.
129. Cane molasses is actually the cheapest source of TDN , but it cannot be used at over about 10% of the ration.
130. The quantity of milk, a calf may be allowed to drink or suckle is about 1/10th of its body weight.
131. The disease condition known as ‘sway back’ in lambs is due to the conditioned ‘copper deficiency’.
132. Ammonia concentration in rumen liquor does not exceed 5-8 mg/ml.
133. Dairy animals can tolerate Ca : P ratio as high as 6:1 without any adverse effect.
134. Only one third of phosphorus in bran is available for sheep.
135. Supplementation of B-complex vitamins in cattle ration is strongly recommended.
136. Sudden change in the diet will not affect the acceptability of feed by ruminants.
137. For effective measurement of BMR the animal must be maintained in the thermoneutral zone.
138. Increased roughage feeding leads to more of propionic acid formation.
139. Only 65% of microbial protein is utilized by ruminants.
140. Overfeeding of cows in late lactation leads to fat cow syndrome.
141. Colostrum contains more of albumin and globulin than in normal milk.
142. Sodium chloride supplementation is must for working animals.
143. Buffalo require more energy and protein than cattle for each litre of milk produced.
144. Arachidionic acid can be synthesized from linolenic acid in dog.
145. Crushing of grains is essential for the feeding of sheep.
146. Vitamin K is synthesized by microorganisms in the rumen and hence it need not be supplemented.
147. Supplementation of lysine and methionine in cattle ration is generally practiced.
148. Inclusion of molasses in livestock ration is essential.

149. Bloat is common in wild ruminants.
150. The energy requirement for lactation are worked out based on the quantity of milk secreted only.
151. Crushing of hard grains is most essential for cattle.
152. The requirement of sulphur for cattle is more than sheep.
153. There is a reciprocal relationship between water and fat content of body.
154. Cereal grains are basal feeds.
155. Dry matter intake varies according to metabolic body weight.
156. The nutrient requirement for maintenance and production are similar.
157. Skim milk is a poor source of vitamin.
158. All tree leaves can be utilized as a feed resource for small ruminants.
159. High moisture grain is superior to low moisture grain in livestock nutrition.
160. Groundnut oil cake is deficient in methionine.
161. Calorimetry is used to measure the intensity of colour production used in vitamin assay.
162. Use of control diets free of the nutrient being studied to establish the size of output when intake is zero.
163. The dietary regulation is to provide a consistent calorie intake, balanced to the animals requirement.
164. Armsby's values were determined near maintenance whereas Kellner's were measured above maintenance.
165. Molasses is used as a readily available energy source in livestock ration.
166. During urea feeding additional mineral supplementation is not required.
167. Colustrum feeding helps in improving the immune status of the calves.
168. Milk fat is not influenced by the type of diet.
169. The carbon content of body protein is 52.54%.
170. Body fat contains less carbon percentage than protein.
171. The dry matter consumption is 5% in buffaloes.
172. Calf starter can be used from the day of birth of calf.
173. Milk replacer is commonly used in southern part of India.
174. The protein content of colostrum is 14%.
175. In sheep, the urea nitrogen is less efficiently utilized in the presence of sulphur.
176. Late cut grass hay is unsatisfactory for sheep.
177. Post-partum feeding of bulky concentrate increases milk production.
178. Feeding of cabbage, turnips produce sweat flavour in milk.
179. The yellow colour milk of Guernsey is due to high concentration of vitamin A.
180. Supplementation of B-complex vitamins in cattle ration is generally practised.
181. Liberal intake of whole cottonseed will increase the fat percentage of milk.
182. Antibiotics are not recommended as additive in feed of dairy cows because of the residue problem in milk.
183. The intensity of yellow colouration of milk indicate the level of vitamin A.
184. Processing of low quality roughages is essential to improve its digestibility in runinants.
185. Biuret is a non-toxic when compared to other NPN compounds.
186. Any material eaten by an animal is called as feed.

187. Haecker considered the quality of milk over and above the maintenance requirement of animals.
188. Kellner used various SE factors for digestible protein from cereal, roughage and oil cake.
189. Cattle will generally eat daily 2000 to 2500 g dry protein from cereal, roughage and oil cake.
190. The DCP of compound feed for cattle and calf starter are similar whereas the TDN of these will vary.
191. In feeding ruminants, black cattle consume less dry matter intake than white cattle.
192. Metabolizable energy value calculation are similar for both ruminant and poultry.
193. The energy expended in the fasting animal is represented in fasting heat production.
194. Maintenance is a state in which there is a remarkable gain with a little loss of nutrients from the body.
195. Working bullocks (8 hours) should be given more protein in addition to enough carbohydrate and fat.
196. The level of vitamin E in the diet depends on the level of polyunsaturated fatty acids.
197. Bran is useful inclusion and tends the diet to have a great effect reducing constipation or diarrhoea.
198. Vitamin 'D' has no effect in reducing the incidence of milk fever.
199. Individual feeding of animal is preferred over group feeding since it will be beneficial to fed the animal according to its needs.
200. Ketotic animals require more glucogenic precursor feeds in their ration.
201. Feeding of concentrate, roughage in the proportions of 60:40 will help the milch animals to produce more butter fat.
202. Ruminant animals require a shorter collection period if indicators are used in the ration during digestion trial.
203. Nitrogen balance method will give an accurate data in estimation of net energy needs of the animals.
204. There is a correlation between milk fat percent and level of roughage feeding in dairy cows.
205. There is no difference between 'feed supplements' and 'feed additives'.
206. Metabolizable energy minus heat increament is net energy.
207. Phosphorous deficiency does not influence reproductive performance of cattle.
208. For bullocks concentrate feeding should be based on nature of work.
209. Feeding standard is also called as nutrient requirement and allowance.
210. Kellner feeding standard is a productive value type standard.
211. Roughages in the diet improves milk fat.
212. Finisher ration of sheep should contain less energy and more protein.
213. Protected protein helps in wool production.
214. Hypoglycemia interferes with reproductive performance.
215. Increased level of starchy grain feeding can be practiced in high milk yielding cows.
216. Complete feed contains both concentrates and roughages.

217. High acid insoluble ash content in concentrate mixture does not influence the feed quality.
218. Respiratory quotient can be conducted by direct calorimetry by measuring the gaseous output.
219. Laboratory method of determination of digestibility is easier than indicator method.
220. 1kg of TDN will produce 7.9 kilo calories of digestible energy.
221. Biological value of protozoal protein is higher than microbial protein.
222. Digestible energy, metabolisable energy and net energy are interconvertible by applying certain correction factors.
223. The proximate analysis is not a useful measure to assess the nutritive value of a feed.
224. Inorganic part of the food has much nutritive value.
225. The high proportion of volatile fatty acid is greatly influenced by the diet.

<u>Multiple choice questions</u>

1 The first limiting amino acid of microbial protein for wool growth and body weight gain in small ruminants is
a lysine
b methionine
c threonine
d glycine

2 Dry matter intake in goats is
a 3 – 7 % of body weight
b 7 – 10 % of body weight
c 1 – 3 % of body weight
d 10 – 15 % of body weight

3 Legume fodders are rich in
a Protein
b Calcium
c Both protein and calcium
d None

4 Poor quality roughages are digested better in goats than sheep because
a Feed retention time is more
b Higher concentration of cellulolytic bacteria in the rumen
c Urea recycling is more efficient in goats
d All

5 The anti-nutritional factor present in mango seed kernels is
a saponins
b oxalates
c mimosine
d tannins

6 'Oat hay poisoning' is due to
a Nitrate
b Citrinin
c Hydrocyanic acid
d None

7 Commonly used aflatoxin binder in the ration of poultry is
a MOS
b Sodium calcium alumina

silicates

c Bentonite d None

8 Crude protein content of soybean meal is

a 42 – 44 % b 22 -24 %

c 32 – 34 % d 52 – 54 %

9 The mesh size of the sieve used for manufacturing of chicken layer mash is

a 2 mm b 10 mm

c 6 mm d 14 mm

10 Mixing time required for mixing mash type of feeds in a horizontal mixer is

a 3 – 5 minutes b 10 – 15 minutes

c 20 – 30 minutes d Less than one minute

11 Ketosis in dairy cattle is due to

a Energy deficiency b Protein deficiency

c Mineral deficiency d None

12 Estimated value of methane emission from Indian Livestock is

a 3-5 Tg b 50-60 Tg

c 9-11 Tg d 30-40 Tg

13 The efficiency of utilization of D-Lysine in chicken is

a 95 – 100 % b 45 – 50 %

c 70 – 75 % d None

14 Vitamin C in the diet / ration is essential for

a Dairy cattle b Chicken

c Sheep d Guinea pigs

15 Number of ATPs produced during the metabolism of one mole of acetic acid in ruminants is

a 12 b 17

c 15 d 25

16 Feed conversion efficiency in broilers is

a 1.7 – 1.9 2.5 – 2.7

c 2.2 – 2.5 1.0 – 1.2

17 Excess energy consumed by animals is

a Excreted through urine b Excreted through both urine and feaces

c Excreted through feaces d Stored as fat

18 Level of urea generally added in the compounded feed of cattle is

a 1 – 3 % b 3 – 6 %
c 10 – 14 % d Less than 0.5 %

19 Defaunation in ruminants is
a Removal of bacteria b Removal of protozoa
c Removal of fungi d Removal of microbes

20 National Institute of Animal Nutrition and Physiology of ICAR is located in
a New Delhi b Hyderabad
c Karnal, Haryana d Bangalore

Answer :

1)	b	11)	a
2)	a	12)	c
3)	c	13)	d
4)	d	14)	d
5)	d	15)	a
6)	a	16)	a
7)	b	17)	d
8)	a	18)	a
9)	c	19)	b
10)	a	**20)**	d

1.Calf starter should have
a. TDN- 70-75% b. Protein supplement of marine / animal origin c. Both a and b are correct d. None of the above
2. DCP is a good source of
a. P b. Ca c.Ca and P d. None of the above
3.Antioxidants are added to concentrate feeds
a. To prevent bloat b. To prevent oxidation of fats
c. To hasten oxidation of fats d. To prevent oxidation of nutrients.
4. Paddy straw is
a. Rich in oxalates b. Rich in DCP c. Highly digestible d. None of the above
5. Antibiotic feed supplement are added to the diets of growing animals because they
a. Improve feed efficiency b. Increase daily body gain
c. Decrease mortality d. All are correct
6. Molasses is a rich source of
a. Protein b. Cellulose c. Complex carbohydrates d. Soluble sugars
7. Shell grit contains
a. 48 % Ca b. 38% Ca c. 28% Ca d. 18% Ca
8. Calfornia net energy system for beef cattle was developed by
a. Lofgreen and Garret b. Kellner c. Armsby d. Morrison
9. Milk replacer is introduced with rations of calves when they attain
a. One month b. One week c. Three weeks d. Two weeks
10. The protein requirement of ruminants according to ARC (1980) are based on
a. DCP b. Crude protein c. Rumen degradable and undegradable protein

d. Metabolisable protein

11. Feeding standards based on digestible nutrients was first suggested by
    a. Lehmann b. Wolff c. Fjord d. Morrison
12. Lime stone is a good source of
    a. Phosphorus b. Calcium c. Calcium and phosphorus d. Magnesium
13. Example of an internal indicator
    a. Carmine red b. Chrome oxide c. Lignin d. None of the above
14. According to BIS the concentrate mixture for dairy cattle should contain
    a. Min CP – 16% b. Min CP- 20% c. Not more than 18% CP d. None of the above
15. Toxicity of dietary lysine is overcome by increasing the level of
    a. Arginine b. Threonine c. Valine d. Leucine

III **Fill up the blanks with suitable words**

1. Concentrate feed should be provided @ 1 kg of every _____ kg of milk produced in dairy cattle.
2. The maintenance requirement of DCP per kg metabolic body weight is _____ g in ruminants.
3. Molasses can be added in dairy rations up to _____ % level.
4. _____ and _____ are metabolic disorders occurring in cattle after calving
5. when urea is supplemented in ruminant ration, the ratio of N:S should be _____
6. The permissible level of AIA in type II dairy cattle is _____ % as per BIS.
7. Morrison feeding standards are based on _____ energy system.
8. A cow in advance stage of pregnancy needs _____ kg of TDN as an additional allowance.
9. According to ICAR 1998, the DCP requirement for each 1 kg of milk with 4 % fat is _____ g
10. One kg of TDN is equivalent to _____ of digestible energy.
11. Sen and Ray feeding standards are based on _____ feeding standards.
12. Livestock rations should contain _____ % of salt.
13. A crossbreed cow in second lactation needs _____ % of nutrients as an extra allowance.
14. In dairy farms, the thumb rule is to feed on kg concentrate for _____ kg of milk produced in buffaloes.
15. A calf weighing 30 kgs requires _____ kg of milk per day at one week of age.
16. Hay standard was developed by _____.
17. Energy requirement for maintenance is _____ kcal of ME per kg MBW.
18. _____ and _____ methods can be used for manufacturing protected proteins.
19. _____ and _____ methods can be used for protecting fat from ruminal fermentation.
20. The DM intake in cows is _____ of body weight.

21. Transition period in a dairy cow is between _____ and _____.
22. Minerals associated with reproduction of dairy cows are _____, _____ and _____.
23. Indian feeding standards are suggested by _____ and _____
24. The permissible level of acid insoluble ash in type II dairy cattle is ____ % as per BIS
25. The normal sulphur to nitrogen ratio in sheep for wool production is _____
26. Morrison feeding standards are based on _____ energy system
27. Meat producing goats require _____ % DM per 100 kg body weight
28. The dry matter intake in milch goats is _____ % of the body weight
29. A by-product rich in cellulose derived from sugarcane industry is _____
30. Unconventional feeds contain _____ factor which are harmful to health.
31. The practice of increasing the nutrient intake in ewes prior to mating is called as _____
32. _____ ,_____and _____ are the internal or natural indicators in feed.
33. _____and _____feeding standards can be followed for formulation of ration for cattle.
34. The calcium and phosphorus content in the mineral mixtures used for cattle should be _____ & _____ %
35. Colostrum is a good source of _____ to the calves .
36. _____ and _____ are the common metabolic disorders in milch cattle.
37. The most commonly occurring mycotoxins in feedstuffs are _____ and _____ .
38. The sugarcane by products commonly used for feeding ruminants are _____ and _____.
39. _____feeding trial method is used to compare two or more rations with each other.
40. Protein requirement for growth can be determined by _____ and _____ methods.
41. The dietary protein for ruminants is expressed in terms of rumen _____ and _____.
42. A calf starter should contain _____ % of D.C.P and _____% of T.D.N.
43. Ketosis and milk fever in dairy cows are mainly caused by _____ and _____, respectively.
44. _____ is the common anti-nutritional factor present in sorghum.
45. The dietary protein which escapes rumen degradation is called as _____
46. _____ and _____ are the feeding standards followed in U.S.A. and U.K.
47. Net energy is the differences between _____and _____.

48. NPN substance urea could be incorporated to a maximum of _____% in concentrate mixture or _____ % of the DM intake.
49. In feeding standards the requirement of nutrients are either expressed as _____ or _____.
50. Feeding of excessive amount of legume forage leads to _____ and _____.
51. _____ and _____ are the digestive troubles that are caused due to sudden change in the diet.
52. _____, _____ and _____ are types of feeding standards.
53. The energy and protein requirement for maintenance per kilogram metabolic body weight of cattle are _____ and _____.
54. The suggested limit of dry matter intake in terms of body weight are _____, _____, _____ and _____% for buffaloe, sheep, cattle and horse, respectively.
55. _____occurs when cattle is suddenly shifted from high roughage to a high concentrate ration and this is due to increase in_____ bacteria.
56. The protein requirement for lactation is _____ times as secreted in the milk.
57. _____ is the energy requirement for growth.
58. _____is the endogenous urinary nitrogen loss per kg body weight.
59. When output of nitrogen from the body exceeds that of input it would result _____.
60. When serum level of calcium goes below _____it will cause milk fever.
61. _____ determines the nutrient requirement of farm animals.
62. Ketosis is caused by _____ in _____ metabolism.
63. Milk fat percentage is determined by _____production in the rumen which is related to level of _____ in the ration.
64. Level of urea in concentrate feed should not exceed _____level or else it will result in _____.
65. The crude fibre fraction includes _____ which is indigestible.
66. Biuret is an example of _____.
67. Heat treatment of soya reduce _____inhibitor.
68. _____ and _____ are used as growth stimulants in fast growing animals.
69. In scandinavian feed unit _____ was taken as one unit and this value was compared to other foods.
70. Grouven in his feeding standard took into consideration _____ and _____in the feed as the basis.
71. Armsby feeding standard is based on _____.
72. In Haecker's feeding standard consideration was given to both _____ and _____ of products.
73. Savage increased the _____requirement by about 20% than Haecker's.

74. Morrison feeding standard originated from _____and _____.
75. The factors for converting digestible nutrients into starch equivalent are _____ for protein _____ for carbohydrate and _____ for fats.
76. Indian standards are almost dependent on _____feeding standard.
77. The amount of endogenous urinary nitrogen and metabolic faecal nitrogen is dependent on _____and _____, respectively.
78. The endogenous urinary nitrogen is about _____ gm/kg body weight and metabolic faecal nitrogen _____ gm/100g dry matter intake.
79. The requirement of protein for growth can be estimated by _____ and _____ methods.
80. Clinical signs associated with deficiency of water soluble vitamin are generally _____ and this vitamin is _____ stored in the body.
81. Overeating of grains in animals can be treated by administration of _____.
82. In ketosis of dairy animals there is elevation of _____ enzyme in liver and _____ level falls below minimum.
83. The gross energy which is ultimately , utilised by the tissues is known as _____.
84. Voluntary feed intake gets reduced during _____ months which should be compensated by increasing _____ density of the diet.
85. Flushing in goats helps in improved _____ and _____.
86. Basal metabolism of an animal can be estimated based on _____ and calculated by a formula _____.
87. Net energy system was adopted in _____ feeding standards.
88. One of the common NPN additive is ---------- and this should be accompanied with ---------- in the feeds of ruminants.
89. The desirable dry matter content of the fodder for ensiling should be about ----------
90. The loss of energy as methane loss during rumen fermentation can be minimized by the addition of ----------.
91. The desirable ratio of N to S in ruminant feed is ---------- for proper utilization of NPN compounds.
92. The biological availability of phosphorus from wheat bran is less because of the presence of ----------.
93. The quantity of milk a new born calf may be allowed to suckle during its first week is about ---------- of its body weight.
94. The feed pellet when it comes out of the pellet mill may have a moisture content of ---------- and a temperature of ----------.
95. A high intake of alfalfa in sheep and cattle may cause clinical condition called ----------.

96. Lactating cows require ---------- kg of concentrate for maintenance and 1 kg of concentrate for every ---------- kg of milk produced.
97. A deficiency of carbohydrate in pregnant ewes may cause a metabolic disorder called _____.
98. The most characteristic sign of chronic aflatoxin B1 toxicity is _____
99. _____ may be incorporated in ruminant feed as methane inhibitor.
100. The first step in formulating ration for cattle is to estimate the _____ intake.
101. Grinding of feedstuffs is a process of _____ reduction.
102. _____and _____ can be used as a pellet binder while preparing pelleted feed.
103. The pigment _____ in yellow corn has vitamin A activity.
104. _____ and _____conditions are favourable for the growth of toxin producing fungus.
105. _____ is a antifungal additives used in high moisture grain to inhibit mould growth.
106. Soaking of cottonseed cake in water reduces _____ a toxic principle present in it.
107. Tannins are classified into _____ and _____ tannins.
108. Young sorghum fodder contains _____.
109. Percentage of crude protein in deoiled rice bran is _____.
110. Total nutrient requirement is sum of _____ and _____ in lactating dairy cows.
111. The nutritive value of molasses is assessed by _____.
112. In Kellner S.E. _____ correction is made for roughage and _____ for concentrate feedstuffs.
113. Chopping of roughage is done to reduce _____ .
114. _____ and _____ encourage mold growth in stored feed leading to problems of mycotoxicosis.
115. In purified diet protein and vitamin are supplemented as _____ and _____, respectively.

Expand the following

a. NRC **b. NE_m** **c. NE_l** **d. RDP** **f. UDP**
g. CNCPS **h. BIS** **i. NDDB** **j. ICAR** **k. CLFMA**