



## **Model B**

First question: Put  $\surd$  or  $\times$  on the followings (0.2 mark for each):

1. Plants didn't show much larger differences in chemical composition than do the animals, however, the plant categories (roughages, carbonaceous and nitrogenous) differ widely in their chemical composition ( ).
2. Variation in fat content, of an animal body, affects the percentages of other constituents and this is peculiarly true for water ( ).
3. A given animal body needs to maintain a relatively constant water content. This of course requires high physiological and biochemical regulations to provide this requirement. These regulations we have to recognize about the body: 1. Water turn over. 2. Water sources. 3. Water losses ( ).
4. Rats, cats, dogs, sheep, goats, buffalo, rabbits and guinea pigs apparently convert most or all carotene to vitamin A, but cows, horses, sows and chickens have high carotenoids depot in blood and fats ( ).
5. Four such pigments have been identified in vertebrates; iodeopsin and cyanopsin, which are present in the rods, and rhodopsin and porophyropsin which are present in the cones of the retina ( ).
6. Di-oxygenase, which readily destroys the carotenes and xanthophyll's, and probably also destroys vitamin A through a coupled oxidation with polyunsaturated fatty acids ( ).
7. Production of  $1.25(\text{OH})_2\text{D}_3$  by liver in case of low dietary Ca which stimulates its production ( ).
8. Tocopherols are absorbed into the lymphatic vessel and are transported as part of lipoproteins ( ).
9. Menaquinone is the metabolically active form of Vitamin K ( ).
10. Thiamin deficiencies in chicken produce polyneuritis which is observed approximately 3 weeks after they are fed a thiamin deficient diet ( ).
11. A diet free of niacin and low in tryptophan produced deficiency signs of sudden anorexia, severe diarrhea, and dehydration followed by sudden death ( ).
12. About 50% of dairy cows in high-production herds go through borderline abortion during early lactation, which could be prevented by niacin dietary supplement ( ).
13. Unlike the fat-soluble vitamins, water-soluble vitamins (except B12) are not stored in appreciable quantities in body tissues ( ).
14. Riboflavin prosthetic group contains: (a) flavin mono nucleotide (FMN) or flavin adenine dinucleotide (FAD). That all are concerning with chemical reactions involving the transport of hydrogen, which is important in energetic nutrient metabolism ( ).
15. Niacin function in the animal body as the active group of two important coenzymes, (NAD) and (NADP). These coenzymes are involved in the mechanism of acyle group transfer in the living cells ( ).
16. Lactic acid is included in the NDSC ( )

17. Sugar composition of cellulose is similar to starch ( )
18. The concentration of cellulose is increased with advanced maturity of the plant ( )
19. Grass contains more cellulose than legumes at the similar stage of maturity ( )
20. Hemicelluloses are the most complex of plant polysaccharide ( )
21. Excess of unsaturated FA decreases milk fat % ( )
22. By pass fat increases short chain fatty acids in milk fat ( )
23. Isomers of linoleic acid inhibits milk fat synthesis in mammary gland ( )
24. Body can synthesize EPA and DHA from ALA ( )
25. Oleic acid is considered an essential fatty acid ( )

Second question: Choose the correct answer (0.2 mark for each):

1. On a percentage basis, the water content shows a large decrease with age
  - (a) - in early life (88% for the embryo shortly after conception, (b)- 85 % at birth, (c) 65 % at five months, and (d) 40 % in the mature animal.
2. Calcium makes up about 1.5% of the total body weight, phosphorus about 1% and together they account for over:
  - (a) 70% of the ash of the body (b) 60% of the ash of the body (c) 50% of the ash of the body (d) 40% of the ash of the body.
3. Riboflavin deficiency causes:
  - (a) clubbed down& curled toe paralysis in the chicks, (b) leg paralyses & poor feathering in turkeys (c) Alopecia in lab animals (d) all of the above.
4. Osteoporosis may be happen due to:
  - (a) Nephritis (b) enteritis (c) polyneuritis (d) none of the above).
5. For poultry the vitamin D2 has the following potency in relation to vitamin D3:
  - (a) about 35 fold the potency of vitamin D3 – (b) about 25 fold the potency of vitamin D3 (c) about 35 folds less than the potency of vitamin D3 (d) none of the above.
6. Appearance of thiamin deficiency symptoms may be due absence of the prosthetic group:
  - (a) TPP (b) TDP (c) lipothiamide (d) all of the above).
7. The metabolic active form of vitamin D in live body is:
  - (a) 25 hydroxy cholecalceferol (b) 1.25 hydroxy cholecalceferol (c) 1.25 di-hydroxy cholecalceferol (d) all of the above).
8. Retinol is important in prevention of:
  - (a) deafness in prenatal embryo (b) enzootic ataxia in calves (c) encephalomalacia of newly born – d. none of the above).
9. Sudden death is a common occurrence in calves and pigs, which show the heart and liver lesions on necropsy due to vitamin:
  - (a) A (b) B (c) C (d) D (e) E (f) K (g) P (h) none of the above).

- (a) E, (b) B1 (c) E (d) folacin.
10. Penguin-like squat is extreme leg weakness of the hens which show this characteristic posture due to deficiency of  
(a) Vitamin D (b) Ca (c) Vitamin A (d) Cholin.
11. From the body oxidant cause is:  
(a) vitamin C (b) B-carotene (c) glutathione peroxidase enzyme. (d) free radical
12. From the causes of fatty liver is deficiency of the AA:  
(a) Methionine, (b) Lysine (C) Tryptophan, (d) Threonine.
13. Polioencephalomalacia is thiamin-responsive disease, which may occur sporadically in  
(a) pigs, (b) dogs, (c) cattle (d) poultry.
14. Niacin response in early postpartum cows might be partially explained via reduction in  
(a) ketosis, (b) milk fever, (c) abortion (d) polioencephalomalacia.
15. The vitamin K is obtained either by absorption from:  
(a) the duodenum in small intestine (b) the lower gastrointestinal tract and through cecotrophy as in rabbit, (C) the ilium in small intestine, (d) or the jejunum in small intestine.
16. The menadion vitamin is  
(a) the plant source of vitamin K (b) the microbial source of vitamin K (C) is the synthetic source of vitamin K (d) the inactive source of vitamin K.
17. Sweet clover disease is  
(a) Symptomatic deficiency symptom for biotin in pigs, (b) symptomatic deficiency symptom for thiamin in lamb, (C) deficiency symptom for menaquinone in cattle, (d) is a drastic effect of dicumarol in cattle fed decomposed berssem.
18. Deficiency symptoms of pyridoxine are:  
(a) dermatitis or partial alopecia, (b) epileptic-like convulsions, (C) anemia, (d) All of the above.
19. Treating and prevention of ketosis in dairy cows could be conducted with:  
(a) 6-12 g doses of nicotinic acid daily (b) 6-12 g doses of thiamin (C) 6-12 g doses of biotin daily (d) 6-12 g doses of B12 daily.
20. The “black tongue,” is a condition characterized by inflammation of the tongue, as well as the esophagus, becomes distinctly inflamed due to deficiency of  
(a) niacin in poultry, (b) biotin in poultry, (C) folic acid in poultry, choline in poultry,
21. Prosthetic group pyridoxal phosphate is concerned primarily with:  
(a) amino acid metabolism, (b) lipid metabolism, (C) carbohydrate metabolism (d) all of the above.
22. PEM affects mainly  
(a) calves and young cattle aged between 4 months and 2 years old, (b) sheep, and goats between 8 and 12 months old, (C) cattle aged between 24 months and 3 years, (d) pigs in the growing period.
23. The degradable protein is high (about 85%) present in:

- (a) Soybean protein (b) in silage and serial protein, (C) fish meal protein, (d) oil bearing seed protein.
24. The protein efficiency ratio of an experimental animal is determined by:
- (a) the weight gain of an animal is divided by protein intake, (b) protein intake is divided by weight gain of an animal, (C) feed intake is divided by weight gain of an animal, (d) weight gain of an animal is divided by feed intake.
25. Dividing Feed intake by weight gain of an animal is defined as:
- (a) Feed efficiency ratio, (b) Feed conversion ratio, (C) gross protein value, (D) none of the above.
26. Certain amino acids (AAs) deficiencies produce specific body lesions as in case of eye cataract, which is due to
- (a) Methionine deficiency, (b) lysine deficiency, (C) tryptophan deficiency, (d) phenyl alanine deficiency.
27. Abnormal feathering in birds is due to deficiency of the AA:
- (a) Arginine, (b) Lysine, (C) Tryptophan, (d) threonine.
28. Metabolic pool is an expression refers to:
- (a) drown of AAs for anabolic purposes in the body, (b) drown of AAs for catabolic purposes in the body, (C) drown of AAs for anabolic and catabolic purposes in the body, (d) none of the above.
29. Measure of protein quality for ruminant animals by
- (a). gross protein value (b) Protein equivalent – (c). BV – (d) protein efficiency ratio.
30. A characteristic military gait (goose step) in pigs is due to deficiency of vitamin:
- (a) vitamin B3, (b) vitamin B1, (C) vitamin B6 (d) Pantothenic acid
31. The structural and reserve material of the plants is:
- (a) protein (b) moisture (c) carbohydrates (d) lipids.
32. Water of the animal body is determined by equation if you know -----%:
- (a) DM (b) protein (c) ash (d) Lipids.
33. Pound water is considerable part of water requirements obtained from:
- (a) metabolism of nutrients (b) drinking (c) Feedstuffs - (d) all of the above.
34. Crumble of equine hoof is a deficiency symptomatic signs' due to:
- (a) choline (b) thiamine (c) pantothenic acid (d) biotin.
35. Urea can be included in rations for ruminants at the rate of:
- (a) 3% of DM content (b) 30 g / Kg diet (c) 33% of N content of the diet (d) one third of the diet protein.
36. Dogs, cats and pigs fed row egg white show signs of alopecia and dermatitis due to:
- (a) allergy of histamine in row egg white, (b) Avidin in row egg white antagonist niacin,  
(c) Avidin in row egg white antagonist biotin (d) Avidin in row egg white antagonist thiamin.
37. Fate of rumen microorganisms :
- (a) pass alive to the intestine, (b) death by true stomach acidity and excretion with feces, (c) death by true stomach acidity and complete digestion and absorption as usual feed (d) none of the above.
38. High-yielding cows cannot meet all their protein needs from that supplied by the microbes as :



- 54 Carbohydrate B1 is  
 a. sugars                                      b. starch                                      c. soluble fiber                                      d. all of them
- 55 Corn silage VFAs (acetate, propionate, and butyrate) are available for  
 a. rumen microbes                                      b. cow                                      c. rumen microbes and cow                                      d. none of them
- 56 Lactic acid in corn silage is ruminally fermented into  
 a. acetate                                      b. propionate                                      c. butyrate                                      d. all of them
- 57 Starch granules are ruminally fermented into  
 a. acetate                                      b. propionate                                      c. butyrate                                      d. propionate and lactate
- 58 Hemicelluloses contain a variety of  
 a. xylose                                      b. arabinose                                      c. glucose                                      d. all of them
- 59 Cellulose and hemicellulose are ruminally fermented into  
 a. acetate                                      b. propionate                                      c. butyrate                                      d. all of them
- 60 Increasing of dietary sugars increases  
 a. milk yield                                      b. milk fat                                      c. milk protein                                      d. all of them
- 61 Hemicellulose is present in high concentrations in  
 a. grains                                      b. oil seeds                                      c. alfalfa                                      d. grain by-products
- 62 Hemicellulose is dissolved in  
 a. H<sub>2</sub>SO<sub>4</sub>                                      b. acid detergent solution                                      c. neutral detergent solution                                      d. all of them
- 63 Carbohydrates are sources of  
 a. energy for cows                                      b. energy for ruminal bacteria                                      c. Milk lactose                                      d. all of them
- 64 NDSC includes  
 a. NDFC                                      b. sugars                                      c. starch                                      d. all of them
- 65 NSP includes  
 a. NDF                                      b. pectin and fructan                                      c. B-glucans                                      d. all of them
- 66 NDSF include  
 a. pectin                                      b. B-glucans                                      c. fructan                                      d. all of them
- 67 NDF includes  
 a. cellulose                                      b. hemicellulose                                      c. lignin                                      d. all of them
- 68 Excessive dietary intake of starch is a risk factor for  
 a. acidosis                                      b. decrease NDF digestibility                                      c. milk fat depression syndrome                                      d. all of them
- 69 Excessive dietary intake of NDF is associated with  
 a. Low dry matter intake                                      b. high energy intake                                      c. high milk fat                                      d. all of them

- 70 NSP is considered a good measure for dietary fiber for  
a. Cows                                      b. sheep                                      c. poultry                                      d. all of them
- 71 Optimum dietary Na in close up diet is up to  
a. 0.05                                      b. 0.12                                      c. 0.25                                      d. 0.3
- 72 Stiffness and difficult locomotion in lamb is caused by deficiency of  
a-Se                                      b. Cu                                      c. Mg                                      d. all of them
- 73 Parakeratosis of teat, ruminal papillae and interdigital skin is cause by deficiency of  
a. Zn                                      b. Cu                                      c. Mn                                      d. All of them
- 74 Shortening of long bone and movement on pastern joint is caused by deficiency of  
a. Se                                      b. Ca                                      c. Mn                                      d. All of them
- 75 Sudden death of rapidly growing calf may be due to deficiency of  
a. Cu                                      b. Se                                      c. Ca                                      d. a and b
- 76 Birth of weak calf and unable to suckle may be due to deficiency of  
a. Iodine                                      b. Se                                      c.vitamin E                                      d. all of the previous
- 77 Birth of hairless immature calf may be due to deficiency of  
a. Iodine                                      b. Se                                      c.vitamin E                                      d. all of the previous
- 78 Which mineral is macro-mineral divalent anion  
a. ca                                      b. P                                      c. Mg                                      d. Se
- 79 Cow suffered from muscle tremors and wide palpebral fissure. It may be due to deficiency of  
a. Ca                                      b. Mg                                      C. P                                      d. all of them
- 80 Unit of micro-mineral requirement  
a. g/kg                                      b. g/100g                                      c.mg/kg                                      d. mg/1009
- 81 Mineral supplement used as an alkalinizer in the diets of dairy cow  
a. Di-calcium phosphate    b. NaHCO<sub>3</sub>                                      c. MgO                                      d. all of them
- 82 Mineral supplement used as a buffer in the diets of dairy cow  
a. Di-calcium phosphate    b. NaHCO<sub>3</sub>                                      c. MgO                                      d. all of them
- 83 Excess of dietary .....decreases mg absorption  
a. K                                      b. Na                                      c. Cl                                      d. all of them
- 84 Excess of degradable protein is a risk factor for  
a. Hypocalcemia                      b. Hypophosphatemia    c. hypomagnesemia                      d. all of them
- 85 Urine pH of a close up cow received anionic salt should be  
a. 7.1-8                                      b. 6-7                                      c. 5.5-5.9                                      d. less than 5.5
- 86 Dietary concentration of Sulfur in close up diet is up to..... %  
a. 0.2                                      b. 0.4%                                      c. 0.6%                                      d. 0.8%
- 87 Dietary concentration of Mg in close up diet is up to..... %  
a. 0.2                                      b. 0.4%                                      c. 0.6%                                      d. 0.8%

- 88 Excessive feeding of Egyptian clover is a risk factor for pica. This is due to deficiency of .....
- a. K                                      b. Na                                      c. P                                      d. b and C
- 89 Dietary requirement of Se for poultry is .....PPM
- a. 0.1                                      b. 0.3                                      c. 0.6                                      d. 0.8
- 90 Persistent diarrhea is caused by deficiency of
- a. Se                                      b. Cu                                      c. I                                      d. Co
- 91 Which species is more sensitive to Cu toxicity?
- a. Cattle                                      b. Sheep                                      c. Poultry                                      d. b and c
- 92 Abortion may be due to deficiency of
- a. Co                                      b. I                                      c. Ca                                      d. Mg
- 93 Still birth may be due to deficiency of
- a. Se                                      b. I                                      c. Ca                                      d. a and b
- 94 Rumenic acid is .....
- a. LA                                      b. ALA                                      c. CLA                                      d. DHA
- 95 Fats synthesized in the rumen are
- a. triglycerides                      b. phospholipids                      c. cholesterols                      d. unsaturated FA
- 96 Excess of ..... decrease fiber digestibility
- a. fractionated fat                      b. Ca-soap of FA                      c. cholesterols                      d. unsaturated FA
- 97 Saturation of fatty acids is performed in
- a. rumen                                      b. liver                                      c. mammary gland                      d. all of them
- 98 Vitamin B 12 is synthesized in
- a. rumen                                      b. liver                                      c. mammary gland                      d. all of them
- 99 Fatty liver is due to accumulation of .....in hepatocytes
- a. triglycerides                      b. phospholipids                      c. cholesterols                      d. lipoprotein
- 100 Which fatty acid is a precursor for PGF2 alpha?
- a. LA                                      b. ALA                                      c. EPA                                      d. DHA

*Good luck*

*Prof. Sayed M Hegazi*