QUESTION BANK VETERINARY PHARMACOLOGY & TOXICOLOGY

PAPER NO 26
(PESTICIDES)

I.NAME THE FOLLOWING:

1.A dithiocarbamate fungicide.-(thiram, maneb)

2.A domestic animal which is more susceptible to rotenone toxicity .—(cats)

3.A phthalimidine group of fungicide.—(Captan)

4.A species which is highly susceptible to Sodium bicarbonate toxicity —(poultry)

5.An agent that inhibit bone resorption of calcium.—(pamidronate)

6.An insecticide with adrenal cortical suppressant action.—(DDD,(Dichloro Di phenyl Diethylamine)

7.Most potent rodenticide.-(sodium fluoroacetate)

8.Most toxic chemical ever synthesized. (tetra chloro dibenzo para dioxin)

9.Most volatile organo phosphorus compound. –(dichlorvos)

10.One chemical used to control termite .—(Pentachlorophenol)

11.One chlorophenoxy herbicide.—(2,4- dichlorophenoxy acetic acid.)

12.One carbamate herbicide .—(barban)

13.One organochlorine insecticide which causes depression in mammals .—(cyclodienes)

14.One organo chlorine insecticide used in animal practice.-(HCH-Hexa chloro cyclohexane)

15.Organochlorine insecticide coming under formamidine group .—(Amitraz)

16.Organophosphorus compound widely used as ectoparasiticide in dog collars—(Dichlorvos)

17.The active ingredient of Sevin.-(carbaryl)

18.The most toxic chemical synthesized,-(2-3-7-8- Tetrachloro dibenzo paradioxin)

19.The toxic metabolite of fluoroacetate.-(fluorocitrate)

20.Three natural insecticides.-(pyrithrins, rotenone, nicotine)

21.Toxins absorbed directly from the skin.-(DDT, Sarin,CCL4, Nicotine)

22.Toxins which achieve their highest concentration in their site of toxic action.-(carbon monoxide in haemoglobin, paraquat in lungs)

23.Toxins which will give dark chocolate colour to mucous membrane-(chlorate, Nitrate)

24.Two agents ,the metabolite of which is more toxic than the parent compound .-(Parathion , fluroacetate)

25.Two contact poisons .-(Diazinon, parathion, malathion)

26.Two chlorophenol fungicides .—(pentachlorophenol, trichlorophenol)

27.Two chlorophenoxy group of herbicides-(2-4 dichlorophenoxy acetic acid, 2-4-5 trichlorophenoxy acetic acid)

28.Two dithiocarbamate fungicides--(maneb, zineb, ziram, nabam)

29.Two examples for fumigents.—(carbondisulphide, aluminium phosphide, carbontetrachloride)

30.Two first generation anticoagulant rodenticides .—(warfarin, dicoumarol)

31.Two herbicides under triazine group.—(atrazine, simazine)

32.Two herbicides under substituted urea group.—(anisuron, diuron)

33.Two herbicides under bipyridyl group.—(paraquat, diquat)

34.Two herbicides under dinitrophenol s .—(dinocap, dinoseb)

35.Two insecticides which are not toxic to warm blooded animals.—(Pyrithrins, Rotenone)

36.Two inorganic insecticides-(calcium arsenate, lead arsenate, sodium fluoride, sodium arsenite)

37.Two OP compounds developed as warfare agent.-(Diethyl flurophosphate, sarin, soman, taban)

38.Two OP compounds introduced originally as insecticide.-(tetraethyl pyrophosphate, hexa ethyl tetra phosphate)

39.Two organo chlorine insecticides.-(DDT,BHC, methoxychlor)

40.Two poisons act on specific receptors.-(O.P, carbamates)

41.Two poisons that prevent the coagulation of blood.-(Warfarin, Fluride)

42.Two pentavalent form of arsenic.-(Arsanilic acid, sodium arsanilate)

43.Two reversible cholinesterase inhibitors.-(carbaryl, furadan, apocarb)

44.Two second generation anticoagulant rodenticides .--(brodifacoum, bromadiolone)

45.Two systemic insecticides.-(Dimethoate, dimetan, furadan)

46.Two toxins which directly act on cell architecture.-(mitamicin, alkylating agent)

47.Two toxins which delay/prevent coagulation of blood.-(Rodenticide, Bracken)

48.Two volatile poisons .-(Dichlorvos, Carbondisulfide)

49. $Zn_3 P_2$---(Zinc phosphide)

50. PH_3 ---(Phosphine)

II.FILL UP THE BLANKS WITH MOST APPROPRIATE WORDS:

1.Alphanaphthyl thio urea was withdrawn from the market because of its …….. toxicity .—(carcinogenic)

2.Among mammals ……are more susceptible to OC insecticide than other species.—(Cats)

3.Among fishes, birds and mammals ……are more susceptible to OC insecticides .—(Fishes)

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

5.Dark green coloured urine is seen in .....poisoning—(Phenol)

6.DNP toxicity causes uncoupling of ……..-(Oxidative phosphorylation)

7.In …….sheeps organophosphorus compounds cause only delayed neuropathy.—(Suffolk)

8.In…….. poisoning stomach content will have acetylene odour.-(zinc phosphide)

9.In organo phosphorus poisoning pupil will be .....—(constricted)

10.In salt poisoning death is due to disturbance in.....(electrolyte and water balance)

11.In case of zinc phosphide consumption empty stomach ……the toxicity.-(decreases)

12.In case of zinc phosphide presence of ….……in the stomach increases the toxicity.-(food)

13.In phosphorus poisoning breath will give ……..smell.-(Garlic)

14.Mottling of teeth is common in ……..toxicity.-(Fluorine)

15.Natural insecticides are less toxic to warm blooded animals except…….alkaloids.-(Nicotine)

16.Nicotine is obtained from the plant ……..—(*Nicotiana tabacum*)s

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

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

19.Originally O.P.compounds were developed as ……agents.(warfare)

20.Pyrithrins will act on ……membrane of the insect and kill it.-(neuronal)

21.Pyrithrins are less toxic to mammals because of rapid ……--(biotransformation)

22.Pyrithrins are less toxic in ..... blooded animals.—(warm)

23.Rotenone inhibits the oxidation of glutamate, ……and pyruvate.-(alpha keto glutarate)

24.Rotenone is a contact insecticide derived from the root of derris ……--(Derris elliptica)

25.Sodium chloride toxicity in pigs is known as ……syndrome.—(water deprivation)

26. Two, Four - dichlorophenoxyacetic acid herbicide is most toxic to ……(species of animals).—(dogs)

27.The breath will smell ……..in phosphorus poisonong.-(Garlic)

28.The biotransformation of xenobiotics can be inhibited by ……drug.-(SKF 525 A)

29.The breath will glow in dark in ……poisoning.-(Phosphorus)

30.The breath may have bitter almonds smell in …….poisoning.-(Cyanide)

31.The colour of the urine will be dark green in …….poisoning.-(Phenol)

32.The colour of the urine will be deep yellow in ……/…….poisoning._(picric acid / phenacetin)

33.The half life of DDT in soil is ……..years.-(3—10)

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

35.The percentage of lindane recommended as insecticide is ……..emulsion.-(20%)

36.The toxic dose of urea in cattle is considered to be ……mg/kg.—(450 mg)

37. Two –Four dinitrophenol uncouple the……and increase the tissue respitation.-(oxidative phosphorylation)

38.Vitamin K is the specific antidote for ……..toxicity.—(Coumarin)

39.Water deprivation syndrome is seen in ……..poisoning.-(Sodium chloride)

40.Warfarin reduce the synthesis of ……..in liver.-(Prothrombin)

41.Zinc phosphide is toxic to birds at ……mg/kg.-(20 to 30)

42.Zinc phosphide poisoning in dog is otherwise known as ……-(Mad dog running)

43……esterase hydrolyse OP but not destroyed in the process , helps to detoxify the pesticides.-(Type –A esterase/ Aryl esterase)

44.....is the specific antidote for organo phosphorus and carbamate insecticides.-(pyridine two aldoxime/ 2PAM)

45……(alkaloid)can be used in the treatment of Organo phosphorus and Carbamate poisoning.-(Atropine sulphate)

46.....is the enzyme system inhibited in the body by cassava (tapioca)leaves.—(Cytochrome-C)

47.....isomer of BHC is a CNS stimulant.—(Gama)

48.....compounds are irreversible cholinesterase inhibitors.—(O P)

49.....compounds are reversible cholinesterase inhibitor.—(Carbamates)

50……enzyme detoxify hydrocyanic acid.-(Rhodanase)

III.STATE TRUE OR FALSE:

1.Alpha napthyl thiourea is a blue grey powder.-(T)

2.Alpha & Gama isomers of BHC stimulate CNS and Beta & Delta isomers suppress CNS.-(T)

3.Animals taking 7-8 ppm DDT in the hay may magnify it up to 65 ppm in the butter from those animals.-(T)

4.Aquatic organisms are extremely sensitive to pyrithrins.-(T)

5.Aspirin and phenylbutazone increase warfarin toxicity —(T)

6.Atropine is the specific antidote in nicotine poisoning.-(F)

7.BHC enhances the release of neuromuscular transmitters in CNS.-(T)

8.Broad spectrum antibiotic therapy enhances warfarin toxicity.—(T)

9.Bromethalin is highly toxic to rats but non toxic to other mammals.—(F)

10.Calcium oxalate is insoluble.-(T)

11.Carbamates are reversible cholinesterase inhibitor.-(T)

12.Carbamates inhibit cholinesterase at anionic and esteratic site.—(T)

13.Carbaryl and furadan are example for reversible cholinesterase inhibitor.-(T)

14.Carbaryl is a contact insecticide .—(T)

15.Carbamates can cross the placental barrier.-(T)

16.Carbamates inhibit carboxylesterase enzyme.—(T)

17.Chlorinated hydrocarbons are more soluble in water than in oil.—(F)

18.Cholinesterase reactivators like 2 –PAM is very effective in carbamate intoxication.—(F)

19.Carbontetrachloride can be used as a fumigant.-(T)

20.Carbolinium is the highest boiling fraction of coaltar distillate .-(T)

21.Carboxyesterases are seen in liver.-(T)

22.Chloropicrin and methyl bromide are examples for organic fumigants.—(T)

23.Dichlorvos is the most volatile of all the insecticides.-(T)

24.Dichlorvos is used as insecticide in dog collars.-(T)

25.Diazepam is the specific antidote of rotenone.—(T)

26.Dieldrin is absorbed through the intact skin even in solid form.—(T)

27.Dinitro ortho cresol will give yellow colour to skin and mucous membrane-(T)

28.DDT in oily medium is less toxic than water medium.-(F)

29.Emaciated animals and non lactating animals are more susceptible to DDT toxicity.-(T)

30.Endosulfan will degrade very slowly in the environment .-(F)

31.Ergocalciferol can be used as a rodenticide .—(T)

32.Females are more susceptible to pyrethroids.—(T)

33.Fenvalerate is a pyrithroid insecticide .—(T)

34.Ferrocyanide and thiocyanate are toxic.-(F)

35.Gramoxon weedicides contain Paraquat.-(F)

36.Females are more sensitive than males for some OP compounds like parathion.-(T)

37.Females are moré resistant than males for some O.P compound like Schradan.-(T)

38.For testing the organo chlorine content in milk it is better to take skimmed milk than whole milk.-(F)

39.Gama isomer of lindane is 50-10000 times more active than other isomers.-(T)

40.Gramoxon weedicide contains Paraquat.-(F)

41.Half life of organo-chlorine insecticide in soil is up to 2- 12 years.—(T)

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

43.High ambient temperature increases the toxicity of parathion in mice .—(T)

44.High inorganic phosphorus hasten the excretion of molybdenum.-(T)

45.Hydrogen cyanide is used to fumigate ships and buildings.—(T)

46. If yellow phosphorus is exposed to air it emit white fumes.-(T)

47.Imidapride is a organo chlorine insecticide used to kill nematodes .-(F)

48.Imidacloprid is a neonicotinoid insecticide binds selectively to nicotinic cholinergic receptor on the .post synaptic membrane .—(T)

49.In acute organochlorine poisoning there will be rise of body temperature and animals will jump over imaginary objects.—(T)

50.In Amitraz poisoning alpha -2 adrenoceptors antagonist yohimbine or atipamezole is very effective .—(T)

51.Incorporation of zinc in the ration give some protection against copper toxicosis.-(T)

52. In zinc phosphide toxicity neither zinc nor phosphorus is toxic.-(T)

53.Large particle size of ANTU is less toxic than small particle size.-(F)

54.Low ambient temperature increases the toxicity of parathion in rats.—(T)

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

56.Males are more susceptible to DDT toxicity.-(F)

57.Male rats are more susceptible to schradan.-(T)

58.Methyl bromide is an organic fumigant produces its toxicity by binding to SH groups of enzymes in the system.—(T)

59.Nicotine is absorbed even from intact skin.—(T)

60.Nitrated phenols- Dinitro ortho cresol(DNOC) is used as a fungicides.-(T)

61.Norbormide is lethal to rats but nontoxic to other rodents , primates, birds, cats, goats, sheep etc.—(T)

62.Organophosphorus compounds inhibit mainly esterase enzymes.-(T)

63.Organophosphorus compounds inhibit trypsin, chymotrypsin, and liver esterases.-(T)

64.Organochlorine insecticides are lipid soluble. –(T)

65.Organophosphorus compounds will cross the placenta and affect the fetal cholinesterase.—(T)

66.Oximes are less effective in carbamate poisoning.-(T)

67.Parathion is more toxic than malathion.-(T)

68.Paraquat and diquat herbicides are highly toxic to animals .—(T)

69.Paraquat and diquat produce their toxicity by generating superoxide radical .—(T)

70.Pentachlorophenol fungicide is an uncoupler of oxidative phosphorylation.—(T)

71.Phosphine is liberated when zinc phosphide is reacted with water and hydrochloric acid.-(T)

72.Phosphorylated enzyme complex tend to age with time and become resistant to reactivation by oxime.-(T)

73.Potassium permanganate solution (1:2000) can be used in oral alkaloids toxicity-(T)

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

75.Pseudo cholinesterase is seen in serum, pancreas, heart and liver.-(T)

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

77.Pure Gama isomer of BHC has no smell.-(T)

78.Pure Gama isomer of BHC has characteristic smell.(F)

79.Pyriminil is a rodenticide under substituted urea group.—(T)

80.Pyriminil is effective against rodents resistant to warfarin.—(T)

81.Pyrithrins are obtained from *Nicotiana tabacum*.—(F)

82.Pyrithrins are highly toxic to animals especially in cats.-(F)

83.Red squill is highly toxic to rats and non toxic to other warm blooded animals in recommended dosage.-(T)

84.Red phosphorus is non toxic.-(T)

85.Reversible cholinesterase inhibitors are less toxic to warm blooded animals.-(T)

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

87.Rotenone is the active principle of root of various species of derris.-(T)

88.Rotenone is highly toxic to fish and birds.—(T)

89.Rotenone inhibits respiratory chain of mitochondria results in reduced oxidative phosphorylation and cell death.—(T)

90.Simple stomached animals are less susceptible than ruminants to anticoagulant rodenticides.—(F)

91.Since DDT is fat soluble fatty animals are more susceptible to DDT toxicity.-(F)

92.Sodium fluoro acetate blocks the citric acid cycle and produce toxicity.-(T)

93.Sodium fluoro acetate is highly toxic to rodents and less toxic to other animals.—(F)

94.Sodium fluroa cetate is converted to fluoro citrate and produce toxicity.-(T)

95.Sodium methyl thiouracil reduces BMR.-(T)

96.Some O.P. compounds cause axonal degeneration and demylination.-(T)

97.Some oximes on keeping for a long period will liberate cyanide hence use only fresh compound each time.-(T)

98.Substituted urea group of rodenticide is destructive to pancreatic beta cells and develop insulin deficient ketosis.—(T)

99.Sulphur dioxide is a fumigant .—(T)

100.Technical grade organophosphorus compounds are less toxic than pure compounds .—(F)

101.Technical mixture of BHC consist of four isomers.-(T)

102.Thallium sulphate is extensively used as a rodenticide .-(T)

103.The actual toxic component in sodium fluoroacetate toxicity is fluoro citrate.-(T)

104.The blood cholinesterase level can be estimated by Delta pH method.-(T)

105.The cause of toxicity of ANTU is increased permeability of lung capillaries resulting in lung oedema and animal will be drowned in its own secretion.-(T)

106.The highest concentration of carbamate insecticides in the body is seen in the liver.-(F)

107.The nicotinic receptors of mammals and insects are equally sensitive to imidacloprid.—(T)

108.The toxic principle released in the body from zinc phosphide is phosphine.-(T)

109.The toxic factor in zinc phosphide is Zinc.-(F)

110.The toxic principle present in zinc phosphide is Phosphorus.-(F)

111.Toxicity of pyrithroids increases as the ambient temperature decreases and vice versa.—(T)

112.Type II (cyano-pyrethroids) are less toxic to mammals .—(F)

113.Type I pyrethroids are less toxic to mammals .—(T)

114.2 PAM treatment should not be delayed in O.P poisoning.-(T)

115.Type B –acetyl choline esterase is seen in RBC ,neuro effector junction and synapse.-(T)

116.2-4-dichlorophenoxy acetic acid (2- 4- D) is a herbicide.-(T)

117.2,4-dinitrophenol uncouple the oxidative phosphorylation in animals and causes toxicity.—(T)

118.Type B acetyl cholinesterase , pseudo cholinesterase and carboxy esterase are inhibited by O.P.-(T)

119.Uncoupling of oxidative phosphorylation by Dinitrophenol causes the production of large amount of heat.-(T)

120.Use of organochlorine insecticide is reduced because of their persistence in the environment.—(T)

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

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

123.Zinc phosphide alone can be given to rats to kill it.-(F)

124.Zinc phosphide is mixed with food materials and then bait the rats to kill them.-(T)

IV. MATCH EACH ONE IN 'A' TO ALL THE MATCHING ONES IN ' B'

A	B
1. Zinc phosphide	Reduce BMR----5
2. Sodium fluoro acetate	Hyper keratosis---10
3.Alpha naphthyl thiourea	Block citric acid cycle--2
4.Warfarin	Wood preservative---10
5.Sodium methyl thiouracil	Paraquat---7
6. 2-4-Dinitro phenol	Copper fungicide---8
7. Gramoxon	Increase BMR---6
8. Bordeaux mixture.	Birds are most prone to toxicity—9
9. Tetramethyl thiuram disulphide	Yellow green coloured urine—6
10. Penta chlorophenol	Inhibit prothrombin synthesis—4
	Vitamin K deficiency—4
	Blue grey powder—3
	Citric acid cycle---2
	Mad dog running---1
	Coumarin derivative---4
	Odour of acetylene in stomach—1
	Phosphine---1
	Increase permeability of lung capillaries---3
	Less toxic in empty stomach—1,3
	Glycerol monoacetate---2
	Black powder--1

V.CHOOSE THE CORRECT ANSWERS FROM THE GIVEN ONES:

1.Alpha naphthyl thiourea is less toxic a) in empty stomach b) with oily food c) full stomach d) not affected.-(A)

2.A rodenticide which blocks tricarboxylic acid cycle by competitive inhibition of the enzyme aconitase.- a) Fluoroacetamide b) Pindone c) Chloralose.—(A)

3.ANTU is less toxic in an empty stomach a) In empty stomach it will irritate the stomach wall resulting in vomition and throwing away the poison and hence no toxicity. b)absorb only with fatty materias c)Immediate absorption and detoxification d) none of the above. –(A)

4.Dimethyl dichloro vinyl phosphate (DDVP) is also called a) Parathion b) Dichlorvos c) Pyrolon --(B)

5.Fumigents are used to control a) insects b) soil nematods c) rodents d) all the above .-(D)

6.Gama isomer of BHC is known as a) Chlordane b) Aldrin c) Lindane –(C))

7.Infants born to mothers exposed to excessive levels of polychlorinated biphenyls are termed as a) Pink baby b)Blue baby c) Cola coloured baby.—(C)

8.In zinc phosphide poisoning examination of stomach content reveals a) odor of acetylene b) odor of bitter almondsc) odor of methane d) none of the above.-(A)

9. 'Mad dog running' is a symptom of a) sodium fluoroacetate b) zinc phosphide c) ANTU d) warfarin -(B)

10.Organophosphorus inhibits a) Cytochrome- C b) Rhodanase c) SGOT d) Cholinesterase .—(D)

11.One of the following is an organo phosphorus compound. a) carbofuran b) HCH cc) DDT d) Malathiin.-(D)

12.One of the following is in the decreasing order of toxicity to pyrethroids. a) arthropods—fish--birds--mammals b) arthropods-birds- mammals-fishes c) mammals—birds-fishes- arthropods. d) fishes—birds—arthropods—mammals.---(A)

13.One of the following isomer of HCH is known as Lindane a) Alpha b) Beta c) Gama d) Delta (C)

14.One of the following insecticide is most resistant to environmental degradation a) Malathion b) Cypermethrin c) Phopoxur d) DDT.-(D)

15.Pentachlorophenol is an anti termite compound b) used to preserve timbers c) absorbed through intact skin d) all the above.-(D)

16.Pentachlorophenol is a a) fungicide b) molluscicide c)insecticide d) herbicide e) all the above.—(E)

17.Pseudo cholinesterase is abundantly seen in a) blood b) bone c) neuro muscular junction d) kidney.—(A)

18.Sodium fluoroacetate will act by a) inhibiting cloting of blood b) inhibiting calcium metabolism c) inhibiting citric acid cycle d) none of the above.—(C)

19.The only known naturally occurring carbamate ester a) Carbaryl b) Eserine c) Octachlor.—(B)

20.The dose of atropine in O.P. poisoning can be reduced by simultaneous administration of a) Calcium b) 2 PAM c) Coramine . d) none of the above—(B)

21.The drug of choice in the treatment of parathion poisoning is a) BAL b) 2-PAM c) Penicillamine d) Sodium EDTA .—(B)

22.The toxicity of zinc phosphide is due to a) zinc b) phosphorus c) phosphin d) all the above.-(C)

23.The rate of absorption of DDT from higher to lower is. a) Insect cuticle , mammalian gut, mammalian skin b) Mammalian gut, insect cuticle, mammalian skin. c) Mammalian skin. Mammalian gut, insect cuticle.—(A)

24.Yellow phosphorus on exposure to air a) emit white fumes b) emit fumes with garlic odour c) luminous in dark d) all the above.-(D)

25.Yellow green colouration of urine is seen in a) dinitrocompounds b) jaundice c) phenothiazine d) none of the above.-(A)

26. 2-4-dinitro phenol a) uncouple the oxidative phosphorylation b) stimulate tissue respiration c) impair the ATP synthesis d) all the above.-(D)

VI.EXPAND THE FOLLOWING:

ANTU- (alpha napthyl thio urea)

2-4 D- (2 4 –dichlorophenoxy acetic acid)

DNP- (dinitrophenol.)

2 PAM- pyridine 2 aldoxime methiodide)

TEPP.-(tetraethyl pyrophosphate)

HCH.-(hexachloro cyclo hexane)

DDT.- dichloro diphenyl trichloroethane)

DAM-(diacetyl monoxime)

TCDD.-(tetrachloro dibenzo paradioxine)

2 4 5 T.-(2 4 5 – trichloro phenoxy acetic acid)

VII. ANSWER THE FOLLOWING: (1-2 sentence)

1.ANTU is less toxic in an empty stomach .Why? In empty stomach it will irritate the stomach wall resulting in vomiting and throw away the poison and hence no toxicity.

2.Define Insecticides: Insecticides are chemical substances used for destruction of many insect species which may cause damage to plants and livestocks.

3.Define pesticides: pesticides are chemicals used to prevent loss of cultivated plants and food or feed stuff in stores.

4.How chlorinated insecticides are classified: a) DDT group- DDT and related parachlorophenol derivatives-DDT, DDD, methoxychlor. b) Cyclodiene group- Dieldrin, chlordane, endosulphan. c) Miscellaneous- BHC, Toxophen, Lindane.

5.How insecticides are classified depending on the mode of penetration in the pest?-a)per oral insecticides-get in through the digestive tract. b) Fumigents-penitrate through respiratory system c) Contact insecticides- penetrate through contact. d) systemic insecticides-get in the insect by feeding the host cells which take the agent in to system from the soil

6.How insecticides are classified chemically.-classifid in to 8 group-1) Natural insecticides 2) inorganic insecticides 3) Nitrated phenols 4) Carbolineum and mineral oil 5)Chlorinated insecticides(OC) 6)Carbamates 7) Organo phosphates 8)Organoic thiocynates.

7.How pesticides are classified depending on their biological effects: a) Insecticide b) Herbicides c) Fungicides d) Rodenticides e) others like fumigents, nematocides, acaricides, hormones etc.

8.How 2 PAM acts in O.P poisoning? 2PAM break the enzyme phosphate bond and form an inert complex with O.P that is excreted in urine.

9.One draw back of this compound as a rodenticide is development of heritable resistance in rats .Which rodenticide? –ANTU .

10.Stress enhances DDT toxicity How? In stress epinephrine is released –initiate lypolysis- release DDT in to circulation-produce toxicity.

11.Susceptible animals to this toxin will be drowned in its own secretions -- prevent the oxygen uptake and die .Which is that toxin?— ANTU .

12.What are the sources of man made radiation injury: Nuclear explosion, nuclear wepons, radioactive waste from nuclear energy operation, diagnostic therapy.

13.What is biomagnifications.-A series of organisms in the food chain accumulate increasingly greater quantities of the insecticide in fat tissue. Ultimately a species at the top of the food chain is adversely affected the magnification of smaller quantities in lower organism to higher concentration in higher organism is called as biomagnifications.

14.What are fumigants: Agents used to control insects, rodents, soil nematods. Exert parasiticidal action –gaseous form is used to penetrate other inaccessible area. Eg.Hydrogen cyanide, carbon disulphide, ethylene bromide.

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

16..What are the mechanism of toxicity with dithiocarbamate fungicide ? a) inhibits SH group containing enzymes –alpha keto glutarate oxidase, pyruvate dehydrogenase, succinic dehydrogenase. b) causes metal chelation –inhibits synthesis of some neurotransmitters particularly nor adrenalin via chelation of copper containing portion of enzyme dopamine beta hydroxylase. Causes endocrine disruption –thyroid gland dysfunction, interfere with gonadotropin releasing hormone – inhibit alcohol dehydroginase.

17.What are the advantages of fumigants over other insecticides? It can be eliminated from the treated area simply by increasing ventilation. Since fumigants exert their action in gaseous form they easily penetrate to area otherwise inaccessible for pesticidal action. useful for very big installations or structures like aeroplane, ships, godowns etc. that can be sealed or enclosed effectively. Chances of secondary poisoning with fumigants are negligible.

18.Why antipyretics are less effective in controlling the hyperthermia caused by 2,4- dinitrophenol toxicity? The temperature rise in 2,4-dinitrophenol toxicity is a result of general tissue response rather than a disorder of central temperature regulation. Since antipyretics acts via central mechanism there is no reduction in temperature in this case.

VIII. WRITE SHORT NOTES ON:

1.Alpha naphthyl thiourea: It is a blue grey powder-LD_{50} is 10-40n mg/kg-less toxic in empty stomach (irritate and vomit) .Large particle size is more toxic-stimulate the permeability of lung capillaries results in lung oedema-animal will be drowned in its own secretion. symptoms gastric and respiratory disorders, watery diarrhea, cyanosis, asphyxia, coma, convulsion. Treatment- Emetics, gastric lavage, give sedatives to reduce oxygen demand, animal may be placed in an inclined position-chest may be compressed periodically to facilitate drainage-silicon aerosol prevent foaming in the respiratory tract-substances containing SH group (N-amyl mercaptan)reduces the binding to receptors.

2.Carbon disulphide as a fumigant, its mechanism of toxicity: Carbondisulphide has been used as a grain fumigant mainly in combination with carbon tetrachloride. It is also used as soil fumigant , general

insecticide. It is highly reactive compound react with various aminoacids, catecholamine, vitamins and steroid hormones. neurotoxic, impairs neurotransmission in adrenergic neurons. Dithiocarbamate formed from carbondisulphide chelate metals like copper, zinc and inhibit some enzyms. Thiamin deficiency disrupt peripheral and central nervous system- disrupt microcirculation in CNS. Cardio and hepato toxic . Main signs include muscular weakness, ataxia, paralysis of extensor muscles. Amblyopia with optic atrophy occurs. No specific antidote- provide fresh air- activated charcoal and saline cathartic- washing the eye- CNS depressants – vitamin B6.

3.Doping : Administration of any substance other than the normal nutrients to animals for the purpose of affecting its speed, stamina, courage,or conduct in race. It is an undesirable practice. Causes considerable damage to Jocky, horse become unmanageable , permanent impairment of reproductive system of female. False selection for breeding under doping. different type of dopings are a) doping to win b) doping to lose c) doping by accident d) therapeutic. Drugs which will enhance the racing performance –caffeine, amphetamine, hormones, anabolic steroids, drugs used to mask normal illness-procaine, phenyl butazone, atropine, tranquilizers. Accidental feeding of certain substances which contain drugs eg. Coca husk. Administer depressants to fail others horse-it is an outside job. Saliva, urine, sweat, blood etc are tested for the drug metabolites.

4.Ionizing radiation: Alpha , Beta and Gama radiation. Sources are cosmic rays from space, naturally occurring radio active material, nuclear weapons, Local fallout, Tropospheric and Stratospheric fall out) radio active waste from nuclear energy operation- diagnostic therapy eg. X-ray. Somatic effect will be early or delayed. Genetic effect is mutation or cancer. Early effect by several thousand rad (unit of radiation) G.I.injury in few hours subside and end fatally. Lesser amount-G.I.disturbances, subside , slow blood change, haemorrhage, increase susceptibility to infection and death. Delayed changes after months or years- local tissue changes, leukemia, teratogenicity, opacity of the eye. Local irradiation of skin leads severe burns (deposition of fall out) edema-cell destruction in epidermis, destruction of follicle and sebacious glands- wool give some protection to the skin. Irradiation of gut, bone, lung and thyroid can also occurs.

5.Mechanism of action of pyrethroids: they are non specific stimulator of CNS- interact primarily with sodium channels- enhance inward sodium flow and suppressed potassium out flow resulting in delayed repolarisation. Type II pyrethroids inhibit the voltage dependent chloride channels in the brain, nerves, muscles and salivary glands. Interfere with binding of GABA with its receptors. inhibit various adenosine triphosphatase , calcium ATP ase , CA/ MG ATPase in the nervous system

6.Mechanism of nicotine toxicity: it binds to nicotinic cholinergic receptors located in skeletal muscle motor end plate , autonomic ganglia, adrenal medulla and CNS. Toxicosis is produced by initial stimulation followed by depolarizing type blockade of acetyl choline receptors - both sympathetic and para sympathetic system producing complex action.

7.Mechanism of DDT toxicity.—1) Degree of toxicity is proportional to the amount of hydrochloric acid which is split off by dehalogination. 2) It alter the transport of Na+ and K+ ion across axonal membrane and reduce transmembrane resting potential and firing threshold resulting in increased neuronal

excitability. 3) Inhibits Na, K, Mg ATPase resulting in alteration in neuronal excitability. 4) Increase in whole brain ammonia and ammonium. 5) Reduce mitochondrial respiration -. 6) Deplete brain serotonine ,epinephrine and dopamine, anti androgenic action, partial agonist and full antagonist of oestrogen receptors. 7) Induce mixed function oxidase system of enzymes in hepatic endoplasmic reticulum –alter metabolism of xenobiotics. 8)Causes induction of cytochrom P- 450.stimulate metabolism of oestrogen in birds-create endocrine imbalance- calcium metabolism and egg laying is affected. 9) Inhibits calcium ATP ase that is necessary for calcification of egg shell –increase breakage of eggs-affect status of breeding population (population may disappear)

8.Mechanism of toxicity and treatment of metaldehyde poisoning in dogs: metaldehyde is a molluscicide – irritant to G.I tract cause electrolyte and acid- base imbalance with development of acidosis. CNS depression, tachypnoea, decrease GABA level in CNS reduce concentration of serotonin and nor adrenalin in brain, produce hyperthermia secondary to intense convulsions. Treatment: convulsions should be controlled with appropriate sedatives such as diazepam-- in horse xylazine with acepromazine- muscle relaxants such as methocarbamol - remove ingested poison from G.I tract -- fluid therapy-- artificial respiration-- provide calm quiet environment.

9.Mechanism of action of Warfarin as a rodenticide. It reduces the synthesis of prothrombin by the liver. It compete with the vitamin K epoxide for the active site on the reductase and this prevent regeneration of vitamin-K- available store of vitamin K deplete- synthesis of prothrombin (factor –II) and factor VII, IX, and X are inhibited. When synthesis of clotting factors is reduced by 50% bleeding disorder occur -direct damage to the capillaries- Bleeding and death even by the normal beat of the heart or movement of the body

10..Mechanism of zinc phosphide toxicity: poisoning is due to release of phosphine in the G.I tract. Phosphine gas is said to act as a general protoplasmic poison- cause direct damage to membrane of blood vessels and RBC leading to C.V. collapse- causes depression of CNS- inhibits cytochrome C oxidase which cause tissue hypoxia . Act as a strong reducing agent .

11.Symptoms and treatment of pyrethroids toxicity: Topically it produce allergic reactions like dermatitis, burning sensation, itching , blister formation. Systemically it causes hyper salivation, vomition, diarrhea, mild tremors, hyper excitability, seizures, dyspnoea hyper or hypo thermia paralysis coma and death. Treatment – no specific treatment – only symptomatic- topical application is removed with soap and water, sedatives like diazepam to control seizures. muscle relaxants- atropine to control salivation – emetics or gastric lavage- activated charcoal , increase ambient temperature which reduce toxicity..

12.Symptoms of nicotine poisoning: clinical signs appear rapidly with in few minutes- excitement – rapid respiration-salivation- lacrimation-vomition-diarrhoea and convulsions of clonic and tonic type which is severe- transient phase of stimulation followed by depression. Muscle weakness incordination-flacid paralysis- rapid pulse- shallow and slow respiration- death from respiratory paralysis of diaphragm and chest muscle.

13.Sources of pesticide toxicity: the main source for animals are a) Accidental exposure- accidental ingestion of chemical as such , consumption of freshly spreyed crops, ingestion of contaminated feed and water, consumption of contaminated dairy products, secondary poisoning in predator animals / birds. Use of insecticides on stressed animals, exposure to contaminated environment, absorption from the skin while using as ectoparasiticide, eating of pesticide treated grains. b) Malicious – intentional by any means. c) Occupational –exposure by factory workers because of environmental contamination.

14.Symptoms of OP poisoning: Over activity of parasympathetic system –anorexia, nausea, vomition, diarrhea, all secretions increase, miosis, dyspnea, constriction of bronchi, cardia, cyanosis of conjunctival mucous membrane,incontinence of urine and feces, abdominal pain and bloat, stimulate nicotinic receptors, stimulation followed by paralysis of skeletal and other voluntary muscles. Twitching of eye lids, face ,protrusion of tongue, nervousness, ataxia, convulsion, coma, death due to resp. paralysis.

15.Symptoms of organo chlorine toxicity: onset of signs may take several minutes to days. In most cases first signs appears in 24 hours, Frothy salivation, vomition, diarrhea, mydriasis,urination, ventricular fibrillation, increase body temperature , death due to resp.failure. Hyper irritability, tremor, paresthesia of tongue, lips, face (abnormal perverted sensation), jump imaginary objects, opisthotonus,. In chronic form abnormal posture ,grinding of teeth, tremor of muscles in neck and head extend to most muscles of body- convulsion-depression in 3-5 days and death in chronic cases reduced milk yield and egg production, reproductive problems, thinning of egg shell.

16.Treatment of nicotine poisoning: in very early stage of poisoning non depolarizing type of ganglion blocking agents like mecamylamine can be used. In late stage these are not useful. If it is external application remove toxins from skin by careful bathing-if entry via GI remove from stomach by gastric lavage with tannic acid or potassium permanganate lotion- hyper secretion and bradycardia may be treated with intravenous atropine sulphate – give parenteral fluid therapy.

17.Treatment of O.P.Poisoning: atropine sulphate i/v, i/p (initial 0.2to 0.5 mg/kg in ruminants.) ,1/4 i/v and 3/4 i/m or s/c) repeat 3-6 hours intervals for a day or more till symptoms subside.(H-65mg, D-2 mg) It will take 10 min for the full action to come. Cholinesterase reactivators-Oximes,2 PAM(pyridine 2aldoximemethiodide)Small animals- 20—50 mg/ kg as 10 % solution i/m or slow i/v. Large animals 25—50 mg/kg as20% sol. Artificial respiration, electrolytes and multivitamins, remove the source by gastric lavage with 5% sodium bi carbonate. If spill in the eyes wash with fresh water for 10min.

18.Treatment of organo chlorine poisoning: severely poisoned excited animals must be narcotized for 24 hours- use narcotics, anticonvulsants and anaesthetics like barbiturates, benzodiazepins, xylazine can be used.-for rise of temperature use cold water bath. remove the source, wash the stomach, wash the skin with soap and water, give calcium borogluconate, give charcoal 1kg/animal/day to adsorb and excrete to prevent enterohepatic cycle. Basic anion exchange resins like cholestyramin binds to it in gut.

19.Treatment of zinc phosphide poisoning: Gastric lavage with 5% sodium bicarbonate –and give activated charcoal. Sodium bicarbonate neutralize stomach acidity . In small animals aluminium and

magnesium hydroxide gel can be used. Artificial respiration to overcome pulmonary irritation . Demulcents and protectants may be given to treat gastro enteritis. Slow i/v sod. bicarb to correct metabolic acidosis.

20.Treatment of warfarin poisoning: In warfarin toxicity the following treatment regimen can be recommended. a) to reduce locomotion and subsequent bleeding calm the animals by giving sedatives-vitamin K1 (phytonadione) –blood transfusion-emetics or activated charcoal to reduce absorption-oxygen therapy- thoracocentesis can be performed to prevent death due to pulmonary or cardiac compression.

21.Treatment of ANTU poisoning: emetics and gastric lavage- activated charcoal for virtual removal of toxin from G.I.tract sedative or anaesthetics with barbiturates to reduce struggling. Place the animal on an inclined surface for the escape of fluid from bronchi-chest may be compressed periodically to facilitate drainage. Silicon aerosols to prevent fatal foaming in bronchioles. Drugs which provide sulphydryl groups like N-amyl mercaptan, N-acetyl cysteine or sodium thiosulphate are beneficial. Competitive ANTU antagonist like ethylene thiourea or 1-ethyl 1-phenyl thiourea give some protection against toxicity. Osmotic diuretics (mannitol) and atropine may help to reduce pulmonary oedema.

22.Treatment of strychnine poisoning: Affected animals must be provided with warm and quiet environment to prevent initiation of convulsion. Sedatives to prevent seizures , barbiturates in small animals, chloralhydras in large animals. Muscle relaxants to relax the tense muscles . gastric lavage with potassium permanganate lotion or tannins in anaesthetized animals with endotracheal tube in place. Fluids to increase urine excretion (5 % mannitol in 0.9% saline) . Acidification of the urine with ammonium chloride to help the excretion of strychnine (contra indicated in animals already acidic) . Artificial respiration after intubation if necessary.

23.Zinc phosphide- It is a black powder with characteristic smell- mixed with moist grain mash , sugar, bread mash etc to bait the rats. Acute poisoning due to the release of phosphine in the stomach . food in the stomach increases the toxicity –Birds are also affected-kills by 20-30mg/kg. Liver and kidney damage, nausea, vomition, bloat, mad dog running, clonic and tonic seizures are the main symptoms. Pulmonary congession, oedema, pleural effusion, are the main PM lesion. Treatment is gastric lavage and other symptomatic treatment. Fluid therapy and corticosteroid to overcome shock . convulsion may be treated with diazepam . B- vitamins and dextrose .

24.Warfarin: (Wisconsin Alumini Research Foundaion) It is a very effective rat b poison, -coumarin derivative-tasteless powder-bait shyness will not develop – inhibits prothrombin production-prolong blood clotting time- must be taken by rats at least 5 days. Dogs will die in 5 days at 3mg/kg dose. Single dose toxicity must be 5-100 times more than multidose. Toxicity occurs in sheep, pig, dogs. Vitamin K deficiency occurs-liver and kidney abnormality increases toxicity. Reduce the synthesis of prothrombin by liver- even normal movement of the body causes massive haemorrhage- bloody discharge from natural body orifice-collapse. Treatment include calm the animal- reduce locomotion- vitamin K i/v 5mg/kg 2-3 days for small animals, 0.5 – 1mg//kg for 5-6days for large animals-blood transfusion, glucose saline,

IX.WRITE ESSAYS ON :

1.Agents used as rodenticides;

2.Differentiate the mechanism of toxicity, symptoms and treatment of organochlorine and organophosphorus compounds in animals.

3.Ionizing radiation in animals

4.Explain the symptoms, mechanism of action and treatnment of Organo chlorine toxicity in animals.

5.Rodenticide poisoning in dogs.

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