QUESTION BANK VETERINARY PHARMACOLOGY AND TOXICOLOGY

PAPER NO - 27

PLANT TOXICITY

I.NAME THE FOLLOWING

1.Active principle present in root of Derris and Lonchocarpus.-(Rotenone)

2.A cytotoxic mycotoxin—(Trichothecens, T2 toxin)

3.An estrogen principle present in plants.-(Isoflavon, Genestin)

4.An oestrogenic mycotoxin—(F2 toxin by Fusarium)

5.Antidote for curare poisoning-(Neostigmine)

6.A neurotoxic mycotoxin—(Tremorgens)

7.A plant containing thiaminase -(Bracken fern)

*8.*A plant causing cyclopean type foetus.-(*Veratrum californicum*)

9.A plant causing thiamine deficiency.-(Bracken fern)

10.A plant poison that will inhibit the oxygen utilization by the tissues.-(Hydrocyanic acid)

11.A systemic poisonous gas.-(Chloracetophenon/CNP)

12.A teratogenic fungal toxin.-(T2 toxin/Rubratoxin)

13.Cyanogenic glycoside in linseed.-(linamerin)

14.Enzyme system in the body affected by HCN –(Cytochromr-C)

15.Fungal organism which produce ochratoxin .-(*Aspergillus ochracens*)

16.Fungal organism which produce Citrinin.-(*Penicillium viridicatum*)

17.Four plants containing cyanogenic glycoside.-(Sorghum,tapioca leaf, wild cherry, white clover, bamboo Shoots, arrow grass, linseeds.)

18.One fodder containing cyanogenic glycoside.-(sorghum)

19.One fungal toxin causing oestrus in animals.-(F2 toxin by fusarium)

20.One fungal toxin causing dermal necrosis.-(T2 toxin)

21.One fungal toxin causing facial eczema .-(Sporidesmin)

22.One fungal toxin causing blindness.-(Aflatoxin)

23.One glycoside in the ration causing cherry red colour of venous blood.-(Amygdalin, Linamarin)

24..One insecticide of plant origin.-(Pyrithrins, Rotenone, Nicotine)

25.One mycotoxin causing hepatic damage—(Aflatoxin)

26.One mycotoxins causing kidney damage. –(Ochratoxin)

28.One phytotoxin causing convulsion.-(Cyanide, Strychnine)

29.One alkaloid which cause contact poisoning –(Nicotine).

30.One plant toxin cause blindness.—(Atropine , ergot, bracken)

31.One plant poisoning which cause thiamine deficiency –(Bracken fern poisoning)

32.One plant which contains high amount of copper.-*(Heliotropum europium*)

33.One plant causing primary photosensitivity.-(St.johnswort, buck wheat, polygonum, phagopyrin)

34.One poison which can be absorbed even through intact skin.-(Nicotine)

35.One teratogenic alkaloid –(Veratrum, Solanin)

36.One toxin causing necrosis of extremities.-(Ergot alkaloid)

37.One toxic principle present in cotton seed .—(Gossypol)

38.One tuber crop containing cyanogenic glycoside.-(Tapioca)

39.Organism which produce Sporidesmin.-(*Sporidesmin bakeri*)

40.Other name for congenital photosensitization.-(congenital porphyria)

41.Other name for secondary photosensitivity.-(Hepatogenous photosensitivity)

42.Phyto toxin causing dilation of pupil.-(Atropine)

43.Plant containing cyanogenic glycoside .-(Tapioca leaves)

44.Plant toxin causing cardiac arrhythmia.-(Oleander)

45.Species of animal which is highly susceptible to rubratoxin.-(Swine)

46.Source of pyrithrins-(powdered flower head of *Chrysanthimum cinerariafolium*)

47.The active ingredient of Black leaf 40.-(Nicotine)

48.The cyanogenic glycoside in white clover.-(Linamarin,Lautostralin)

49.The cyanogenic glycoside in tapioca leaf.-(Amygdalin, Linamerin, Lautostralin)

50.The fungi which produce the toxin "Citrinin"—(*Penicilium palitasis*)

51.The main toxicity of solanine in pregnant animals.-(Teratogenicity)

52.The main toxic fractions of Aflatoxin.-(B1, B2, G1 and G2)

53.The most important metabolites of aflatoxin .-(Q1, P1, B2a and aflatoxicol)

54.The metabolic cycle that is affected by lathyrism.- (Urea cycle)

55.The most powerful natural toxin.-(Botulinum toxin)

56.The most sensitive species to aflatoxin .-(day old ducklings)

57.The metabolic fraction of aflatoxin which is carcinogenic.-(M1)

58.The order of toxicity of aflatoxin fraction in decreasing order.-(B1, G1, B2 and G2)

59.The scientific name of thorn apple.-*(Datura stramonium*)

60.The scientific name of Broad bean.-(*Vicia faba*)

61.The toxic factors in bracken fern.-(thiaminase, Cyanogenic glucoside, aplastic anemia factor, haematuria factor, carcinogenic factor)

62.The toxic principle in the Indian pea.-(Beta amino propio nitrile)

63.The toxic principle present in red squill .-(Scillaren)

64.The toxic principle present in the rodenticide 'Betakil' -(Reserpine)

65.The toxicity due to Indian pea .-(lathyrism)

66.The toxic principle in *Vicia faba*.-(L- DOPA)

67.The toxic principle present in sweet clover.-(Coumarin)

68.The toxic principle present in potato especially at germination stage.-(Solanine)

69.The toxic principle present in *Leucaena leucocephala*.-(Mimosine)

70.The two forms of Ergot poisoning.-(Gangrenous and Nervous form.)

71.Three insecticide of plant origin.-(pyrithrin, rotenone, nicotine)

72.Three cyanogenic glycoside in tapioca.-(amygdalin, linamarin, lautostralin)

73.Three herbicides.-(carbon disulphide, ethylene bromide , hydrogen cyanide)

74.Three insecticide of plant origin.-(pyrithrin, rotenone, nicotine)

75.Three moulds which attack harvested crops and causes toxicity in animals.-(Aspergillus, Fusarium, Penicillium)

76.Three mould which attack plants in the field and causing toxicity in animals.-(Claviceps, Fusarium, Helminthosporium)

77.Three plants commonly seen in India which causes photosensitization.-(*Tribulus terrestris, Lantana camara, Crotalaria brassica*)

78.Three plants causing secondary photosensitization.-(*Lantana camara , Tribulus terestris* , crotalaria, polygonum

79.Toxic principle present in castor beans.-(Ricin)

80.Toxic principle present in Rape seed cake.-(Sinigrin)

81.Toxic principle present in cotton seed cake.-(Gossypol)

82.Two antidote of alkali poisoning.-(acetic acid, citric acid)

83.Two dyes causing primary photosensitivity.-(rose Bengal, acridine, phenothiazine)

84.Two drugs causing primary photosensitivity.-(phenothiazine, acridine dyes, rose Bengal dyes)

85.Two forms of Ergot poisoning.-(Gangrenous and Nervous form.)

86.Two mould toxins causing mould nephrosis.-(Ochratoxin, Citrinin)

87.Two phytoestrogenic principles.-(Isoflavon, Genestein)

88.Two plants containing phytoestrogen.-(Rye grass, red clover, bamboo shoots)

89.Two plants containing teratogenic alkaloids.-(veratrum, solanum)

90.Two plants which will inhibit the oxygen utilization by the tissues.-(tapioca leaves, *Abrus precatorius* leaves)

91.Two plants causing secondary photosensitivity.-(lantana, crotalaria, tribulus)

92.Two plants having high oxalate level.-(Sugar beat top, beta vulgaris, colacasia)

93.Two plants containing oestrogenic principles.-(Rye, bamboo, pinapple, papaya)

94.Two plants containing phytoestrogen.-(Rye grass, red clover, bamboo shoots)

95.Two plants with high nitrate content..-(corn, sorghum, sugar beat top, rye, sudan grass)

96.Two species of fungi which causes aspergillosis.-(*Aspergillus flavus, Aspergillus parasiticus*)

97.Two toxin produced by Fusarium.-(T2 toxin and F2 toxin)

98.Two toxin which delay/prevent coagulation of blood.-(Rodenticide, Bracken)

99.Two toxic fractions of Gossypol.-(Gossypurpurine and Gossy verdurin)

100.Two vegetables having phytoestrogens.-(pinapple, papaya, drumstick)

II. NAME THE PLANTS IN WHICH THE FOLLOWING TOXINS ARE PRESENT.

1.Atropine._(*Atropa belladona*)

2.Abrin.—(*Abrus precatorius*)

3.Ergot.—(*Claviseps purpurea*)

4.Gossypol.-(Cotton seeds)

5.Mimosine.-(*Leucenia leucocephala*)

6.Nicotine.-(*Nicotiana tabacum*)

7.Pyrithrins.-(*Chrysanthemum cinerariafolium*)

8.Reserpine- *(Rauwalfia serpintina*)

9.Recin.-(*Ricinus communis*)

10.Rotenone.-(Derris, lancocarpus)

11.Sinigrin.—(Rape seeds)

12.Solanine.-(Tomato, germinating potato)

III. STATE TRUE OR FALSE:

1.Addition of fungicidal dyes like Gentian violet to feed reduce the aflatoxin production.-(T)

2.Addition of hydrated sodium calcium aluminosilicate to feed (5 gm/ton) will adsorb aflatoxin and reduce absorption from G I tract.—(T)

3.Aflatoxin bounds to endoplasmic steroid binding site.-(T)

4.Aflatoxin was first discovered in England.—(T)

5.Aflatoxin bound to macromolecules such as DNA and prevent RNA synthesis.-(T)

6.Aflatoxin bounds to various enzymes in liver.-(T)

7.Aflatoxin M1 (metabolite of B1) is carcinogenic.—(T)

8.Aflatoxin toxicity is enhanced by exposure to light.-(T)

9.Aflatoxin resistance is enhanced by Carotene.-(T)

10.Aflatoxin fractions are heat stable.-(T)

11.Aflatoxin as such is carcinogenic in bovine.-(F)

12.A feed which is not visibly mouldy is safe for feeding.-(F)

13.All the aflatoxin fractions are heat labile.-(F)

14.Any evidence of mould growth in stored food means it is toxic .-(F)

15.Aspergillosis is otherwise known as Turkey x disease.-(T)

16.Atropine is the specific antidote of nicotine poisoning.-(F)

17.Bark of older Calotropis plant contain less toxic principles than young ones.-(F)

18.Because of rapid detoxification animal can eat cyanide slightly lower than the lethal dose over a long period without any harm.-(T)

19.Blood remain unclotted in hydrocyanic acid poisoning.-(T)

20.Blood will be bright red in colour in hydrocyanic acid poisoning.—(T)

21.Botulinum toxin prevent the synthesis of acetyl choline.-(T)

22.Bright blindness is a typical symptom of Bracken fern toxicity in sheep.-(T)

23.Burning of nitrogen containing plastics release cyanides.-(T)

24.Calcium oxalate is insoluble in water.-(T)

25.Calcium oxalate crystals may block kidney tubules.-(T)

26.Calcium oxalate crystals may deposit in brain tissue and may cause paralysis.-(T)

27.Cobaltous chloride and cobalt EDTA potentiate the protective action of sodium thiosulphate in the treatment of HCN poisoning.—(T)

28.Congenital porphyria is due to excess production of porphyrins in the body.-(T)

29.Congenital porphyria is due to metabolic disorders and it is icterogenic.-(T)

30.Congenital photosensitivity is due to certain metabolic disorders.-(T)

31.Coumarins are converted in to dicoumarins in spoiled sweet clover.-(T)

32.Cyanogenic glycoside as such is highly toxic.-(F)

33.Cyanide is having more affinity to methaemoglobin than cytochrome ferric iron.-(T)

34.Cycasin from *Cycas circinalis* as such is highly toxic.-(F)

35.Cycasin is converted to a toxic principle by microbos of the intestinal tract.-(T)

36.Day old ducklings are comparitively resistant to aflatoxin.-(F)

37.Deficiency of selenium and vitamin increases the susceptibility to aflatoxin.—(T)

38.Dicoumarol inhibits the prothrombin synthesis.-(T)

39.Dicoumarin is converted into coumarin in spoiled sweet clover.—(F)

40.Dichloroformoxime is used as a harassing agent.-(T)

41.Dietary calcium and iron retard absorption of fluorine from gastro intestinal tract,-(T)

42.Dilatation of pupil is a typical symptom in morphine poisoning.—(F)

43.Ducklings, dogs and guinea pigs are highly susceptible to aflatoxin.—(T)

44.Early somatic effect of ionizing radiation causes G.I.injury in few hours.-(T)

45.Early somatic injury due to radiation is caused by 100—500 rad. Units.-(T)

46.Ergot is an alkaloid obtained from the *fungi Claviceps purpurea*.-(F)

47.Eventhough, ricin is coagulated by heat it retain its antigenicity.-(T)

48.Evidence of mould growth in stored food does not mean that it is toxic .-(T)

49.Fasiolunatin is a cyanogenic glycoside .-(T)

50.Ferrocyanide is not toxic.-(T)

51.F 2 toxin is oestrogenic in action .—(T)

52.F 2 toxin causes 'vulvo vaginitis' syndrome in pigs.—(T)

53.Gossypurpurine is more toxic than Gossy verdurin.-(F)

54.Guanidine hydrochloride can overcome some of the paralysis caused by botulinum.—(T)

55.Herbicides are toxic to herbs but not to animals.-(T)

56.Horses are more susceptible than ruminants to cyanogenic plant poisoning-(F)

57.Hydrocyanic acid has more affinity to ferric iron in methaemoglobin than in cytochrome-C.-(T)

58.Hydrocyanic acid is fixed to ferric iron in methaemoglobin or cytochrome..-(T)

59.In acute oxalate toxicity death may cause due to hypocalcemia.-(T)

60.In bromide toxicity sodium chloride can be used as the specific antidote.—(T)

61.In cyanide poisoning sodium nitrate convert ferric iron to ferrous iron.—(F)

62.In hepatogenous photosensitivity the sensitizing substance is phyloerythrins.—(T)

63.In non ruminents Bracken fern may cause incordination, arched back,muscular tremors and opisthotonus.-(T)

64.In nitrate poisoning blood will have tarry red colour.-(F)

65.In sodium chloride toxicity blood-brain barrier is broken.-(T)

66.In Warfarin toxicity vitaminK3 (Menadion) is more effective than K1 for the treatment.-(F)

67.Lantana camara contain a photodyanamic toxin that is why it produce photosensitization.-(F)

68.Lathyrus toxin is heat labile and can be destroyed by cooking.—(T)

69.Least toxic form of cyanide is ferrocyanide.-(T)

70.Light skinned areas of the body is more affected with photosensitivity.-(T)

71.Liver and kidney diseases increases the toxicity of warfarin.-(T)

72.Liver dysfunction is not the cause of production of phylloerythrins.-(F)

73.Methylene blue convert haemoglobin to methaemoglobin .—(T)

74.Metabolites of aflatoxin is excreted in bile and is reabsorbed.-(T)

75.Mimosine from Leucenia as such is goitrogenic.-(F)

76.Mimosine as such can cause hypothyrodism in cattle.-(F)

77.Mimosine is converted by rumen microbs in to 3-hydroxy 4-pyridone which is goitrogenic.-(T)

78.Normally hydrocyanic acid is rapidly detoxified to thiocyanate and excreted in the urine.(T)

79.Ochratoxin is a fungal toxin and it is nephrotoxic.-(T)

80.Oleandroside and neriosides are having cardiac glycoside like action.-(T)

81.Osteolathyrism is a disease seen in animals characterized by skeletal deformities and aortic rupture.—(T)

82.Oxalic acid will be present in moist straw infected with fungus.-(T)

83.Oxalates may lead to break down of RBC.-(T)

84.Oxalate may crystallize in brain tissue.-(T)

85.Phenothiazine causes photosensitisation in bovines,-(T)

86.Phylloerythrin can cause secondary photosensitization.-(T)

87.Phytoestrogenic principles like isoflavon and genestin are destroyed by ensilaging.-(F)

88.Presence of phenyl butazone increases the toxicity of Warfarin.-(T)

89.Prussic acid can be used to sterilize ships.-(T)

90.Red squill can be used as a rat poison.-(T)

91.Ricin is not oil soluble hence it goes with castor cake.-(T)

92.Ricin is a protein which is heat labile.-(T)

93.Ricin is the toxic principle in the castor seed and it goes with the oil.—(F)

94.Ricin is the toxic principle present in castor seeds , which goes with the cake and not with the oil.-(T)

95.Rubratoxin is carcinogenic .-(T)

96.Rubratoxin causes reduction in energy production.-(T)

97.Rubratoxin inhibits various ATP ase enzymes.-(T)

98.Sheep, goats and adult cattle are comparatively resistant to aflatoxin.—(T)

99.Sodium potassium and ammonium nitrate and nitrite are important in considering nitrate poisoning.-(T)

100.Soya meal contain a lot of urease enzyme .-(T)

101.Spoiled sweet clover contains dicoumarins.-(T)

102.Strychnine causes stimulation of pre synaptic inhibition and causes convulsion.-(F)

103.Sweet clover contains dicoumarins.-(F)

104.Sweet clover contains coumarins.-(T)

105.T2 toxins are potent inhibitors of protein synthesis in mammalian cells.—(T)

106.The botanical name of thorn apple /Angels trumpet is *Datura stramonium*.-(T)

107.The carcinogenic metabolite of aflatoxin will not be excreted in milk.--(F)

108.The co- carcinogen present in bracken fern is Quercetin.—(T)

109.The hydrocyanic content of plant is more in the afternoon than in the morning.—(F)

110.The milky juice *of Calotropis gigantea* contain recin and proteolytic enzymes.-(T)

111.The milky juice of *Calotropis gigantea* causes purgative, emetic and caustic action.-(T)

112.The milk of animals fed with aflatoxin contaminated feed is toxic. –(T)

113.The M1 metabolite of aflatoxin is carcinogenic and is excreted in milk.-(T)

114.The optimum aflatoxin production is at 24—25 degree centigrade when moisture exceed 15 %.-(T)

115.The photosensitizing substance phyloerythrins are normal metabolic product of chlorophyll which is normally excreted in bile.-(T)

116.The toxicity of recin will disappear and antigenicity will be retained by heating –(T)

117.The toxic principle present in cassava (tapioca) leaves is a cyanogenic glycoside.—(T)

118.Thorn apple toxicity causes mydriasis in rabbits –(F)

119.Tribulus terrestris, Lantana camara and Crotalaria can cause secondary photosensitization.-(T)

120.Thorn apple toxicity causes a reduction in temperature, pulse, and respiration, dilate pupil.-(T)

121.Thiaminase can destroy vitamin B12.-(F)

122.Thiocyanate inhibits Iodine uptake by the thyroid.-(T)

123.Urea mixed with soyameal is particularly toxic in cattle.-(T)

124.*Veratrum californicum* can cause cyclopian condition.-(T)

125.Vitamin E and selenium in diet may reduce the effect of aflatoxin .—(T)

126.Warfarin is a coumarin derivative .-(T)

127.Workers in silo for silage making may suffer from Silofillers disease due to liberation of carbon monoxide.-(F)

128.Whole seeds of Abrus as such is not toxic to animals.-(T)

129.Whole seeds of Abrus is toxic in birds.-(T)

130.Young calves are less susceptible to gossypol poisoning as their rumen is not fully developed.-(F)

131.Yellow green colouration of urine is characterestic in 2-4 Dinitro phenol toxicity.-(T)

IV. FILL UP THE BLANKS WITH MOST APPROPRIATE WORDS:

1.Abrus poisoning is otherwise known as ……-(Sui poisoning)

2.Abrus seeds contain the toxic principle ……-(Toxalbumin)

3.Acridine dyes can cause……..photosensitivity.-(Primary)

4.Acid burned surfaces must be flooded with water except for burns due to ……..acid.-(Sulphuric)

5.Aflatoxin production can be prevented by ……., and it can be destroyed by ……-(gentian violet, ammoniation)

6.A plant causing teratogenicity is ……..-(*Veratrum californicum*)

7.Aplant causing cyclopean type foetus is……..-(*Veratrum californicum*)

8.Aspergillosis is otherwise known as……--(Turkey X disease)

9.Because of rapid……,animals can eat cyanide slightly lower than the lethal dose over a long period without any harm.-(detoxification)

10.Biological effect of radiation falls into 2 groups …….and ……..-(somatic and Genetic)

11.Botulinum toxin blocks the release of .....in to the neuro effector junction.—(Acetyl choline)

12.Characteristic pink brown pigmentation of teeth is seen in ……..porphyria.-(Congenital)

13.Conversion of methaemoglobin to Hb by methylene blue is a ……dependent reaction.-(NADH2)

14.Condition in which animal become hyper sensitive to light of certain wave length is called as……..—(photosensitivity)

15.Cyanide is converted in to nontoxic thiocyanate in the body with the help of an enzyme.....—(Rhodanase)

16.Dicoumarol inhibits the synthesis of .....in liver—(Prothrombin)

17.Ergot is the sclerotium of the fungi .....----*(Claviceps purpurea)*

18.Fagopyrin is otherwise known as ……..-(Buck wheat)

19.F2 toxin is produced by fungi named ……..—(Fusarium)

20.Germinating potato contain a toxin …… (solanin)

21.HCN is converted in to thiocyanate by the enzyme……..—(Rodanase)

22.HCN is produced while burning ……..containing plastics.-(nitrogen)

23.If a drop of urine from animals suspected for datura toxicity is put in the eyes of rabbit causes ……..of pupil in positive cases.—(dilatation)

24.If feed contain more than ……ppm of aflatoxin B1 it is considered potentially hazardous.-(0.5)

25.In birds botulinum toxicosis is called .....due to paralysis of neck.—(limberneck)

26.In the treatment of cyanide toxicity sodium nitrate will convert …….to bind with cyanide.—(haemoglobin to methaemoglobin)

27.In ……toxicity death is due to digitalis like action on heart.-(oleander)

28.Lathyrism is a toxic condition caused by .....—(Indian pea/*Lathyrus sativa*)

29.Leuco……is the actual agent which convert methaemoglobin to haemoglobin.-(methylene blue)

30.Lime juice can be used in the treatment of …….poisoning.-(alkali)

31.Linamerin releases HCN in presence of enzyme ……-(Linase)

32.Liver abnormality in……. the toxicity of Warfarin.-(increases)

33.Methylene blue is administered intravenously at a concentration of ……..-(1%)

34.Micotoxic nephropathy is caused by ……and……-(Ochratoxin and Citrinin).

35.Mimosine is converted by rumen …….in to goitrogenic substance.-(rumen microbs)

36.Mould nephrosis is caused by ……..and ……..toxins from fungi.-(Ochratoxin and Citrinin)

37.More than ……ppm of B1 aflatoxin in feed is dangerous.-(0.5ppm)

38.Moist hay infected with fungi contain .....which causes precipitation of calcium in the .....results in hypocalcemia.—(Oxalate, G.I.Tract)

39.On laboratory analysis of P.M samples ,more than ……..micro gram of HCN /gm of liver is indicative of HCN poisoning.—(1.4)

40. On laboratory analysis of P.M samples ,more than ……micro gram of HCN/gm of rumen material is indicative of HCN poisoning.—(10)

41.Out of the four Aflatoxin fractions G1, G2 ,B1 and B2) the most toxic fraction is .....(B1)

42.Phylloerythrin is the normal end product of ……..metabolism and it is excreted in the bile.-(chlorophyll)

43.Phenothiazine causes ……..photosensitivity.-(primary)

44.Post mortem materials for Hydrocyanic acid analysis is stored in 1% ……--(Mercuric chloride)

45.Rubratoxin is produced mainly by …….-*(Penicillium rubrum*)

46.Secondary photosensitivity is otherwise known as …….photosensitivity.-(hepatogenous)

47.Secondary photosensitization is due to accumulation of …….-(phyloerythrins)

48.Since warfarin is tasteless it does not develop ……in rats.-(bate shyness)

49 Splay leg is caused by ……toxin.-(F2)

50.The colour of the urine will be deep yellow in .....poisoning—(picric acid)

51..The important draw back of Warfarin as a rodenticide is development of …….in rats.-(heritable resistance)

52.The important symptoms of favism is ……-(haemolytic anaemia)

53.The lethal dose 50 of Botulinum toxin in human being is…….microgram/kg. .-(0. 01)

54.The LD 50 of Aflatoxin is……..mg/kg.-(0.5)

55.The LD50 of 2-3-7-8- Tetrachloro dibenzoparadioxin is…… microgram/kg-(0.6)

56.The metabolite fraction of aflatoxin B1 seen in milk is known as ……..—(M1)

57.The most abundant fraction of aflatoxin among B1, B2, G1 and G2 is ……-(B1)

58.The odour of breath will be bitter almond in toxicity due to .....—(tapioca leaf)

59.The permissible limit of aflatoxin B1 in the feed is ……..ppm –(0.5)

60.The pigment glands of cotton seeds carry the toxic principle .-(Gossypol)

61.The scientific name of Jimson weed is ……..-(Datura stramonium)

62.The toxicity of *Lantana camara* in bovine is mainly .....—(Photosensitisation)

63.The toxic principle in Lin seed is .....—(Linamerin)

64.The toxic principles in *Calotropis gigantea* is having ……like action.-(Digitalis)

65.The toxic effect due to Gossypol in the feed can be reduced by addition of …….in the ration.-(Ferrous sulphate)

66.Thorn apple is same as Jimson weed and the botanical name is ……-(*Datura stramonium*)

67.Urine will be deep yellow in colour in toxicity due to--…….. (picric acid.)

68.Vicia faba causes favism in individual deficient in …… enzyme.-(glucose 6- phosphate) dehydrogenase

69.Vitamin K deficiency …….the toxicity of Warfarin.-(increases)

70.Vitamin K3 is otherwise known as ……..-(Menadion)

71.Vitamin K deficiency prolong the toxic actions of ……-(warfarin)

72.Warfarin inhibits the synthesis of …….. and thereby prevent blood clotting.—(prothrombin)

73.With the help of enzyme .....cyanide is converted to thiocyanate.—(rhodanase)

74.....(plant) toxicity causes photosensitisation-(*Lantana camara*)

75.....is one of the cyanogenic glycoside in cassava leaves.-(Amygdalin, Linamarin, Lautostralin)

76. Zearalenone is otherwise called as ……..toxin.—(F2)

77.....metabolite of aflatoxin is carcinogenic and excreted in milk.—(M1)

78……and……are the two estrogenic principles in the plants.-(Isoflavon, and Genestin)

79……toxin is an oestrogenic mycotoxin.-(F2)

80…….destroy already present aflatoxin in feed .-(Ammoniation)

81……toxicity of selenium is known as blind staggers.-(sub acute)

82……and……are nephrotoxic.-(ochratoxin and citrinin)

83……can be given orally to prevent the enterohepatic circulation of aflatoxin.-(charcoal)

84……..is a toxic condition caused by eating broad bean.-(favism)

85…….acids will give yellow colour to the mucous membranes.-(picric acid, nitric acid)

86. …… is a toxic condition caused by Indian pea.-(Lathyrism)

V. MATCH THE FOLLOWING: 1

A	B
1. Aspergillus	Phenothiazine—9
2. Rubratoxin	Facial eczema----6
3.Ochratoxin	Refusalfactors--5

3. Oestrogenic mycotoxin	Mould nephrosis---3
5. T2 toxin	Turkey x disease---1
6. Sporidesmin	*Penicillium rubrum*---2
7. Phagopyrin	Acridine dyes----9
8. Hypericin	Buckwheat---7
9. Primary photosensitivity	dermal necrosis—5
	Splay leg----4
	M1 metabolite—1
	Rose Bengal—9
	Penicillium viridicatum—3
	B 1 fraction—1
	F 2 toxin---4
	Fusarium---4, 5
	St. johns wort—8

Match the following:2

A	B
1.Bee sting	T2 toxins-15
2. Toad venom	photosensitivity-14, 16, 17
3.Betakil	Indian pea-8
4.Broad bean	bufogenin-2
5. Acetic acid	linase-9
6.Sui poisoning	F2 toxin-19
7. Sinigrin	dicoumarol-10
8. Lathyrism	linamerine-9
9. Lin seeds	rauwolfia-3
10. Sweet clover	favism-4
11. Bracken fern	pinapple-13
12. Myrosin	*Abrus precatorius*-6
13. Phyto estrogens	malicious poisoning-6
14. Acepromazine	dilute ammonia.-1, 5
15.Refusal factors	thiaminase-11
16. Phenovis	ochratoxin-18

17.*Tribulus terrestris*	beta amino propionitrile -8
18.Mould nephrosis	rape seeds-7,12
19.Spley leg	

Match the following 3

PLANT	**TOXIC PRINCIPLE**	**TOXIC CONDITION**
1.Subabul	gossypol—8	cyclopian condition-10
2.Broad bean	linamerin-9	G.I.symptoms—8
3.*Solanum tuberosum*	L-dopa—2	Lathyrism---4
4.*Lathyrus sativa*	Nerioside—7	HCN poisoning---9
5.*Claviceps purpurea*	mimosine--1	teratogenesis—3
6.*Abrus precatorius*	Linamerin—12	cardiac problem—7
7.Oleander	Veratrum alkaloids—10	sui poisoning—6
8.Cotton seeds	nitrate--11	HCN poisoning—12
9.Lin seed cake	solanine—3	nitrate poisoning—11
10.*Veratrum californicum*	beta amino propionitrile—4	ergotism—5
11.Sugar beat top	abrin—6	favism—2
12.Tapioca leaf	ergot alkaloids—5	alopecia--1

Match the following-4

A	B
1. Thorn apple	Solanin-----16
2. Amygdalin	Toxalbumin---14
3. Linamerin	Cotton seed cake---11
4.Hydrocyanic acid	Bright blindness---7
5. Oxalates	Hypothyroidism---18
6. Bamboo shoots	Bitter recin---13
7. Bracken fern	Dicumarol----8
8.Spoiled sweet clover	Isoflavon----6
9. Veratrum	Favism----17
10. Castor bean	Cardiac glycoside like factor--12
11. Gossypol	*Datura stramonium*--1
12. Oleander	Linseed---3

13. Calotropis	Teratogenic---9
14. Abrus	Sugar beat top----5
15. Indian pea	Recin---10
16.Germinating potato	Beta amino propionitrile--15
17. Broad bean	Cherry---2
18.Subabul	Bitter almond smell---4

VI. CHOOSE THE CORRECT ANSWERS FROM THE FOLLOWING:

1.Aflatoxin is a) carcinogenic b) mutagenic c) teratogenic d) immunosuppressive e) all the above.-(E)

2.After absorption the poison first act as a stimulant and then as a depressant .a) Oleander b) Gossypol c) Nicotine.--(C)

3.Aflatoxin fractions in the order of least toxic to higher toxic is a) B1 , G1, B2, G2 b) A1,B1, B2, G2 c) G2, B2, G1, B1 d) B1, B2, G2, G1.--(C).

4.Agents which prevent the uptake of iodine. a) ferrocyanide b) thiocyanate c) Hyoscyamus d) Strychnine—(B)

5.Ammoniation of food a)prevent aflatoxin production b)destroy aflatoxin c)stimulate the organ function d) destroy food.-(B)

6.Among the following plant one is an oxalate containing plant. a) Xylorrhiza b) halogeton c) Ipomoea.-(B)

7.An agent which causes hepatic photosensitisation a) Fagopyrin b) Hypericin c) Phyloerythrin –(C)

8.Aspergillosis is the toxicity produced due to the presence of the following in the feed. a) Asparagine b) Aflatoxin c) Recin d) none of the above.—(B)

9.Bracken fern contain several toxic factors except a) Aplastic anemia factor b) Thiaminase c) Cyanogenic glycosides d) Nitrites—(D)

10.Botulinum toxicity in Horses is described as a) Spinal typhus b) Lamsiekte c) Loin disease.-(A)

11.Convulsion is a typical symptom of a) Copper toxicity b) Sodium chloride toxicity c) Strychnine toxicity d) Atropine toxicity .—(C)

12.Facial eczema is a disease condition caused by a) penicillium b) Sporodesmium c) Fusarium-(B)

13.F2 toxins is produced by fusarium is a) carcinogenic b) oestrogenic c) nephrotoxic d) all the above –(B)

14.Following moulds are toxic a)Claviseps b) Aspergillus c) Fusarium d) all the above.-(D)

15.Following are examples for ‘Bone seekers’ .a) Strontium 80 b) Barium 140 c) Isotopes of radium d) all the above.-(D)

16.Following areas of the body are most sensitive to photosensitization when exposed to light. a) Nose b)Face c)Udder d) Groin e) all the above .-(E)

17.Following plants will cause primary photosensitization a) alfalfa b) bishops weed c) buck wheat d) parthenium e) all the above .—(E)

18.Following plants produce secondary photosensitization a) blue green algae b) lantana c) rag wort d) heliotrope d) all the above (E)

19.Fractions of aflatoxin which are most toxic is a) B1 b) B2 c) G2 d) G1—(A)

20.Gentian violet helps to a)prevent aflatoxin production b)destroy aflatoxin c) stimulate liver function d)destroy bacteria.-(A)

21.Hydrocyanic acid in food materials will escape on a) drying b) steam treatment c) boiling d)All the above.-(D)

22.If feed contain more than …….ppm of aflatoxin it is not good for feeding a) 5 ppm b) 2 ppm c) 10 ppm d) 0.5 ppm.-(D)

23.In horse lathyrism causes a) transient paralysis of Larynx b) degenerative changes in vagus c) inflammation of liver d) degenerative changes in recurrent laryngeal nerve e) all the above.—(E)

24.In prothrombin deficiency bleeding can be initiated by a) beat of the heart b) movement of lung c) movement of limbs d) all the above.-(D)

25.In the treatment of hydrocyanic acid poisoning it is preferable to give a) nitrite first b) thiosulphate first c) both together d) both are not advisable –(A)

26.Irradiation of the Gut generally happen due to contamination of food mainly by a) Alpha particle b) Gama particle c) Beta particle d) none of the above.-(C)

27.Jimson weed is the synonym of the plant a) Nerium b) Datura c) Calotropis.—(B)

28.Lameness can be caused by by a) Atropine b) Ergot c) Arsenic .-(B)

29.Lathyrism is a toxic condition produced due to the use of the following. a)Green gram b) Black gram c) Indian pea d) Cow pea .—(C)

30.Micotoxic nephropathy is caused by a) Aspergillus ochracens b) Aspergillus flavus c) Penicillium rubrum d) none of the above.-(A)

31.Most oxalate containing plants are a) palatable to animals b) block kidney tubule c) produce hypocalcemia d) all the above.-(D)

32.Normaly cyanide is converted in to thiocyanate in the body by the enzyme a) Rhodanase b) cytochrome –C c) ATP-ase d) none of the above.-(A)

33.Nuclear explosion causes a) local fall out b) tropospheric fall out c) stratospheric fall out d) all the above –(D)

34.Ochratoxin is otherwise known as a) Aspergillosis b) mould nephrosis c) mad dog running d) black head.—(B)

35.Odour of breath will be garlic in poisoning due to a) cyanide b) mercury c) phosphorus d) chloroform.-(C)

36.On postmortem examination of HCN poisoned cow the blood will have a) bright red colour b)dark red c) light red d) chocolate .-(A)

37.One of the following causes blindness.-a) aflatoxin, b) phenol c) Zinc phosphide.-(A)

38.One of the following is not a cyanogenic plant a)Tapioca leaf b) White clover c) Ricinus communis d) Sorghum.-(C)

39.One of the following oxalate is in soluble in water a)Sodium b) potassium c) calcium d) none of the above.-(C)

40.One of the following toxin is a refusal factor in mouldy grain a) T2 toxin b) F2 toxin c) Q1 toxin d)none of the above.-(A)

41.One of the following toxin cause facial eczema in sheep grazing on *Lalium perunne* pasture. a) Sporidesmin b) T2 toxin c) B1 toxin d) F2toxin .-(A)

42. One of the following species is most susceptible to aflatoxin. a) Bovines b) Swine c) Ducks d) Rabbits.—(C)

43.Photosensitivity can be a) primary b)secondary c) congenital d) all the above.-(D)

44.Photosensitive reactions may cause the following in the area exposed a) seepage of serum b) itching c) bacterial infection d) exfoliation e) all the above-(E)

45.Primary photosensitivity can be due to consumption of a) St. Johns wort b) buck wheat c)Phenothiazine d) all the above.-(D)

46.Rubratoxin is a)teratogenic b) embryocidal c) inhibits various ATP ase enzymes d) all the above.-(D)

47.Sodium nitrate is administered in the treatment of HCN poisoning to convert a) haemoglobin to met haemoglobin b) met haemoglobin to haemoglobin c) haemoglobin to cyan met haemoglobin d) none of the above.-(A)

48.Sodium thiosulphate is administered in the treatment of HCN poisoning to convert a) haemoglobin to met haemoglobin b) cyan met haemoglobin to thiocyanate c) met haemoglobin to haemoglobin d) none of the above.-(B)

49.Spoiled sweet clover causes a) capillary bleeding b) haematemesis c) haematoma d) reduce prothrombin synthesis f) all the above.-(F)

50.Spoiled sweet clover contain a) anti anaemic factor b) hydrocyanic acid c) linamerin d) none of the above.—(D)

51.Subabul toxicity causes the following in ruminants a) infertility b) loss of hair c) hypothyroidism d) all the above.-(D)

52.T2 toxin is produced by fusarium causes a) dermal necrosis b) teratogenicity c) embryo toxic d) immune suppression e) all the above.-(E)

53.The active ingredient of 'Black leaf 40' is a) Cocaine b) Nicotine c) Theophylline d) Atropine –(B)

54.The cause of death in HCN poisoning is due to a) Froath in the resp.tract b) Tympany c) Tissue anoxia d) cardiac arrest.-(C)

55.The exhaled air of animals will have the smell of bitter almonds in a) HCN poisoning b) Datura poisoning c) Nitrate poisoning d) Sui poisoning -(A)

56.The following plants can cause primary photosensitivity a) bracken fern b) buck wheat c) tapioca d) all the above.-(D)

57.The following seeds are not poisonous to animals but poisonous to birds. a) *Calotropis gigantia* b) *Abrus precatorius* c) *Lathyrus sativa.*-(B)

58.The most toxic fraction of aflatoxin is a) B1 b) B2 c) G1 d) G2.-(B1)

59.The most susceptible species to aflatoxin is a) day old duckling b) young calves c) laying birds d) milking animals.-(A)

60.The main source of cyanide poisoning in cattle is a) rodenticides b) plants c)effluents from mines, d) drugs.—(B)

61.The toxic principle present in bracken fern include a)Thiaminase, b) cyanogenic glycoside c) aplastic anaemia factor d) all theabove.-(D)

62.The toxic principle present in *Leucenia leucocephala* is a) Atropine b) Mimosine c) Nicotine d) Strychnine.—(B)

63.T2 toxin is produced by fusarium causes a) dermal necrosis b) teratogenicity c) embryo toxic d) immune suppression e) all the above.-(E)

64.The toxic principle present in *Datura stramonium* is a) Atropine b) Hyoscyamine c) Hyoscine d) all the above.-(D)

65.The toxic principle present in *Calotropis gigantea* a) Convallotoxin b) Oleandroside c) Ricinin.—(A)

66.The toxic dose of Strychnine for most mammals a) 1—3 mg/kg b) 0.5 --2mg /kg c) 0.3---1mg/kg.—(C)

67.The toxic principle present in Datura stramonium is a) Atropine like principle b) strychnine c) Cardiac glycoside d) amygdalin—(A)

68.The toxic principle present in cotton seed is a) Gossypol b) Linase c) Toxalbumin d) abrin.—(A)

69.Warfarin is a) product of Wisconsin Alumni Research Foundation b) Coumarin derivative c) rat poison d) all the above-(D)

70.Warfarin a) inhibits prothrombin synthesis b) baite shyness will develop immediately c) single feeding is enough d) all the above are correct.-(D)

71.Warfarin toxicity is increased by a) vitamin K deficiency b) liver and kidney abnormality c) prolonged antibiotic therapy d) all the above.-(D)

VII. WRITE THE MECHANISM OF ACTION OF THE FOLLOWING(1_sentence only)

1.Atropine.---(inhibits the action of parasympathetic nervous system)

2.Cyanide---.(inhibit cytochrome-C enzyme system)

3.Datura.---(inhibits the action of parasympathetic nervous system)

4.Oxalates. --(binds with calcium in the blood)

5.Strychnine.-(stimulate spinal cord, block renshaw cell)

6.Warfarin.-(reduces the prothrombin synthesis)

VIII. ANSWER THE FOLLOWING: (in 1—2 sentence)

1.How can you reduce the toxicity of ergot contaminated feed? –can be reduced by autoclaving the feed , exposure to high temperature above 150 degree Celsius , application of 1% chlorine solution –will reduce the toxicity.

2.How oxidizing agent methylene blue is used to reduce methaemoglobin to haemoglobin.? methylene blue is converted in to a reducing agent leuco methylene blue inside the body-which reduce met.Hb to Hb.

3.How hydrocyanic acid cause death in animals? hydrocyanic acid bound to cytochrome oxidase results in acute tissue anoxia. Death occure in few seconds.

4.What is the mechanism of action B-amino propionitrile (seen in *Lathyrus sativa*): It interfere with formation of cross linkage in polypeptide chain in collagen and elastin, causes weakening of blood vessel walls, causing aortic rapture, skeletal deformities, muscular weakness, paralysis of skeletal muscle and laryngeal muscle , demylination of nerves.

5.What is the mechanism of dipilatory effect of mimosine? It inhibit the enzyme which require pyridoxal phosphate especially the cysteine synthesizing system.

6.What is photosensitivity? Photosensitivity is a condetion in which the animal become hypersensitive to light of certain wave length due to the presence of some abnormal substances(photodynamic) in the peripheral circulation the condition may be primary , secondary, or congenital.

7.What are the toxic principles present in Nerium oleander?- The toxic principles are Nerioside, oleandroside)

8.Why rabbits can tolerate large quantity of belladonna ? --Rabbits liver is a source of atropine esterase an enzyme which can destroy atropine ,hence rabbits can take large quantity of atropine with out producing toxicity as it is immediately biotransformed.

9.What is the treatment for burns due to phenol?-- Wash the area with alcohol or apply alcohol pads 3-4 times repeatedly to extract phenol in to alcohol from tissue then apply some oily dressing.

10.What is favism: Produce by vicia faba which is used as a vegetable, contain L-D- 4-dihydroxy phenyl alanine. In individual deficient in glucose 6-phosphate dehydrogenase- causes haemolytic anemia known as favism ,when *Vicia faba* is consumed.

(**In 4-5 sentence)**

11.How Excess methylene blue (more than 9 mg/kg as 1 % in saline)will convert haemoglobin to met haemolobin ? --- Conversion of met. Hb. by methylene blu is an NADH2 dependent reaction. Methylene blue is reduced to leucomethylene blue with the help of NADH2, it is oxidized back to methylene blue and is again reduced to leuco met.blue as long as NADH2 is available. When all the NADH2 is saturated excess methylene blue administered will convert haemoglobin to methaemoglobin. Hence too much met. blue is not recommended in methaemoglobinemia.

12.What is hydrocyanic acid and what are the sources : hydrogen cyanide (volatile gas) dissolved in water gives hydrocyanic acid. Many plants contain this poison. Hydrocyanic acid is present in plants as its precursor cyanogenic glycosides in the epidermis acted up on by Beta glycosidase (present plant tissues) to release hydrocyanic acid. Any damage to cells cause the release, rumen microflora also can cause release. Eg. For plants containing this wild cherry, sorghum, millet, jwar, sudan grass, velvet grass, bitter almond, linseed, cassava leaf. indiscriminate use of cyanide containing fumigents, rodenticides, use of sodium nitroprusside, sodium and potassium cyanide.

13.What is the mechanism of action of aflatoxin? It bound to macromolecules such as DNA and RNA interfere with enzyme synthesis - interfere energy and fat metabolism – reduce formation of structural protein- reduce prothrombin and clotting factor, immune suppression and improper antibody

formation- hepatocellular damage –jaundice . affect endocrine system resulting in hormonal imbalance. Chromosomal aberration , DNA breakage result in mutargenicity.

14.What are the sources and main symptoms of the following toxins: T2 , F2, Rubra toxins? T2 toxin : Produced mainly by fusarium- directly irritate the skin and mucous membrane-cause dermal necrosis-ulceration of skin, mouth, G.I.Tract, teratogenic, embryo toxic, immunosuppressant. This is one of the refusal factors in mouldy grain. Gastro intestinal symptoms with haematurea, Nasaldischarge is also there. F2 Toxin: Produced by Fusarium- act on female reproductive tract mainly in pigs- induce oestrus-atrophy of uterus- still bourn pigs and piglets with splay legs are bourn. Rubra toxin :Mainly produced by *Penicillium rubrum*, teratogenic, embryocidal, inhibit various ATP ase enzymes and Liver damage.

IX.WRITE SHORT NOTES ON:

1.Abrus precatorius- Abrus seeds contain toxalbumin, whole seeds are not toxic to animals, but toxic in birds used for maliesious killing of animals. Seeds are powdered and a paste is prepared . A needle or Spike (Sui) is made coated with this paste-embeded as darts in the flesh of animals at the throat /rump region. Produced similar symptoms as Black quarter. Symptoms – painful swelling at the site of implantation-salivation, nasal discharge, stiff joints, incordinations and muscle spasm. P.M.lesion-Embeded sui underneath the skin, petechiae all over –local inflammation. Treatment. Symptomatic, use hyper immune serum.

2.Botulinum toxin: most potent toxin- produced by clostridium botulinum-proliferate in improper stored food and elaborate the toxin. Botulinum toxins are designated as A to G . Sensitivity to fractions vary with species. Storage of meat and meat products in metal drums in which anaerobic condition prevail is an excellent medium for production of toxin . when botulinum grows in necrotic tissues of living animal and produces toxins then the disease is called toxicoinfectious botulism. Dogs , cats and pigs are relatively resistant. Mechanism of action: It prevent the release of acetyl choline from the nerve terminals –results in flaccid paralysis, disturb vision, mydriasis, death due to respiratory and cardiac failure.Treatment: Polyvalent antitoxin can be used for treatment , guanidine hydrochloride can partially overcome the paralysis.

3.Bracken fern poisoning: The toxic principle present are cyanogenic glycoside, thiaminase, an aplastic anemia factor, carcinogenic factor, haematuria factor. Symptoms in non ruminents –Incordination, arched back, muscular tremor, opisthotonus, cardiac arrhythemia. In ruminents the main symptoms are anorexia, enteritis, haemorrhage, lack of blood, cloting, leucopenia, bright blindness. Thrombocytopenia, tumours in urinary bladder and digestive tract Treatment –blood transfusion, administration of thiamine, D-l-Butyl alcohol (1gm in 10ml olive oil for 5 days) oral/sub.cut to stimulate bone marrow

4.Calotropis gigantea- A toxic plant- active principle is an yellow bitter recin. Bark of older plants contain higher amount of toxin. They act like digitalis milky juice contain recin-contain a proteolytic enzyme similar to papaine. It is caustic, purgative, emetic in action. Gastro enteritis-foaming of the mouth-slow heart-petechiae-respiratory depression.

5.Congenital photosensitivity: (congenital porphyria, Gunther's disease) It is an inherited metabolic disorder , very rare disease-Excess production of porphyrins in the body , high sensitivity to sunlight, results in icterus, depression, salivation, chronic damage to skin, cartilage and bones can cause mutilation. diarrhea, redish coloured urine, lacrimation, itching, dry eyelids and nostrils, irritation of the tongue, characteristic pink brown pigmentation of teeth and bones, splenomegaly. No specific treatment keep the animal out of sunlight.

6.Castor toxicity (*Ricinus communis*) All parts of the plant contain a highly toxic glycoprotein (toxalbu

min) called Ricin. It is not fat soluble hence goes with cake. The phytotoxic'Ricin' coagulated by heat. Toxicity is lost by heat but antigenicity is retained. Ricin inactivate 60 S ribosomal unit and prevent protein synthesis. It will irritate and damage gut epithelium-defective digestion and absorption Symptoms include -nausea, vomition, abdominal pain, diarrhea, ruminal atony, anorexia, weakness, incordination, tetanic spasm, sweating, increase heart beat and shock. Treatment is symptomatic ,activated charcoal, demulcents, fluid and electrolytes, specific antisera.

7.Cyanogenic plants: Plants containing cyanogenic glycosides-sorghum, sudan grass, white clover, bamboo shoots, wild cherry, tapioca leaf (cassava), linseed etc. Consumption of these plants causes toxicity. Cyanogenic glycoside amygdalin, Linamarin, Lautostralin) is hydrolysed to hydrocyanic acid by appropriate enzymes present in same or other plant materials in the stomach . Hydrocyanic acid is toxic- greater part of which is rapidly detoxified to thiocyanate and excreted in the urine-bound to ferric iron in methaemoglobin and cytochrome-prevent tissue respiration resulting in death- ruminants are most susceptible. (add symptoms and treatment also).

8.Datura straminium toxicity: (Thorn apple) Toxic principle present in this plant is atropine, hyoscyamin, hyoscine and solanine . Inhibit the action of neurotransmitter acetyl choline at muscarinic receptor site. Higher dose block nicotinic receptors at autonomic ganglia also. Body secretions are reduced, temperature is increased, photophobia, dilated pupil, tachycardia, bloat , rumenotomy, excitation, later temperature and pulse reduce, respiratory suppression, death from asphyxia. Diagnosis –put a drop of urine from the suspected case in to the eye of a cat or rabbit causes mydriasis in positive cases.. Treatment – pylocarpine, physostigmine, diazepam to control excitation, coldwater application to reduce temperature.

9.Ergot poisoning (St. antony's fire): Ergot is the sclerotium of the fungi *Claviceps purpurea* which infest mainly rye and other serials- contain a number of highly potent alkaloids which causes toxicity- eg. Ergotamine, ergometrine, ergotoxine – stall fed animals are more affected . Two forms of toxicity acute (nervous) and chronic (gangrenous) -acute form occurs mostly in carnivors, horse and sheep characterized by neurotoxicity- vertigo, recumbancy, spasms, hyper exitability, incordination, ataxia, staggering gait, drowsiness, nodding of head, tremors and incordination, tonic convulsion, opisthotonus, posterior paralysis, intermittent blindness and deafness. Chronic form is characterized by gangrenous type –mostly seen in cattle-lameness, swelling and tenderness of fetlock-necrosis, charring and sloughing of feet, ear and tail. No specific treatment.

10.Estrogenic plant poisoning: estrogenic principles present in Rye grass, red clover, Bamboo shoots ,pinapple, papaya, drum stick, The oestrogenic principles are Isoflavon,and genestein, seen more in early stage of growth- symptoms are prolapse of vagina, rectum, abortion, dystocia, fragility in pelvic bone, short intermittant infertility- No specific treatment-remove the source.

11.Fescue: is a forage crop when infested with fungal endophyte that produce several toxins including ergovaline and peramine produce toxicity . Pregnant mares are highly susceptible to toxicity spontaneous abortion – stillbirths , retained placenta, – laminitis- reproductive problems. In cattle disease is called " fescue summer toxicosis" reduce feed intake – low milk yield, elevated body temperature- tachypnoea, rough hair coat –agalactia. Sheeps are also affected "fescue foot" occure in sheeps and cattle.

12.Gossypol: It is the toxic principle in cotton seed cake- toxic substance is in the pigment glands of seeds-gossy purpurine, gossy vedurine are other two toxic principle which are less toxic to ruminents. Gossypol binds strongly to lysine and methionine rendering them unavailable . it chelate iron- leads to anaemia- inhibits several dehydrogenase enzymes inhibits glutathione S-transferase, impaire liver function, young calves are susceptible – reduce appetite, reduce growth . gastro enteritis, leuteolytic

and may cause abortion, reduce spermatogenisis and infertility in males, dyspnea, convulsion and death . No specific treatment-addition of Ferrous sulphate in the ration reduce toxicity.

13.Hepatotoxic mycotoxins: Aflatoxins, rubratoxins, sporidesmin and sterigmatocystin. Aflatoxin is produced by *Aspergillus flavus* and related species- it can infest cake of ground nut , soybean, cotton seed when moisture content exceeds 15% result in toxin production-four important fractions are B1, B2 and G1, G2- they are hepatotoxic , carcinogenic , mutagenic ,teratogenic and immunosuppressive. Metabolites are excreted in milk and toxic to consumers. –Rubratoxin: by *Penicillium rubrum* produce 'haemorrhagic syndrome' in poultry-teratogenic- embryocidal –inhibits various ATPase enzymes-liver damage. Sporidesmins : infect dead plant material -destroy liver- photosensitization and blistering of the skin.

14.Ipomoea poisoning: the toxic principle is a resin scammonin, strongly irritant, produce cathartic action- nausea, salivation, mydriasis, incordination, ataxia, staggering gait, hallucination, paralysis of limbs, hypotension and death. No specific treatment-virtual removal of toxin from stomach and supportive therapy.

15.Lantana camara as a toxic plant: It is a weed causing secondary (hepatogenous) photosensation in animals-most frequent type of photosensitization caused by photosensitizing agent "phylloerythrin" a bacterial break down product of chlorophyll- this is normally removed by liver and is excreted in bile-if the liver is damaged /obstruction of bile duct phylloerythrin accumulate in the peripheral blood to cause photosensitization.

16.Lathyrism: caused by *Lathyrus sativa* (Indian pea) cattle horse and human are affected . In horse – transient paralysis of larynx with suffocating degenerative changes in vagus and recurrent laryngeal nerve, liver inflammation. Toxic principle is B –amino propionitrile – interfere with formation of cross linkage in polypeptide chain in collagen and elastin, causes weakening of blood vessel walls and bones-urea cycle is inhibited –induce ammonia toxicity action can be suppressed by calcium.

17.Mimosine toxicity: Mimosine is seen mainly in Leucaena leucocephala.(Subabul)- Inhibit enzyme which require pyridoxal phosphate especially the cystein synthesizing system. This may be the cause of depilatory effect as hair contain an exceptionally largeamount of cysteine . Mimosine is not goitrogenic but 3-hydroxy 4- pyridine which is formed from mimosine by micro organism of rumen is goitrogenic. Reduce weight gain , cateract in young animals, infertility loss of hair and hypothyroidism.

18.Malicious poisoning: use of toxic chemicals, toxic plants for the purposeful poisoning of animals/men. The commonly using agents are a) Arsenical baits with cereals powder/ wrap in pieces of meat for killing dogs .b) Abrus (Sui) poisoning- made in to a paste and smear over spikes then pierce in to skin-animal will die in 18-24 hours. c) Snake venom- Cobra is irritated and allowed to bite on banana-crush it and place in the rectum in which tares were made by split bamboos. d) Calotropis gigantea latex is so poisonous inserted in to rectum or vagina. e) Nuxvomica to kill dogs-along with bait. Insecticides also are used.

19.Nephrotoxic mycotoxins: ochratoxin and citrinin- ochratoxin is produced by aspergillus and penicillium species affected stored grains, corn, peanuts, cotton seed etc. –produce renal damage in animals and birds-called mould nephrosis/mycotoxic nephropathy. Ochratoxin A is the most common of all and has greatest toxicological significance- mainly act on proximal tubules where they cause reduced metabolic clearance and urine concentration ability- interfere with protein synthesis. Activated charcoal is used to reduce GI absorption .Citrinin is a toxin produced by penicillium and aspergillus and it is a co contaminant of ochratoxin- pigs are highly sensitive.

20.Neurotoxic mycotoxins: Tremorgens – produced by penicillium , aspergillus and claviceps species. a large number of toxins are coming under this out of this penitrem A is most toxic one may affect the presynaptic acetyl choline release , antagonize production of Glycine. Increase level of excitatory neurotransmitter glutamate and reduce level of GABA in brain- irritability , muscular tremors, rigidity, opisthotonus , weakness and death. Rarely animal may recover gradually. No specific treatment.

21.Nicotine toxicity: Nicotine is a liquid alkaloid from tobacco leaves and it is a potent poison used mainly as a contact insecticide. Therapeutically it is used as an anthelmintic and immobilizing agent. Sources of toxicity are- ingestion of nicotine sulphate insecticide, use of dust/ spray on animal body, over dose while capturing/ restraint of animals and inhalation of tobacco smoke. It binds with nicotinic cholinergic receptors located in skeletal muscle motor end plate , autonomic ganglia, adrenal medulla and CNS. Initiate stimulation and then suppression of all acetyl choline receptors. After initial stimulation persistant paralysis of skeletal muscles(depolarizing). Main symptoms are excitement, rapid respiration, salivation, lachrymation, vomition, diarrhea, convulsion, muscle weakness, incordination, rapid pulse, shallow and slow respiration, flaccid paralysis finally death from respiratory failure. In early stage non depolarizing type of ganglion blockers may have some use, gastric lavage with tannic acid or potassium permanganate lotion, bath the animal with liquid detergent on topical exposure, intravenous atropine to reduce hyper secretion and bradycardia, parenteral fluid therapy and artificial respiration can be tried.

22.Oleander toxicity: A large number of plants are there. Nerium odorum (white oleander) , fox glove,milk weed, thevetia nerifolia (yellow oleander) , contain many cardio active glycosides including nerioside, oleandroside, oleandrin, nerin, folinerin and digitoxigenin - toxic to all animals, birds and human beings. Its action on heart is similar to digitalis- inhibits Na+ K+ -ATPase enzyme system, result in conduction block , initial stimulation followed by paralysis of vagus nerve - weakness, rapid pulse, tachycardia, arrhythmias. Nausea, vomition, anorexia, abdominal pain, colic, sweating, blood in the faeces- cold extremities, dilatation of pupil, muscular weakness, ataxia, hypothermia, titanic spasms, unconsciousness, coma and death. No specific treatment- activated charcoal orally, rumenotomy to remove plant materials, other symptomatic treatment.

23. Oxalate poisoning: Consumption of plants containing sodium and potassium oxalate causes toxicity(sugar beat top, beta vulgaris, moist straw infected with fungi) . Most oxalate containing plants are palatable to animals. Oxalate bind with calcium and causes hypocalcemia , bind with magnesium also. Acute hypo calcemia ,calcium oxalate block of kidney tubule, deposit in brain result in paralysis and death. Deposit in rumen epithelium causing haemorrhage-damage to the blood vessels. Interfere with electrolyte activity of the muscles and nerves. Impair the cloting mechanism, reduce milk yield. Main symptoms – salivation, weakness, incordination, prostration, labored respiration, dilated pupil, twitching of muscles, tetany, convulsion, coma and death. To treat remove the source, dicalcium phosphate and diuretics can be given, lime water can reduce the absorption of oxalates.

24.Primary photosensitivity : Injection of photodyanamic substances like hypericin (in hypericum perforatum) fagopyrin from *Polygonum fagopyrum,* phenothiazine, rose bangal, acridine dyes. Light skinned animals, white patches, light skinned areas nose udder,coronary band of hooves, face, and groin regions are more susceptible. There will be release of histamine, erythma, seepage of serum, exfoliation, serous fluid ooze out, scabformation necrosis, peal off, itching, rubbing - there can be secondary bacterial infection.

25.Principles of treatment in cassava leaf (Cyanogenic glycoside) poisoning, how can we destroy the hydrocyanic acid in cassava leaves? (explain the principles of treatment of hydrocyanic acid toxicity (see .No 33) cyanogenic glycoside can be destroyed by heating/wilting/boiling .

26.Secondary photosensitivity :Photosensitisation due to phylloerythrins a normal end product of chlorophyll metabolism excreted in bile. Ingestion of some plants give rise to liver dysfunction and obstruction of bile duct. Eg. Lantana camara , tribulus terrestris, crotalaria brassica. The damage it causes in the liver allows substances to accumulate in liver, otherwise normally eliminated in the bile. It reaches the peripheral circulation and give rise to photosensitization. No specific treatment only symptomatic treatment.

27.Symptoms of hydrocyanic acid poisoning in bovines: the main symptoms include frothy salivation, lacrymation, urination, defecation, colic, clonic convulsion, frothy nasal discharge, dilate pupil, prominent glassy staring eyes which is not sensitive to light. Tympanitis.-short period of stimulation(excitement and convulsion) followed by depression. Death due to respiratory failure-preceded by a characteristic crying.

28.Symptoms of aflatoxicosis: Disease is seen in acute, subacute and chronic forms. Acute form is mostly seen in day old duckling. In calves also it is observed-symptoms include blindness, circling, falling down., grinding of teeth, tremours, eversion of rectum, anorexia, depression ,dyspnea, cough, nasal discharge,epistaxis,,convulsion. In sub acute form there will be jaundice, haematoma,petechiae, hypoprothrombanemia, haemorrhagic enteritis, ascites,hepatic tumour,hyperkeratosis. In chronic form-Debility, rough coat,enlarged abdomen,hepatic carcinoma.

29.Sweet clover-white and yellow clover-contain coumarin- no harm when plants are used or made in to hay. In spoiled hay coumarin is converted into dicoumarin- inhibits prothrombin synthesis, haemorrhage in to G.I.tract. Haematamesis, haematuria, and capillary bleeding. Treatment include blood transfusion,administration of vitamin.K.

30.Tetanus toxin : It is a potent neurotoxin by *Clostridium tetani* under anaerobic conditions- spores are present in faeces of animals especially Horse and in soil contaminated by faeces. Horses and humans are most susceptible to tetanus toxin, while cattle, pigs and sheeps are less susceptible. Dogs and cats are fairly resistant. Anaerobic condition such as development of tissue necrosis at the site of infection. Toxin prevent the release of inhibitory neurotransmitter Glycine and GABA- cause excess stimulation of spinal cord –leads to spasmodic tonic contraction of skeletal muscles called tetany. Death is due to rigidity of respiratory muscles. Tetanus anti toxin can give some relief. Antibiotics like penicillin can kill the organism. Anticonvulsants like Phenobarbital to control convulsion, keep the animal in dark room and quite environment.

31.T 2 mycotoxin- : (trichothecenes) T2 toxin is produced mainly by Fusarium fungi – it is an inhibitor of protein synthesis in mammalian cells-interact with 60s subunits – inhibit DNA and RNA synthesis. It causes reduction of immunity – depression of clotting factors, irritant to the skin and mucous membrane and cause dermal necrosis, teratogenic. Toxin is one of the 'refusal factors' in mouldy grain-animal refuse to take grains when certain level of infestation is there . In acute case GI symptoms , death occurs in minutes to hours , direct contact with contaminated feed cause cutaneous lesions - due to immune suppression (secondary infection can also cause death.)

32.Turkey x disease: otherwise called as Aspergillosis- caused by Aspergillus flavus which produce aflatoxin- B1,B2,G1 and G2 are main fractions. B1 is the most toxic. If food contain more than 0.5 ppm B1 it is toxic. All fractions are heat stable. Addition of gentian violet prevent aflatoxin production, and ammoniation destroy aflatoxin. Aflatoxin bound to macromolicules such as DNA and prevent RNA synthesis. Metabolites are excreted in bile and reabsorbed. M1 metabolite is carcinogenic- one day old ducklings are most susceptible. Acute, subacute and chronic forms are there. Liver cancer can occure in chronic cases. Treatment include withdrwal of feed, addition of gentian violet to prevent production and ammoniation to destroy already produced toxin.

33.Treatment of hydrocyanic acid poisoning: Aim of the treatment is to fix highly lethal cyanide ion in to harmless form then convert to thiocyanate and readily excreted in the urine. Normally with the help of the enzyme Rhodanase cyanide is converted in to thiocyanate in the presence of available sulphur-reaction is limited because the availability of rhodanase and sulphur is limited. Sodium nitrite15-25 mg/kg 1% solution i/v to convert haemoglobin to met haemoglobin(ferric iron is formed)-this compete with ferric cytochrome oxidase for cyanide- (cyanide is having more affinity to ferric iron in met.hb) here cytochrome oxidase get free to perform its function. Cyan methaemoglobin is formed (repeatition of this treatment must be with greater care because that can cause nitrite poisoning). Then give sodium thiosulphate 30mg/kg 25 % sol. i/v -act as sulphur donor for conversion to nontoxic thiocyanate with the healp of rhodanase. This can be repeated if necessary.

X.WRITE ESSAYS ON:

1.Explain the etiology, pathogenesis, symptoms and treatment of Aflatoxicosis.

2.Explain briefly mould toxicity in bovines-

3.Explain photosensitization in animals.

4.Explain cyanide poisoning in animals. give importance to source, mechanism of action, symptoms and treatment.

5.Ionizing radiation in animals

6.Enumerate the important fungi causing toxicity in cattle , Explain Aspergillosis in bovines.

7.Explain the principle of treatment in cassava leaf poisoning , how can you destroy the cyanogenic glycoside in the leave?

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