Qn. Paper II

CNS Pharmacology

Name the following

1. Two long acting barbiturates .(Barbitone sodium, Phenobarbitone sodium)
2. Two intermediary acting barbiturates .(Amobarbitone sodium, Butabarbitone sodium)
3. Two short acting barbiturates. (Pentobarbitone sodium, Secobarbitone sodium)
4. Two ultra short acting barbiturates. (Pentothal sodium, Thiobarbitone sodium)
5. Two Sulphur containing barbiturates. (Pentothal sodium, Thiobarbitone sodium)
6. Active ingredient of Surital.(Thiamylalsodium)
7. Active ingredient of Intraval sodium. (Pentothal sodium)
8. Trade name of Hexobarbitone. (Evipen)
9. One ultrashort acting barbiturate which will not cause any side effect even if injected Perivascularly.(Methohexital sodium(Brevital).
10. Dog breed which are highly sensitive to Pentobarbitone .(Grey hounds.)
11. Former name of Guaifenesin . (Glyceryl guiacolate)
12. Active ingredient of Gecolate (Glyceryl guiacolate)
13. Active ingredient of Saffan (Althesin,(Alphaxalone, alphadalone)
14. Active ingredient of Sernylan, Sernyl, GP 121.(Phencyclidine)
15. One trade name of Ketamine.(Vetalar, Ketalar, Ketaset)
16. Trade name of Tiletamine Zolazepam combination (Zoletil, Tilazol)
17. Antidote of Ketamine xylazine combination .(4 Aminopyridine+ Yohimbine)
18. Two neuroleptanalgesic combination . (Droperidol +Fentanyl citrate, Etorphine + Acepromazine)
19. One trade preparation of Droperidol+ Fentanyl (Innovar vet)
20. Active ingredient of M-99 (Etorphine)
21. Active ingredient of M 50-50. (Diprenorphine)
22. Active ingredient of GP 121. (Phencyclidine)
23. Active ingredient of MS 222 .(Tricaine methane sulphonate)
24. Active ingredient of CT 1341. (Althesin)
25. Active ingredient of Oripavin (Etorphine)
26. The characteristic gate in swine due to droperidol fentanyl administration .(Goose Stepping)
27. Other name for Tranquilizer .(Ataractics / Neuroleptics)
28. Active ingredient of Atravet .(Acepromazine maleate)
29. One trade name of Trimeprazine tartrate .(Vallergan)
30. One trade name of Promethazine hydrochloride .(Phenergan)
31. The most potent antiemetic known .(Droperidol)
32. One Benzodiazepine antagonist .(Flumazenil)
33. The common name of *Papaver somniferum*. .(Poppy plant, Opium plant)
34. The most important alkaloid present in Opium .(Morphine)
35. Plant from which Reserpine is obtained .(*Rauwolfia serpentina*)
36. Drug which can partially antagonize CNS suppression induced by Benzodiazepins. (Physostigmine)
37. The active ingredient of Valium.(Diazepam)

38. One trade name of Chlordiazepoxide .(Librium)
39. Active ingredient of Siquil . (Trifluprom azine)
40. Scientific name of Poppy plant . (*Papaver somniferum*)
41. Groups of alkaloids in Opium .(Phenthrene and Benzyl isoquinoline groups)
42. Three Phenanthrene group of alkaloids in opium .(Morphine, Codeine, Thebaine)
43. Three Benzyl isoquinoline group of alkaloid in opium .(Papaverine, Narceine, Narcotine(Noscapine)
44. Centers in the medulla stimulated by opium .(Vagal, Vomiting & Occulomotor)
45. Centers in the medulla depressed by opium .(Respiratory, Vasomotor & Cough)
46. One morphine derivative having powerful emetic action .(Apomorphine)
47. Alakloid in opium used as a cough suppressant .(Codeine)
48. Other name for Meperidine .(Pethidine).
49. Active ingredient of Revivon .(Diprenorphine)
50. Four major types of Opioid receptors in the brain .(Mu, Kapa, Delta & Sigma)
51. Opioid receptors responsible for analgesia .(Mu & Kapa)
52. Opioid receptors responsible for Psychomotor action .(Sigma)
53. Opioid receptors responsible for Respiratory and Cardiovascular suppression .(Delta)
54. The active ingredient of Rompun .(Xylazine)
55. Antagonist of Carfentanyl. (Naltrexone)
56. Species of animal highly sensitive to the action of Xylazine .(Bovines)
57. Antidote of Xylazine .(Yohimbine)
58. Active ingredient of Antagozil-SA .(Yohimbine,4 Aminopyridine)
59. One Alpha2 blocker .(Yohimbine)
60. One Alpha2 agonist .(Xylazine)
61. Active ingredient of Nor-Oripavin .(Diprenorphine)
62. Vaso constrictor agent added to local anesthetics to prolong the action .(Adrenaline)
63. The procaine metabolite acts as Sulfonamide antagonist .(Para amino benzoic acid)
64. The procaine metabolite acts as anti rheumatic .(Diethyl amino ethanol)
65. The active ingredient of Antagozil .(Yohimbine)
66. One sedative analgesic exclusively developed for Vety. use .(Detomidine.
67. One alkaloidal local anesthetic .(Cocaine.
68. Enzyme responsible for procaine metabolism . (Pseudo cholinesterase.)
69. One topical local anesthetic .(Amethocaine, Benzocaine,Benoxinate,).
70. Active ingredient of Lomotil .(Diphenoxylate.)
71. Three Opioid compound .(Meperidine, Anileridine, Methadone.)
72. Three morphinan compound .(Butorphanol, Levorphanol,Nalorphine)
73. The active ingredient of Fortwin .(Pentazocine.)
74. The active ingredient of Tidigesic .(Buprenorphine.)
75. The brain peptides binds to Opioid receptors .(Endorphins, Enkephalins,Dynorphins.)
76. The natural antidote in placenta for pain stress of parturition .(Beta endorphins.)
77. One Enkephalin analog .(Metkephamide).
78. The mediator in the afferent nerve terminals carrying pain signals .(Substance-P.)
79. The types of local anesthesia .(Infiltration, Regional, Paravertibral & Intrathecal.)

Fill up the blanks with most appropriate words.

1. For hypnotic activity both H atom on C5 of Barbituric acid must be replaced with

---------- or---------- groups.(Alkyl or Aryl.)
2. Short acting barbiturates depend on the ……..... mechanism of the body for removal. (enzymatic)
3. Long acting barbiturates depend on the ……mechanism of the body for removal--(excretory)
4. Branched chain on carbon 5 of barbituric acid give ……..duration compound than straight chain.(shorter)
5. Replacement of O atom on carbon 2 of barbituric acid by S increases the potency and …… the duration of action.(shorter)
6. Amobarbitone is available as ……(Amytal)
7. The duration of action of Gardinal is ……..(8-12 hrs)
8. Short chain compounds attached to carbon5 of barbituric acid gives…….duration of action. (long)
9. Long chain compounds attached to carbon5 of barbituric acid gives…….duration of action. (short)
10. Sulphur containing barbiturates have ……colour.(light yellow)
11. The active ingredient of Gardinal is ……..(Phenobarbitone sodium)
12. Barbitone sodium is available as …….(Veronal)
13. Attachment of alkyl groups to position 1 of barbituric acid shortened the duration and tends to ……..CNS. (stimulate)
14. Attachment of alkyl groups to position …&…. of barbituric acid gives convulsive Drugs. (1 & 3)
15. Depending on the duration of action barbiturates are classified in to Long acting, ……, Short acting and …….acting compound. (intermediary, ultra short)
16. The active ingredient of Nembutal is …….(Pentobarbitone)
17. Attachment of unsaturated carbon chain on carbon 5 of barbituric acid gives ……..duration compounds.(short)
18. ……..percentage of the long acting barbiturates bound to plasma protein.(80)
19. Barbiturates will combine with …….in the liver and interfere with biotransformation of drugs and endogenous substrates.(Cytochrome P 450)
20. Deep surgical anesthesia will last for …….hr with Pentobarbitone sodium.(One hr)
21. The duration of action of Pentobarbitone can be increased by injecting lactate , pyruvate and …….(glutamate)
22. The duration of action of Pentobarbitone can be reversed by ……..(Acetyl Choline)
23. ……..percent solution of Thiopentone sodium is used for injection in dogs.(5)
24. Phencyclidine is otherwise known as ……..dust.(Angel)
25. Barbiturates accelerates the disappearance of …….vitamine and a deficiency of ……factor results in enhanced bleeding. (K, Coagulation)
26. Sulphur containing barbiturates are attracted towards …..tissue.(Adipose)
27. The duration of action of short and ultra short acting compounds can be increased by injecting ……% dextrose @ ……..ml/Kg. I/V in dogs.(20, 2.)
28. Helibron mixture contain ……mg/ml of Xylazine(125.)
29. In Helibron mixture the concentration of ketamine is ……..(100 mg/ml)
30. Tilazole is a mixture of …….. and Zolazepam.(Tiletamine)

31. Zoletil is a mixture of ……and……..(Tiletamine, Zolazepam)
32. Helibron mixture is a combination of ……..and……...(Xylazine, Ketamine)
33. To control hypertonicity of muscles in Ketamine anesthesia Xylazine must be administered ……..min. before giving Ketamine.(20)
34. Bland ophthalmic ointment must be applied to prevent drying of ……..in …… anesthesia.(Cornea, Ketamine)
35. Ketamine is a noncompetitive antagonist of ……receptors in brain.(NMDA)
36. Telazole 100 contain ……mg of Tiletamine and ……mg of Zolazepam /ml.(50, 50)
37. The active ingredient of Antagozil is ……(Yohimbine hydrochloride)
38. Etorphine is developed from …… an alkaloid.(Thebaine)
39. .....……can be used prior to Ketamine in cats to prevent muscular hypertonicity.(Xylazine)
40. Althesin is a mixture of 2 steroids……and ……in the ratio 3:1.(Alphaxalone Alphadalone)
41. One ml. of Althesin contain ….mg alphaxalone and ……mg alphadalone .(9, 3)
42. Conventional i/v anesthetic agents acts primarily on …….system than limbic system.(Reticular activity)
43. The active ingredient of Antagozil SA …….and ……(Yohimbine and & 4- Aminopyridine)
44. Woody chest syndrome is a side effect of …….....in dogs and swine.(Innovar vet)
45. Immobilon is a mixture of …….and……(Etorphine and Acepromazine)
46. Each ml. of Innovar vet consist of …..mg Droperidol and 0.4 mg fentanyl(20)
47. Fentanyl is ……..times analgesic than Morphine.(1000)
48. Etorphine +Acepromazine is available in the trade name……..(Immobilon)
49. Innovar vet. consist of a tranquiliser……and an analgesic……. (Droperidol, Fentanyl)
50. Carfentanyl is ……times analgesic than morphine.(15000)
51. Immobilon contain ……..mg Etorphine and ……mg Acepromazine /ml .(2.4, 10)
52. Innovar vet produce spasm of…….....…which can be prevented by pre treatment with……..... (Larynx, Atropine)
53. It is not advisable to use Immobilon unless its antagonist ……..is available with us(Diprenorphine)
54. Chlorpromazine is available as ……..(Largactil)
55. The most important side effect of Acepromazine in Horse is ……..... (photosensitization)
56. The active ingredient of Stemetil is……(Prochlorperazine)
57. Promethazine theoclate is available as …….(Avomine)
58. Droperidol is ……..time more antiemetic than Chlorpromazine(1000)
59. Epinephrine is contraindicated with all phenothiazines except ……..which is an antihistaminic.(Trimeprazine)
60. In addition to tranquilizing effect Trimeprazine possess …….actions. (Antipruretic, Antitussive, Anti histaminic and Antiemetic)
61. Azaperon with ……is used as neuroleptanalgesic in swine (Metomidate)
62. Benzodiazepins are potent ……. inhibitors.(GABA)
63. Active ingredient of Librium is ……..(Chlordiazepoxide)
64. Active ingredient of Versed is …….(Midazolam)

65. The CNS depression induced by Benzodiazepin can partially be antagonized by …….(Physostigmine)
66. Reserpine is available as ……tablets .(Serpasil)
67. Reserpine is used widely in human practice against……..(hypertension)

68. Small dose of Tiletamine causes excitatioin in …….(Rats and Mice)
69. In guinea pigs and rabbits Tiletamine causes …….of CNS (depression)
70. Chloroform (0.25% in water) is used internally as a …….(Carminative)
71. Chloral hydras is reduced inside the body to …….which is a CNS depressant. (Trichloroethanol)
72. Chloral hydras is having a ……period of action as it has to be reduced in to Trichloroethanol.(latent)
74. Chloroform is decomposed by light to …….....which is highly toxic.(Phosgene/ Carbonyl Chloride)
75. ……will come under esters of para amino benzoic acid group of local anesthetic (Procaine)
76. Thiopentone sodium will give deep anesthesia for …….min.(10-20 min)
77. In 1860…….(Scientist) isolated the cocaine from *Erythroxylon coca*.(Neiman)
78. The order of loss of sensation is ……by local anesthetics. (pain, cold, warm, touch, pressure)
79. The action of local anesthetics can be prolonged by adding..... (Vasoconstrictors/ Adrenaline)
80. ……..is an example for local anesthetic under Amide group.(Lidocaine)
81. Xylazine is a …….derivative having analgesic action.(Thiazine)
82. Xylazine is an ……agonist with very powerful analgesic action.(Alpha 2)
83. Alpha 2 receptors are seen mainly in ……adrenergic nerve terminals.(pre synaptic)
84. Opium has been used for medicinal purpose as early as ……BC.(1500)
85. Opium plant is indigenous to ……..(Asia minor)
86. Tr. Opium is otherwise known as …….(Laudanum)
87. In addicts if opium administration is stopped withdrawal symptoms will appear in ……..hrs.(6-12)
88.The Phenanthrene group of alkaloids in opium is mainly ……..in action..(sedative)
89. The Isoquinoline group of alkaloids in opium is mainly……..in action.(smooth muscle relaxant)
90. The name Morphine is derived from the name of Greek God …… "God of dreams". (Morpheus)
91. In Nalorphine the CH3 radical on Ethenamine ring of morphine is replaced by……group(Allyl)
92. In animal with highly developed cerebral cortex Morphine/Opium causes …… of CNS.(Depression)
93. In animal with lesser developed cerebral cortex Morphine/Opium causes ……. of CNS.(Stimulation)
94. Alteration in phenolic OH group of morphine causes ……..in analgesic action. (a decrease)
95. Alterations in alcoholic OH of morphine causes ……in analgesic action.(an

Increase)
96. In animal with highly developed cerebral cortex Morphine/Opium causes …….in body temperature.(a reduction)
97. In animal with lesser developed cerebral cortex Morphine/Opium causes ……..in body temperature.(an increase)
98. The constipatory effect of opium is mainly due to 3 mechanisms……....., ……& ……..(increase smooth muscle tone, reduce peristalsis, &constriction of sphincter.)
99. Dimethyl morphine is known as ……..(Thebaine)
100. Since Opium produces ……..& …… it is not available in the open market. (Euphoria & Addiction)
101. Morphine causes mydriasis in ....., ... and .....(Horse, Sheep, Cat)
102. Apomorphine is a Dopamine……..(Agonist)
103. Papaverine causes ……..of smooth muscles of blood vessels.(relaxation)
104. The common name of methyl morphine is…….(Codeine)
105. Diacetyl morphine is known as …….(Heroine)
106. Narcotine is otherwise known as ……..(Noscapine)
107. Narcotine is mainly ……..in action.(Antitussive)
108. Noscapine is not recommended in dogs as it causes……..(histamine release)
109. Methadone is otherwise known as …….(Amidone)
110. Methadone is mainly used in ……..pain.(visceral)
111. …….form of propoxyphen is having analgesic action and ……is having antitussive action.(Levo, Dextro)
112. The active ingredient of Narcan is ……..(Naloxon)
113. Papaverine can be given in pulmonary ……..as it ……the blood vessels. (Embolisn, relaxes)
114. Loperamide is an ……drug used to control diarrhea.(Antiperistalitic)
115. D-isomer of Dextromethorphan is having more of ..... action.(Antitussive)
116. L- isomer of Dextromethorphan is having more of ..... action.(Analgesic)
117. Cataleptoid anesthesia is produced by .....(Ketamine)
118. The specific antagonist of etorphine is .....(Diprenorphine)
119. Cats are more susceptible to the action of morphine as they are deficient in.....(Glucuronides)
120. Althesin is a mixture of 2 steroids…….and ……in the ratio 1:3 (Alphadalone and Alphaxalone)

State True or False , correct the false statement by minimum change in the underlined portion.

1. A calm environment is a must for the best action of Dissociative anesthetics. (T)
2. Acepromazine can be recommended in food producing animals. (F, cannot)
3. Acepromazine will produce photosensitization in Elephants. (T)
4. Administration of neuromuscular blocking agent will not prevent woody chest syndrome in dogs .(F, will prevent)
5. Adrenaline will give a pink color to the solution when it is added to local

Anesthetics. (T)
6. Alcohol stimulate the release of anti-diuretic hormone. (F , inhibits)
7. Alphadalone increases the solubility of Alphaxalone. (T)
8. Alphadalone is twice potent than Alphaxalone. (F) Alphaxalone is twice potent than Alphadalone.
9. Althesin causes excitation in Horses and hence contra indicated. (T)
10. Althesin is best suitable for subhuman primates (T)
11. Among analeptics Doxapram can be used to screen anticonvulsant drugs.(F)
12. Among analeptics Doxapram is superior.(T)
13. Anoxic drive of respiration is acting through Carotid chemoreceptor mechanism .(T)
14. Apomorphine is a Dopamine agonist. (T)
15. Azaperone is the sedative of choice in pigs.(T)
16. Barbiturate therapy enhances the blood calcium level. (F, decreases)
17. Barbiturate therapy enhances the metabolism of Testosterone.(T)
18. Barbiturates and Aminoglycosides are contra indicated. (T)
19. Barbiturates are decomposed by light and not by heat .(F, light and heat)
20. Barbituric acid is having no CNS depressant action . (T)
21. Barbituric acid is a CNS depressant .(F, Phenobarbitone)
22. Benoxinate is a topical local anesthetic with Antibacterial and antifungal action.(T)
23. Benzocaine is active topically.(T)
24. Benzodiazepins are recommended in Glaucoma in dogs.(F, not recommended)
25. Benzodiazepins are recommended in cats as it metabolises easily.(F, not recommended, metabolise slowly)
26. Benzodiazepins will impair the sexual function.(T)
27. Benzyl isoquinoline group of alkaloids are mainly narcotic in action..(F ,Smooth muscle relaxant.)
28. Beta casomorphines are Opioid peptides seen in milk & milk products.(T)
29. Birds will respond very well to the vomiting action of Apomorphine.(F—Dogs)
30. Brownish coloured local anesthetic solution is inactive.(T)
31. Buprenorphine is a morphine derivative with high analgesic action.(F, Thebaine)
32. Butacaine is particularly meant for Eyes.(T)
33. By fermentation of grains we get methyl alcohol which causes ascending paralysis of CNS. (F , Ethyl alcohol, Decending paralysis.)
34. Caffeine is having more intensive diuretic action . (F—Theophylline)
35. Carfentanyl is 10000 times more analgesic than morphine .(T)
36. Chemically heroin is diacetyl morphine and codeine is methyl morphine. (T)
37. Chloral hydras along with Mag. Sulf. can be used as i/v anesthetic in large animals.(T)
38. Chloral hydras is generally used orally along with treacle and water for sedation in.large animals.(T)
39. Chloral hydras is a poor muscle relaxant. (T)
40. Chloral hydras is less irritant than Trichloroethanol. (F, more irritant)
41. Chloramphenicol is an inhibitor of hepatic microsomal enzymes.(T)
42. Chlorazepate is a pro-drug metabolized to nordiazepam .(T)
43. Chloroform is a highly inflammable and highly volatile gas . (F, noninflammable, liquid.)

44. Chloroform is a sweet smelling gas. (F, Liquid)
45. Cocaine and Tetracaine are Esters of benzoic acid having local anesthetic action..(T)
46. Cocaine blocks the uptakes of Catecholamines at nerve tissue.(T)
47. Cocaine is isoquinoline group of alkaloid. (F—Codeine)
48. Cocaine is not active topically. (F. active)
49. Codeine will suppress dry harsh cough.(T.)
50. Corneal ulcers are one of the side effects of Procaine.(F, Cocaine)
51. Depth or level of anesthesia is better controlled with injectable anesthetics. (F, inhalent)
52. Detomidine an $\alpha 2$ agonist and is less potent than Xylazine.(F. more potent.)
53. Detomidine and Cotrimaxazole is synergestic..(F. Antagonist.)
54. Detomidine and Meditomidine are similar to Xylazine in action. (T)
55. Detomidine is developed for Veterinary use.(T)
56. Dibucaine is special for insect bites. (T)
57. Diprenorphine is used for the reversal of Etorphine analgesia (T)
58. Disulfiram acs by inhibiting alcohol dehydrogenase .(T)
59. Dissociative anesthetic agent acts primarily on Cortical and Limbic system. (T)
60. Droperidol fentanyl is contra indicated in animal intended for consumption.(T)
61. Droperidol fentanyl produce woody chest syndrome in lions.(F—Swine)
62. Elephants are most sensitive to Xylazine.(F, Bovines.)
63. Enkephalines stimulate the release of ADH, GH and Prolactin.(T)
64. Ether sensitizes the myocardium to circulating adrenaline. (F, Chloroform)
65. Ethyl chloride spray can be used for local loss of sensation. (T)
66. Etorphine is mostly used for capturing of wild animals.(T.)
67. For the complete recovery from Thiopentone anesthesia 2- 3 hrs. are needed .(T)
68. Guaifenesin is a long duration anaesthetic agent . (F, very short)
69. Guaifenesin is having Analgesic action and no Antipyretic action . (F, analgesic and Antipyretic)
70. Guaifenesin is having antibacterial action. (T)
71. Guaifenesin is having central muscle relaxant effect. (T)
72. Guaifenesin is having expectorant action. (T)
73. Halothane often produce malignant hyperthermia in pigs. (T)
74. Halothane is more safer than ether. (T)
75. Heroin is synthesized from morphine and has no addiction .(F Addiction.)
76. Hiccups is a side effect seen in Althesin therapy. (T)
77. High concentration of adrenaline to local anesthetic causes Necrosis. (T)
78. In addition to alkaloids opium contain organic acid, resins, gums, sugar etc. (T)
79. In dogs 0.11ml/kg i/m dose of Innovar vet can be used for Caesarian. (T)
80. In dogs phencyclidine low dose is a depressant and high dose is a stimulant .(T)
81. In Guinea pig and Rabbit Tiletamine causes a CNS Depression. (T)
82. In mice and rats Tiletamine causes a CNS excitation. (T)
83. In opium addict the withdrawal symptoms will starts in 1-2 days –.(F,6-12 Hrs.)
84. It is dangerous to use Immobilon in wild animal when ambient temperature is above 27 ^{0}C.(F, 38^{0}C)
85. Ketamine is not recommended in animal meant for consumption.(T)
86. L isomer of Propoxyphen is antitussive and *d* isomer is analgesic in action.(T)

87. Largactil can be used in pyrexia of unknown origin . (T)
88. Largactil is not advisable in motion sickness . (F , advisable)
89. M 50-50 is the antagonist of M 99. (T)
90. Meditomidine is more potent than Detomidine. (T)
91. Melonyl urea produce anesthesia by CNS stimulation. (F, no anesthesia)
92. Mephobarbitone is metabolized in the kidney to Phenobarbitone. (F, Liver)
93. Met kephamide is a weak analgesic.(F, very potent)
94. Metomidate is mostly used for the capture of wild birds. (T)
95. Morphinan compounds are Opioid with agonistic, antagonistic, partial agonistic action.(T)
96. Morphine and related compounds stimulate the release of Substance-P.(F, Inhibits)
97. Morphine blocks the emetic action of Apomorphine. (T)
98. Morphine produce depression in Monkeys. (T)
99. Morphine produce pinpoint pupil .(T)
100. Morphine will increase the pain in meningitis.(T)
101. Myelinated nerve fibers are first affected by local anesthetics .(F, non myelinated)
102. Naloxon blocks the effect of Enkephalins .(T)
103. Naloxon is the true antagonist of Morphine.(T)
104. Neostigmine can be used to counteract the muscle paralysis by Chlorpromazine.(T)
105. Nociceptive responses are intensified by Substanc-P.(T)
not recommended.
106. Opiates applied to drugs derived from Opium—T
107. Opioid receptors are Gi/o coupled receptors that mediate the inhibition of neuro transmission and endocrine secretion..(T)
108. Opium cannot be used to reduce cough in cat. (T)
109. Opium is a brown semisolid material . (T)
110. Opium is a stimulant in horse. (T)
111. Opium is an alkaloid from *Papaver somniferum*. (F- Morphine)
112. Opium produce difficult urination because of sphincter constriction and increase bladder tone . (T)
113. Opium will not produce euphoria but causes addiction. (F, will produce.)
114. Pentobarbitone affects the circadian rhythm. (T)
115. Pentobarbitone is identified as a Chronobiotic agent. (T)
116. Phenanthrene group of alkaloids are mainly sedative in action. (T)
117. Phencyclidine is a dissociative anesthetic agent .(T)
118. Phencyclidine is included under Schedule-I drug.(T)
119. Phenytoin sodium induces hepatic microsomal enzymes. (T)
120. Primidone is a 2-deoxy analogue of Phenobarbitone used as an anticonvulsant.(T)
121. Propofol is a substituted isopropyl phenol as aqueous emulsion for short duration anesthesia . (T)
122. Propoxate is a potent anesthetic agent for vertebrates. (F, cold blooded animals.)
123. Recovery from Dissociative anesthetics may have some unusual features, disagreeable dreams, Hallucination. (T)
124. Repeat dose of Apomorphine is not advisable as it reduces the chances of Emesis. (T)

125. Respiratory depression due to barbiturates will respond to anoxic drive .(T)
126. Rough handling of dogs with morphine suppression may cause excitement.(T)
127. Small diameter fibers are first affected by local anesthetics. (T)
128. Stage II of anesthesia is ideal for surgery. (F, Stage III)
129. Strychnine inhibits the inhibition by Renshaw cells. (T)
130. Substitution on alcoholic or phenolic –OH of morphine nucleus enhances analgesic property- (F, decreases.)
131. Succinyl choline can prevent the woody chest syndrome in dogs. (T)
132. Sulfonamide antagonism occur with all Procaine local anesthetics.(T)
133. The action of pentobarbitone in lab. animal is increased by Sulfonamide. (T)
134. The botanical name of poppy plant is *Papaver somniferum* .(T)
135. The central action of Dopamine, Norepinephrine and other Catecholamines are Blocked by Butyrophenons. (T)
136. The duration of action of Tiletamine is 3 times more than Ketamine.(T)
137. The duration of short acting barbiturate can be increased to 4 Hrs.by Dextrose.(F, 3 Hrs.)
138. The Eyes remain closed in Ketamine anesthesia. (F, opened)
139. The most abundant alkaloid in opium is Narcotine-F.(Morphine.)
140. The optimum concentration of adrenaline in local anesthetic is 1:50000. (T)
141. The partial agonistic action of Buprenorphine on μ receptors cannot be antagonized by Naloxon. (T)
142. The pupil remain constricted in ketamine anesthesia. (F, dilated)
143. Theobromine is having more prolonged diuresis. (T)
144. Therapeutic index of alphaxalone is less than barbiturate. (F, more)
145. Thiopentone is a highly irritant compound.(T)
146. Thiopentone is bitter to taste (T)
147. Thiopentone is hygroscopic in nature. (T)
148. Thiopentone sodium is a light yellow coloured powder .(T)
149. Thiopentone will produce excitation in Horses.(T)
150. Valproic acid augment the release of GABA .(T)
151. Valproic acid causes reduction of the flow of calcium ions through T type calcium Channels.(T)
152. Xylazine has sedative and analgesic effect, but has no muscle relaxant effect. (F, has relaxant effect.)
153. Xylazine is an Alpha 2 Sympatho lytic with analgesic effect.(F, Sympatho mimetic)
154. Yohimbine is used to reverse the effect of xylazine .(T)
155. Althesin is a steroidal anesthetic agent. (T)
156. Phenothiazine derivative tranquilizers block Dopamine, Alpha 1 adrenergic and Serotonergic receptors.(T)
157. Largactil causes hyper glycemia. (T)
158. Phenothiazine tranquilizers must be used cautiously in as a restraining agent in aggressive dogs. (T)
159. Because of individual variation some aggressive dogs become more reactive after Phenothiazine administration. (T)
160. Benzodiazepins alone are not reliable tranquilizer in Horse, Dogs or Cats.(T)
161. Largactil causes hyper prolactinemia.(T)

Underline the correct answers from the given ones/write the alphabet of correct ones.

1. Brevital is a barbiturate compound having action for a) Long duration b) Intermediary duration c) Short duration d) Ultrashort duration.
2. The following barbiturate compounds are white in colour except a)Barbitone sodium b) Pentobarbitone sodium c) Pentothal sodium d) Diallyl barbituric acid.
3. Barbiturates combine with other CNS depressants and a) cause severe depression b) Accelerate the disappearance of oral anticoagulants c) Early metabolism of testosterone d) All the above.
4. The specific antagonist of barbiturate is a) Bemegride b) 4-Aminopyridine c) Yohimbine d) None of the above.
5. The essential pre anesthetic agent in most cases a) Siquil b) Atropine c) Acepromazine d) None of the above.
6. The neuromuscular blocking action of barbiturate can be blocked by a) Tubocurarine b) Nicotine c) Calcium d) All the above.
7. Action of Barbiturate is by a) Central inhibitory transmission process mediated by GABA b) Suppress Glutamate induced depolarization c) Suppress the calcium depended release of neurotransmitter d) All the above.
8. The duration of ultra short acting barbiturate can be prolonged with the administration of a) 5% Dextrose b) 20% Dextrose c)50% Dextrose d) Repeat dose of barbiturate.
9. Guaifenesin posses a) Anesthetic action b) Antipyretic action c) Expectorant action d) All the above.
10. One of the following is a dissociative anesthetic agent a) Tiletamine b) Barbiturate c) Largactil d) None of the above
11. Ketamine is a dissociative anesthetic agent acts by a)Antagonist at NMDA receptors b) It stimulate sigma receptors c) It inhibit GABA binding to CNS d) All the above.
12. In Droperidol Fentanyl mixture. a)Droperidol is neuroleptic and Fentanyl is analgesic b) Droperidol is analgesic and Fentanyl is neuroleptic c) Both are analgesic d) Both are neuroleptic.
13. Benzodiazepines are having a) Muscle relaxant action b) Anticonvulsant action c) Antianxiety action d)All the above
14. Largactil is having a) Ataractic action b) Antiemetic action c) Hypothermic action d) All the above.
15. Following side effects are seen in Innovar vet. administration a) Woody chest syndrome in dogs b) Goose stepping in swine c) Laryngospasm d) All the above.
16. Morphine is having the following action—a)Analgesic b) Hypnotic c) Euphoric d) All the above
17. Opium causes a)Constriction of sphincters b) Increase the tone of G.I. muscles c) reduce peristalsis d) All the above
18. Morphine can be recommended in a) Meningitis b) Urinary bladder operation c) dry cough d)All the above
19. Following receptors are Opioid a) Kappa b) M1 c)Alpha 2 d)None of the above
20. One of the following is an endogenous pain producing substance a) Met. Enkephaline b) Endorphins c) Metkephamide d) Substance-P

21. Vaso-constrictors in local anesthetics causes a) reduction in absorption b) Reduce bleeding c) Prolong the action d) All the above.
22. The concentration of adrenaline added to procaine is a) 1:1000 b) 1: 50000 c) 1:100 d) None of the above
23. Addition of Hyaluronidase to Local anesthetics causes a) Increase duration of action b) Reduce duration of action c) reduce bleeding d) None of the above
24. Sulfonamide antagonizes with the following except a) Cocaine b) Procaine c) Proparacaine d) Chlorprocaine
25. The most potent Local anesthetic among the following is a) Procaine b) Bupivacaine c) Lidocaine d) Prilocaine
26. Which one of the following drug will reverse the respiratory depression caused by Oxymorphone , but still leave dog with some analgesia? a) Tramadol, b) Fentanyl c) Naloxone d) Morphine e) Nalbuphine.
27. Which one of the following statements concerning buprinorphine is true? a)It is a partial agonist at μ receptor and agonist at κ receptor. b)It is an agonist –antagonist Opioid with partial agonist activity at the μ receptor c) It is a very potent μ agonist use to immobilize non domestic ungulates. d) It is an antagonist at μ, κ and sigma receptors e) It is an alpha 2 adrenoceptor agonistin CNS.
28. Which one of the following is a correct statement about phenothiazine tranquilizers? a)They also have potent analgesic activity b) They stimulate alpha-1 adrenergic receptors to induce hypertension c) They evoke hypoglycemia by increasing insulin secretion d) Most of them are desirable restraining agents for aggressive dogs. e) They suppress emesis by blocking dopamine receptors in the CTZ.
29. Which one of the following drugs is an antagonist at the μ, κ, and sigma receptors? a) Naloxon b) Morphine c) Oxymorphone d) Sufentanil e) Butorphanol.
30. Compared to morphine which one of the following drug is most potent in terms of analgesic effect/a) Oxymorphone b) Tramadol c) Butorphanol d) Fentanyl e) Methadone.
31. A common side effect of Oxymorphone administration in dog is a) Panting b) Vomition c) Defecation d) hypotension e) tachycardia.
32. Which one of the following opioid receptor is correctly matched with its function? a) μ supraspinal analgesia b) μ vaso constriction c) Sigma respiratory depression d) κ antidiuresis e) κ respiratory depression.
33. Phenobarbitone can be used as an oral anticonvulsant. What other anticonvulsant drug is metabolized in the liver and produce phenobarbitone as metabolite? a) Primidone b) Phenytoin c) Diazepam d) Pentobarbitone e) Potassium bromide.
34. An I./V injection of Xylazine was given to a horse. It immediately falls to ground and goes in to violent seizures. What is the probable cause/ a) The horse was prone to seizures, and Xylazine lowered the threshold enough for a seizure to occur.b) The injection was given in to carotid artery instead of jugular vein. c) Extreme hypotension from epinephrine reversal led to cerebral hypoxia and seizure.d) Alpha -2 Adrenoceptor stimulation decreased the activity at GABA receptor s. e) Increased insulin release by the pancreas secondary to alpha-2 receptor stimulation caused acute hypoglycemia.

35. Which one of the following drugs will reverse the effect of diazepam in case there

is an overdose? a) Butorphanol b) Naloxone c) Flumazenil d) Yohimbine e) Zolazepam.

36. Which one of the following statements concerning alpha-2 adrenergic agonists is *incorrect* ? a) Ruminents are more sensitive to the sedative properties of these drugs than nonruminents.b) IM administration of these drugs induces vomiting more frequently than does IV administration.c) They induce antidiuresis . d) Concurrent administration of ketamine may synergistically suppress cardiopulmonary function.
37. The drug of choice to treat status epilepticus in dogs is a) Diazepam b) Acepromazine c)Pentobarbitone d) Primidone e) Potassium bromide.
38. IV administration of Xylazine in horse frequently result the following cardiac abnormalities? a)Atrial fibrillation b) Sinus tachycardia c) Premature atrial contraction d) second degree atrio- ventricular block e) Premature ventricular contraction.
39. which anticonvulsant is excreted unchanged by the kidney and acts by hyperpolarizing the neuronal membrane after entering the cells through chloride channels? a) Valproic acid b) Phenobarbitone c) Diazepam d) Gabapentin d) Potassium bromide.
40. IV administration of alpha -2 agonist produces all the following pharmacological effect , except a) Bradycardia b) Increased GI motility c) Transient hypotension d) Diuresis.
41. The alpha-2 agonist with the most selectivity and potency is a) Meditomidine b) Detomidine c) Romifidine e) Xylazine.
42. Which one of the following antidepressant is most effective in the treatment of psychogenic dermatitis? a) Doxepin b) Fluoxetin c) Imipramine d) Desipramine 5) Sertralin
43. Which of the following behavior –modifying drug is most likely to produce pronounced antimuscarinic side effects and cardiac disturbances? a) Fluoxetine b) Sertraline c) Alprazolam d) Diazepam e) Imipramine
44. Which of the following drug should not be concurrently administered with fluoxetine due to the risk of "serotonin syndrome" and cardio vascular disturbances? a) Imipramineb) Selegiline c) Clomipramine d) Amitriptyline e) All of the above.
45. Which of the following is the most commonly seen adverse effect in cats treated with diazepam for noise phobia? a) Endometrial hyperplasia b)Urinary retension c) Orthostatic hypotension d) Hepatic necrosis e) Blurred vision
46. Which of the following drug can be used for the treatment of anxiety-related disorders in geriatric animals or in patients with impaired liver function? a) Oxazepam b) Diazepam c) Lorazepam d) Chlordiazepoxide e) Both A and C.
47. Which of the following drug is most likely to produce dis- inhibition phenomenon manifested as increased aggressiveness? a) Imipramine bb) Clomipramine c) Fluoxetine d) Sertraline e) Diazepam
48. Which of the following behavior –modifying drugs may precipitate diabetes mellitus? a) Medroxy progesterone acetate b) Imipramine c) Seligiline d) Clomipramine e) Fluoxetine
49. Which of the following drug is FDA approved for the treatment of separation anxiety in dogs? a) Clomipramine b) Amitriptiline c) imipramine d) Doxepin e) Diazepam.
50. Which of the following drugs exert its action through selective inhibition of

serotonin transporter? a) Fluoxetine b) Imipramine c) Medoxy progesterone d) Buspirone e) Doxepin.

51. According to the monoamine theory of depression imbalances, which of the following neurotransmitters play a key role in the disease pathogenesis? a) Nor epinephrine b) Serotonin c) Acetyl choline d) GABA e) Both 1 and 2.
52. Which of the following drug is useful in providing rapid relief from anxiety associated with noise phobia ? a) Amitriptyline b) Imipramine c) Fluoxetine d) Sertraline e) Alprazolam.
53. Which of the following drug is a partial 5-HT 1A receptor agonist and is effective when used in combination with Fluoxetine for the treatment of aggression and stereotypical behavior in dogs? a) Buspirone b) Imipramine c) Diazepamd) Medroxyprogesterone e) Alprazolam.
54. Which of the following drug is a selective irreversible MAO-B inhibitor and is useful in the treatment of canine cognitive dysfunction? a) Selegiline b) Medroxyprogesterone c) Sertraline d) Alprazolam e) Fluoxetine
55. What is the first indicator of local anesthetic toxicity ? a) Skeletal muscle twitching b) Tonic- clonic convulsion c) Hypotension d) Cardiac arrhythmias e) Vomiting
56. Which inhalant anesthetic has the lowest vapor pressure? a) Isoflurane b) Sevoflurane c) Desflurane d) Nitrous Oxide e) Propofol
57. Which one of the following drug is NMDA receptor antagonist? a) Thiopental b) Propofol c) Etomidate d) Ketamine e) Guaifenesin
58. Which one of the following drug inhibits steroidogenesis in the adrenal gland for several hours after administration? a) Thiopental b) Propofol c) Etomidate d) Ketamine e) Guuaifenesin
59. Which one of the following drug is best suited for small animal requiring outpatient procedure ? a) Propofol b) Pentobarbital c) Thiopental d) Tiletamine-zolazepam e) Guaifenesin
60. Which of the following drug is highly lipid soluble oxybarbiturate with an ultrashort duration of action? a) Methohexital b) Pentobarbital c) Thiopental d) Phenobarbitone
61. Which local anaesthetic is used topically on the cornea of animals? a) Lidocaine b) Proparacaine c) Bupivacaine d) Procaine e) Mepivacaine
62. Opioids produce mydriasis in a)Cats b)Dogs c) Rats d)Human
63. Diacetyl morphine is otherwise known as a) Heroin b)Codeine c) Hydromorphone d) Oxymorphone.
64. A opioid used to immobilize wild animals a) Dibucaine b) Droperidol c) Morphine d) Etorphine.
65. Specific antagonist of Morphine is a) Nalorphine b) Naloxon c) Diprenorphine d) All the above.
66. Fentanyl is usually combine with one of the following drug for neuroleptanalgesia a) Droperidol b) Acepromazinw c) Oxymorphone d) Meditomidine
67. Benzyl isoquinoline derivative from opium a) Papaverine b) Morphine c) Codeine d) Thebaine.
68. Meperidine hydrochloride is known as a) Methadone b) Fentanyl c) Droperidol d) Pethidine.
69. Methyl alcohol causes damage to the a) Vegas nerve b) Myelinated nerve c) Optic nerve d) Cochlear nerve

70. A potent Opioid agonist which is 1000 times potent than that of morphine a) Fentanyl b) Etorphine c) Carfentanyl d) Oxymorphone
71. A synthetic Opioid which accumulate in tissues a) Etorphine b) Pethidine c) Methadone d) Oxymorphone
72. One of the following is an inhalant anesthetic used in fishes a)Tricaine methane sulfonate b) Diethyl Ether c) Thiopentone sodium d) Althesin

Write the dose of the following

1. Pento barbitone in dogs.(25-30 mg/kg, i/v.)
2. Thiopentone sodium in dogs. (15-17 mg/kg, i/v.)
3. Guaifenesin for dogs. (200mg/kg, i/v).
4. Ketamine for a major surgery in cats. (33mg/kg, i/m.)
5. Tiletamine zolazepam for dogs. (5-10 mg/kg, i/v.)
6. Etorphine for immobilization of Elephants. (1µ gm /kg)
7. Triflupromazine in dogs .(2.2 - 4.4 mg/kg, i/m.)
8. Anticonvulsant dose of Diazepam .(1-2 mg/ kg.)
9. Diazepam for immobilization of wild animals .(1-3.3 mg/kg, i/m.)
10. Nalorphine as antidote for Morphine.(1mg for every 10 mg morphine.)
11. Naloxon as antidote for Etorphine .(1mg. for 1mg. Etorphine.)

Mark the odd one and justify?

1. Barbitone sodium, Phenobarbitone, Methyl phenobarbitone, Secobarbitone (All are long acting barbiturate except Secobarbitone.)
2. Phencyclidine, Propofol, Ketamine, Tiletamine.(All are dissociative anesthetic except propofol.)
3. Droperidol fentanyl, Etorphine acepromazine , Azaperon metomidate, Ketamine Xylazine. (All are neuroleptanalgesic agents except Ketamine xylazine)
4. Largactil, Benzperidol, Reserpine, Diazepam (Reserpine is the only natural)
5. Action of opium on Vagal center, Vomiting centre, Cough center, Occulo motor centre. (All centers are stimulated except Cough.)
6. Nalorphine, Naloxon , Diprenorphine Etorphine. (Etorphine is the only agonist)
7. Ethyl chloride, Cocaine, Procainen Dibucaine. (All are producing local loss of sensation by chemical reaction except Ethyl chloride.)
8. Cocaine, Procaine, Hexylcaine, Benzocaine. (Cocaine is the only natural product)

Match each one in A to those in B and C

A	B	C
1) Phenobarbitone	Catalepsy-7	Antiemetic-13
2) Pentobarbitone	Yohimbine-9	Reduce Blood Pressure-14
3) Thiamylal sodium	Analgesic-5	Acepromazine-10
4) Atropine sulphate	Short action-2	Opened eyes-7
5) Guaifenesin	Rauwolfia serpentine-14	Anticonvulsant-1

6) Althesin	Ataractics-12	Phenothiazines -12, 13
7) Ketamine	Alphaxalone-6	Goose stepping-11
8) Phencyclidine	Avomin-13	Expectorant-5
9) Antagozil SA	Woody chest syndrome-11	Anesthetic agent-2,3
10) Neuroleptanalgesic	Angel dust-8	4-Aminopyridine-9
11) Droperidol fentanyl	Etorphine-10	High abuse potential-8
12) Chlorpromazine	Long acting-1	Steroidal anaesthetic-6
13) Promethazine theoclate	light yellow powde-3	Parasympatholytic-4
14) Serpasil	Pre anesthetic agent-4	Attracted to fat tissue-3

Match.....

A	B	C
1) Disulfiram	By-passes stage-II-4	Alphaxalone-10
2) Claud Bernard	Corneal reflex disappears-5	Moderate surg. anesthesia-5
3) Stage II	Nitrous oxide-6	Malignant hyperthermia-4
4) Halothane	Delerium-3	Chronic alcoholism-1
5) Plane-II	Largactil-11	Colloidal theory-2
6) Laughing gas	Steroidal anesthesia-10	Fluothane-4
7) Diethyl ether	Antabuse therapy-1	Latent period of action-9
8) Dry ice	Trichloroethylene-9	Involuntary excitement-3
9) Chloral hydras	1875 -2	Hepatitis-4
10) Althesin	Hallucination-	Oxidize Cobalt atom -6
11) Chlorpromazine	Solidified CO2-8	CNSstimulant-8
12) Substance P	Highly inflammable-7	Atarectics 11

Answer the following (explanation is needed on the points given here)

1. Barbiturates and Streptomycin are contra indicated Why?.(Both have neuromuscular blocking effect.)

2. Pentobarbitone and Chloramphenicol are contra indicated Why? (Chloramphenicol inhibit hepatic microsomal enzymes affect the metabolism of barbiturates, may produce toxicity.)

3. Sulphur containing barbiturate are having very short duration of action Why? (It is attracted towards adipose tissue and return to blood very slowly.)

4. Repetition of ultrashort acting barbiturates is not advisable Why? (Stored in adipose tissue and return to circulation slowly, second injection give cumulative effect and may cause toxicity)

5. Althesin is contra indicated in dogs Why? (The non ionic surface active agent added to it (Chremophore-EL) is highly allergic to dogs.)

6. Fentanyl is not recommended in Horse, Cattle and Cats. Why? (It is a CNS stimulant in these species.)

7. Chlorpromazine is not recommended in horse Why?(It causes excitation in horse.)

8. Benzodiazepins are recommended only at a lower dose in cats Why?(Cannot be detoxified by glucuronide conjugation which is absent in that family, hence higher dose become toxic.)

9. Epinephrine is contraindicated with chlorpromazine Why? (Chlorpromazine causes the blockade of Alpha receptors, hence epinephrine will cause a fall in blood pressure instead of a rise.)

10. Dextrose injection will give more duration of anesthesia with barbiturates Why? (It will help the barbiturates to return to circulation and penetrate in to the brain.)

11. Ketamine alone is a poor drug of choice for Oesophagial surgery Why? (In ketamine anesthesia pharyngeal and laryngeal reflexes remain active leads to laryngeal spasm and broncho spasm and cough during surgery.)

12. What to do if we want to increase the duration of anesthesia with thio barbiturates? (Inject 20 % Dextrose 2ml/kg, i.v during anesthesia, duration will be increased to 20-30 min ,Helps the barbiturates to return to circulation and to penetrate in to the brain)

13. How will you manage if Thiopentone has been injected accidentally in to the peri-vascular space ? (Stop the injection, dilute with normal saline added with hyaluronidase at the site, It will dilute and helps the spread and absorption hence reduce irritation.)

14. What is dissociate condition? (It is a state of sedation , Amnesia , Immobility and marked analgesia result from the administration of a single drug)

15. Classify local anesthetics depending on the chemical structure (I-Esters of benzoic acid-eg.Cocaine, Tetracaine. II.- Esters of meta amino benzoic acid-eg.Cyclomethycaine, Metabutoxycaine. III-Esters of para amino benzoic acid-eg.Procaine, Proparacaine. IV-Amides-eg.Lidocaine, Dibucaine.)

16. Local anesthetics are having no action in the presence of pus.Why?
(Local anesthetics are active in their base form. It is available as water soluble acidic salts, which are stable , these acidic salt will react in the basic body pH and base is release for action. In the presence of pus pH is acidic hence no base form is released for the action.)

17. To procaine adrenaline is added Why?
(To induce vasoconstriction, thereby reduce the absorption, reduce bleeding during operation, lessen the toxicity & prolong the action.)

18. To Cocaine we need not add the vasoconstrictors Why? (It itself is having vasoconstrictor action.)

19. Morphine is contra indicated in meningitis Why? (It will increase the pain instead of a reduction.)

20. Even though codeine is having only 1/3 cough suppressant action than morphine codeine is preferred for cough suppression Why? (Other serious side effects of morphine can be avoided by using codeine even though cough suppression is less.)

21. Even though Pethidine is a very powerful spasmolytic agent it is not available in the open market as analgesic Why? (It produce euphoria and addiction.)

22. What is Ataraxia?(It is a condition of mental peacefulness with out proportionate mental suppression, indifferent to or detachment from the environmental stimuli. No analgesic action but response to pain stimuli may be modified.)

23. What are the advantages and disadvantages of inject able anesthetics over inhalant anesthetics?(Advantages.-:No struggling during induction, single man can give anesthesia and perform the surgery, can do the surgery on head, can brought to anesthesia quickly, prompt and calm induction and recovery , no costly equipment is needed , not pollute the environment.
Dis advantages.--- moment- moment control is not possible, no perfect muscle relaxation, contra indicated in renal and liver trouble)

24. How procaine induce local anesthesia? (It suppress the nerve cell membrane-stabilizes the membrane forces-diffusion of Na+ and K+ can not take place – so no impulse transmission.)

25. What are the uses of Ataractics in animal practice?(To make the animal calm, Pre medication to general anesthetics, handling of nervous animal, control before casting, examination of mouth, passing catheter, taking x ray, clipping, shoeing, putting nervous animal for crossing etc.)

26. Xylazine must be used with caution in case of colic in equines Why? (with out proper diagnosis of the etiology of colic use of Xylazine will mask the underlining cause, proper diagnosis and treatment.)

27. Classify Opioid agonist wit examples.
(A. Natural –Opium alkaloid-Morphine.
B. Semisynthetic opioid-Diacetyl morphine, Hydromorphone
C. Synthrtic opioids-
1. Phenyl piperidine and piperidine derivatives-Pethidine, fentanyl.
2.Diphenyl heptane and diphenyl butane derivative- Methadone, Tramadol.
3. Morphinan series-Levorphanol.
4. Benzomorphan series-Cyclazocine.

5. Thebaine derivative-Etorphine.)

Match each one in A to all the matching ones in B

A	B
1) Ketamine	Antagozil SA 1,5
2) Propofol	Droperidol 4
3) Mepyramine maleate	Cycloalkylamine-1
4) Innovar vet.	More toxic in cats-2
5) Xylazine	Fentanyl- 4
6) Promethazine theoclate	Narcotic analgesic -5
7) Triflupromazine	Muscle relaxant -5
8) Reserpine	Dries up cornea -1
9) Trimeprazine tartrate	Woody chest syndrome -4
10) Caffeine	Avomine -6
11) Cocaine	Anti emetic -6
12) Ethyl chloride	Serpasil -8
13) Evipen	Catalepsy -1
14) M 99	Siquil -7
15) M 50-50	Phenothiazine derivatives -3,6,7,9
16) Ultra short acting	Goose stepping -4
17) Intraval sodium	*Rauwolfia serpentina* -8
18) Drug automatism	Anti pruritic -9

Match....

A	B
1) Selective β_1 blocker	Salbutamol- 4
2) Selective α_1 blocker	Tranyl cypromide- 8
3) Glycine	Homatropine- 10
4) β_2	Thiamylal sodium 12
5) Celecoxib	Inhibitory neurotransmitter-3
6) Schizofrenia	Medullary stimulant 9
7) Tiletamine	Anti platelet ggregation-11
8) Anti depressant	Atenolol 1
9) Nikethamide	COX-2 inhibitor 5
10) Mydriasis	Dopamine 6
11) Prostaglandin I 2	Prazosin 2
12) Ultra short acting barbiturate	Dissociative anesthetic-7

Give the mechanism of action of the following.

1. Ataractic drugs.(It suppresses the reticular activity system, act indirectly on the mid brain by altering the transmission of nerve impulse en route to higher cortical centers-most of the behavioral activity require a co-ordination of several centers of brain, altered transmission of any impulse changes the expected response.)

2. Barbiturates.(Prolong the central inhibitory transmission process mediated by GABA, Suppress the Glutamate induced depolarization, Suppress
Calcium depended action potential-reduce calcium dependent release of neurotransmitters, depress the Na^+ and Ka^+ channels).

3. Schizophrenic action of Ketamine.(It affect the sensory data uptake ,when sensory input is reduced the miscoding process is not active, the chronic miscoding of information is one of the reason for schizophrenic reaction.)

4. Ketamine .(Potent inhibition of GABA binding to CNS(inhibit GABA reuptake), block the neuronal transport process for monoamine transmitters such as 5HT, Dopamine and Nor epinephrine, catalepsy and other allied mobility disorders are due to deficiency of dopamine function or an imbalance of cholinergic –dopaminergic function. It inhibits the polysynaptic action of the excitatory neurotransmitter acetylcholine and L-glutamate in the spinal cord and N-methyl D-aspartate (NMDA) in the brain. It stimulate Sigma receptors result in dysphoria and hallucination)

5. Anti diarrhoeal action of opium. (closure of the sphincture muscles- get more time for evacuation, reduce peristalysis-food will remain in the tract for more time , fluid will be absorbed more, increase the tone of the intestinal muscles- food will be pressed , as a result constipation)

6. Analgesic action of morphine.(Opiate receptors in the brain have a high binding affinity to morphine derivatives. Analgesia by this leads to an increase firing of neurons in the nucleus raphae magnus at the base of the brain. This in turn inhibits or prevent the firing of neurons carrying pain signals up the spinal cord.)

7. Local anesthetics.(Suppresses the nerve cell membrane, stabilizes the membrane forces, diffusion of N+ and K+ will not take place,Causes depolarization of nerve at Node of Ranvier in myelinated nerve, prevent transmission of nerve impulse, affect the metabolism of nerve fiber by blocking enzyme pathways.)

Match each one in A to all the matching ones in B

A	B
1) Ketamine	Droperidol—14
2) Propofol	Cycloalkylamine----1
3) Reserpine	Vallergan—5
4) Codeine	Antagozil SA---1, 13
5) Trimeprazine tartarate	Anesthesia in cold blooded animal ---2
6) Cocaine	Goose stepping---14
7) Procaine	Dries up cornea---1
8) Endorphine	Anti pruritic—5
9) Substance-P	Fentanyl—14
10) Gardenal	Narcotic analgesic—13
11) Intraval sodium	More toxic in cats than dogs—2

12) Ethyl chloride	Catalepsy---1
13) Xylazine	Woody chest syndrome—14
14) Innovar vet	Muscle relaxant--13

Write short notes on the following-(points to be explained)

1. Chlorpromazine hydrochloride.(Phenothiazine tranquilizer, synthetic, (Largactil,) adrenolytic action, ant emetic action, hypothermic effect, muscle paralyzing,effect .explain uses, not recommended in deeply anaesthetized animal, with epinephrine, and in equins. Uses.)

2. Structure activity of barbiturates.(draw the structure of barbituric acid, number the atoms in the ring structure , for hypnotic action both H atom on C5 must be replaced with alkyl or aryl groups, to get optimum therapeutic action the substituted radical on C5 should contain a total of minimum 4 and maximum 9 C atom, branched chain shorter in action than straight chain, long chain –short action, short chain- long action, unsaturated carbon chain readily oxidizable so short action, replacement of O atom on C2 by S atom the potency and stability increases and shortened the duration, alkyl group to position 1 or 3 shortened the period of action and stimulate CNS, if both 1 and 3 convulsive compounds).

3. Mechanism of action of anesthetics.(No single mechanism can be explained for all the anesthetics. Some of them interact with functional membrane protein particularly Wide range of ligand gated ion channels especially GABA –A receptor gated chloride channels. Most anesthetic inhibit the function of excitatory receptors- ionotropic glutamate and acetyl choline or 5 HT receptors, as well as enhancing the function of inhibitory receptor GABA and Glycine. Many inhalant anesthetics, barbiturates, benzodiazepins and propofol potentiate the inhibitory transmitter GABA to open chloride channels. Nitrous oxide and Ketamine selectively inhibit the excitatory type glutamate receptors. Another type of channel involved is two pore domain potassium channels known as TREK , low concentration of several volatile anesthetics activated this and reduces membrane excitability)

.

4. Drug interaction of barbiturates.(combine with other CNS depressants and cause severe depression, accelerate the disappearance of oral anticoagulants, digitoxin, beta adrenergic antagonist, doxycycline, griseofulvin, oral contraceptive, testosterone, tri cyclic anti depressants, the metabolism of vitamin K and D is accelerated, deficiency in coagulation factor I and VIII)

5. Treatment of barbiturate toxicity.(use specific antidote, eliminate the drug by haemodialysis, peritoneal dialysis, haemoperfusion through activated charcoal, acrilic hydrogel-coated carbon, ion exchange resins, forced diuresis, alkalinisation of urine)

6. Pento barbitone sodium, Nembutal. (short acting, white powder, synthetic, orally sedative, i/v anesthetic, dose, method of administration, pre anesthetic, pedal reflex is looked for depth, antidotes and contra indications)

7. Thiopentone sodium. (Sulphur containing, ultrashort action, light yellow, hygroscopic, decomposed by light, air, heat. Dose, method of administration, duration of anesthesia, methods to prolong duration, antidote, premedication, precaution while injecting,)

8. Ketamine- xylazine anesthesia in dogs and goats.(Combination is known as Helibron mixture, Ketamine is a cataleptoid agent, poor muscle relaxation and analgesia, hence xylazine is combined, atropine as pre anesthetic,
Acepromazine 0.55 mg/kg in dogs, xylazione 2mg/kg and ketamine 15mg/kg , 30-45 min anesthesia. In goats xylazine 0.22mg/kg after 8-10 min ketamine 11 mg/kg duration 40-45 min)

9. Neuroleptanalgesia.(This is a condition similar to anesthesia but severe CNS suppression is avoided, sleep is not induced, analgesia , provided by the use of a neuroleptic and analgesic agent together, droperidol-fentanyl, etorphine –acepromazine, azaperon-metomidate,side effect are there, woody chest syndrome. Goose stepping,)

10. Innovar vet.(Neuroleptanalgesic, Droperidol- fentanyl combination , Droperidol 20mg/ml.is neuroleptic , Fentanyl0.4mg/ml is analgesic, Droperidol long duration, dogs-0.11 ml/kg ,atropine as preanaesthetic, laryngospasm, bronchospasm, woody chest syndrome, goose stepping,)

11. Immobilon. (Etorphine (M-99, Oripavin) developed from Thebaine synthetic opiate derivative 1000 times analgesic than morphine antidote Diprenorphine must be with us before giving Etorphine, Etorphine 2.4 mg.ml Acepromazine 10mg/ml combination, for zoo animals, high ambient temperature increase toxicity, use in wild animals also for immobilization,)

12. Butyrophenones.(A group of ataractics, central action of dopamine , nor epinephrine and other catecholamines are blocked, Droperidol-(Dihydro benzperidol, Inapsine) along with Fentanyl is innovar vet400 times active than chlorpromazine, most potent , short duration, 1000 times anti emetic than Largactil, wide margin,effective in pigs also,other examples -Bezperidol , Azaperon , Lenperone, Haloperidol, Triperidol Trifluperidol)

13. Benzodizepins .(One group of tranquilizers, potent GABA ergic inhibitor, widely used as muscle relaxant, anticonvulsant, antianxiety, appetite stimulant, detoxified by glucuronide conjugation, lower dose in cats, side effects- drowsiness, stimulate appetite, rashes, nausea, headache, impair sexual function, contraindication in glaucoma
Examples are Diazepam(Valium) dog 1 3.3 mg/kg,i/m, for immobilization of wild animals, Chlordiazepoxide(Librium), Lorazepam, Midazolam (Versed,Greater potency) Antagonist-Flumazenil,)

14. Phenothiazine group of tranquilisers , ataractics (eg: Chlorpromazine (largactil)hydrochloride, synthetic, adrenolytic action, ant emetic action, hypothermic effect, muscle paralyzing effect, not recommended in deeply anaesthetized animal, epinephrine, equine, uses. promazine hydrochloruide(sparin)-- can be used in horse, less potent and less toxic than Largactil, excreted in milk, accumulate in tissues,

Acepromazine (Atravet, promace)—Yellow powder used in equine colic, atropine is the pre medicant, photosensitization may happen, other eg. Perfenezine, Triflupramazine(Siquil), Trimeprazine tartrate(vallergan) antipruretic antitussive antihistaminic, Promethazine(Phenergan), Prochlorperazine (Stemetil) antiemetic, Mepyramine maleate (Anthisan) antihistaminic, Promethazine theoclate(Avomin)antiemetic. All phenothiazine are synergestic with barbiturate so the dose can be reduced.

15. Opium.(is the dried exudates obtained by the incision of the growing unripe seed capsule of poppy(*Papaver somniferum*) aromatic odor, brown colour, semi solid, contain more than 24 alkaloids- 2 groups are important 1) Phenanthrene group(Morphine, Codeine, Thebaine) mainly sedative in action 2)Benzyl isoquinoline group(Papaverine, Narcotine or Noscapine Narceine) mainly smooth muscle relaxant. Opium also contain organic acids, resins, gums, sugar. Euphoria and addiction, not available in open market, analgesic, sedative, hypnotic anti diarrhoeal, cough sedative.)

16.Action of morphine on medullary centers.(Vagal center, vomiting centre, Occulomotor centre are stimulated-initial stimulation is followed by depression, Resp. centre, Vasomotor centre and cough centers suppressed without initial stimulation. (Explain the effects of these.)

17. Opium alkaloids.(contain more than 24 alkaloids- mainly 2 groups are important 1) Phenanthrene group(Morphine 10%, Codeine 0.5%, Thebaine0.2%) mainly sedative in action 2)Benzyl isoquinoline group(Papaverine 1%, Narcotine or Noscapine6%, Narceine 0.3%) mainly smooth muscle relaxant in action (explain the action of individual alkaloid)

18. Morphine .(Most important alkaloid in opium, produces euphoria and addiction, Morphine sulphate is bitter white powder, absorb very well , narcotic, depress all vital centers, depressant in highly developed species , less developed species a stimulant ,hypothermia in high species ,hyperthermia in lower species, vagal, vomiting, Occulomotor are stimulated, Respiratory, vasomotor, and cough centers depressed, constipation, powerful analgesic, difficult urination, used for analgesia, to reduce diarrhoea, cough sedation, not advisable in meningitis, pneumonia, obstructive colic, productive cough, bladder operation-Antidote-Nalorphine, Naloxon.)

19. Morphine antagonist.(Nalorphine(Lethidrone, N-allyl nor morphine) partial agonist ,orally ineffective, prevent resp. suppression, 1mg Nalorphine for every 10 mg morphine, no repeat dose, Naloxon(Narcan)more specific than Nalorphine,short action, 10-30 times more effective than Nalorphine.)

20.Apomorphine.(Semi synthetic , dopamine agonist, stimulate Chemoreceptor trigger zone(CTZ) very small dose is effective, 0.04 mg/kg/i/v , 0.07 mg/kg/i/m, repeat dose will not be effective, blocked by phenothiazine)

21. Opioid compound.(Naturally occurring semi synthetic and synthetic drugs not necessarily related chemically to morphine-but have morphine like action . Methadone &

related compounds-Methadone(Amidone) 3 times analgesic than morphine, reduce cough and suppress respiration, no vomition, used in severe visceral pain, Propoxyphene—Dextro form is analgesic, Meperidine (Pethidine) spasmolytic mainly on uterus, urinary tract, bronchi,analgesic, euphoria and addiction. Anileridine, Diphenoxylate ,Loperamide, Fentanyl , Lofentanyl, Sufentanyl)

22.Morphine substitutes.(Opioid compounds.)

23.Morphinan compounds.(These are Opioid with mixed action ie. Agonist, antagonist and partial agonist at different Opioid receptors,Drugs in this groups binds with μ receptors either exert no action or limited action eg. Nalorphine, Nalbuphine, Cyclozocine- partial agonist at κ and Sigma receptors. Butorphanol-both agonist and antagonist action, 4-7 times analgesic than morphine, powerful antitussive, Pentazocine (Fortwin, Fortral, Talwin) antagonist at μ and agonist at κ and sigma. Nalbuphine. Buprenorphine (tidigesic) 20-30 times analgesic than morphine.)
24.Analgesic antagonists.(Nalorphine, Naloxon, Diprenorphine, Buprenorphine, Cyclazocine, Naltrexone, Oxymorphon, Levorphanol, Nalbuphin.)

25.Xylazine,Rompun).(Thiazine derivative α 2 sympathomimetic with a potent analgesic action. Sedation, prevent the release of NA from the adrenergic neuron terminals .muscle relaxation, sensitize heart to adrenaline, ruminants are most sensitive, sensitive to noise during sedation, Cattle 0.1 0.2 mg /kg,i/m, H-0.5 -1.1 mg/kg,i/m, act in five min. elephant 0.1 -0.4 mg. kg, along with Ketamine used to induce cataleptoid anesthesia, antagonist-yohimbine,)

26.Endorphins , Enkephalins & Dynorphins.(They are brain peptides with opiate like activity Beta endorphins discovered in1975. Methionin enkephalins, Leucine enkephalins ,Endorphin is 37 times more analgesic than morphine, more in pituitary, hypothalamus, small intestine, placenta, plasma, released in to the blood in various type of stress, natural antidote for pain in parturition, Enkephalins more in amygdale, globus pallidus, striatum, hypothalamus, thalamus, brain stem, dorsal horn of spinal cord, adrenal medulla , autonomic nervous system, peripheral ganglia, G. I. Tract, plasma. Enkephalin analogs-by modifying the structure of Enkephalin, Metkephamide is 30000 times more analgesic than Met. Enkephalin.)

27.Opiate receptors.(brain,pituitary,spinal cord, myentric plexes of G.I.tract, heart,kidney, adrenal glands contain cell receptors called opiate receptors—Have high binding affinity to Opioid receptors, 8 type are explained , 4 major types, 1) μ-Supraspinal analgesia ,low dose of Naloxon block it 2) κ-Spinal analgesia, high dose of Naloxon block it 3) Delta –behavioural change, resp. & C.V.supression, hiogh dose of Naloxon block it 4) Sigma- dysphoria, psychomotor ,not blocked by Naloxon.)

28.Cocaine.(Alkaloid from *Erythroxylon coca*, messengers chewed the leaf, local anesthetic action,CNS stimulant, topical as well as injection, sympathomimetic, dries up cornea, vaso constrictiom, addiction-not available in market, block the uptake of catecholamines at the nerve ending,.toxic.)

29.Procaine.(Synthetic local anesthetic, (Planocaine, Sevicaine, Novocaine) not topically active, less potent, no toxicity, no vasoconstriction, can be sterilized by boiling, incompatible with alkalies, Tanic acid, metallic salt, metabolized to PABA & DEAE Incompatible with sulfonamides, anti rheumatic action, act in 5-10 min, act for 1.5 hrs, i.v ly for spasmodic colic in horse, so many derivatives.)

30.Fentanyl citrate.(pethidine congenor,1000 times analgesic than morphine, used with Droperidol as neuroleptanalgesic, Carfentanyl (15000 times active), Sufentanyl, Alfentanyl.)

31. μ receptoirs.(opiate receptors-located throughout the brain, dorsal horn of spinal cord-activation causes supraspinal and spinal analgesia, euphoria, sedation,miosis, resp.depression, chemical dependence, inhibition of acetylcholine and dopamine release, decrease in G. I motility due to inhibition of acety choline release.)

32. κ receptors.(Opiate receptors found in cerebral cortex ,spinal cord, and other brain regions like hypothalamus-activation causes spinal and supraspinal analgesia—mild sedation—dysphoria, inhibition of ADH, miosis.)

33. Delta receptors.(Opioid receptor located in the limbic system, cortex, spinal cord—activation results spinal and supraspinal analgesia, inhibition of dopamine release, cardio vascular depression.)

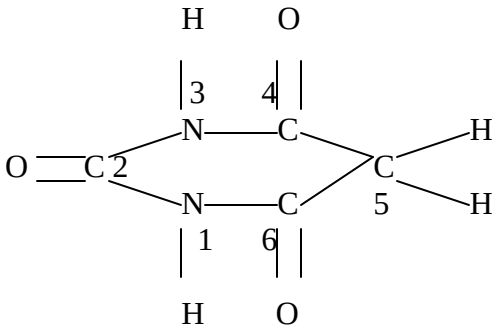
34.Butorphanol.(is an Opioid partial agonist- partial agonist on μ receptors and full agonist on κ .It can antagonize the effect on μ receptor by a previously administered μ agonist (morphine or Oxymorphone)—reverse the sedation and respiratory depression but mentain analgesia , 4-7 times more analgesic than morphine- has antitussive and antiemetic action.)

Essays.

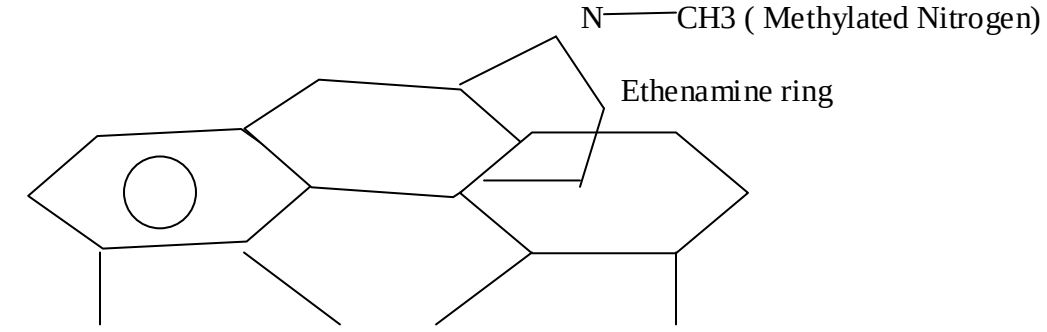
1. What are Ataractics ? classify them with examples, Explain in detail phenothiazine derivative ataractics, What are the other actions of phenothiazine derivatives?
2. Classify barbiturate depending on their duration of action, give two examples each, Explain any one short acting barbiturate.
3. Classify barbiturate depending on their duration of action, give two examples each, Explain any one sulfur containing barbiturate.
4. What is Opium? name the important alkaloids present in it, explain the actions of Opium and Morphine.
5. What are dissociative anesthetics ?give the advantages and disadvantages over other conventional anesthetic agents, Explain in detail Ketamine.
6. What is meant by dissociative anesthesia? Explain in detail Ketamine –Xylazine combination anesthesia.
7. Explain in detail Neuroleptanalgesia.

8. What are Narcotic analgesics? classify with examples, Explain in detail Morphine.
9. Explain in detail Endogenous analgesics.
10. Classify local anesthetic with examples, Explain procaine and related compounds.
11. Classify narcotic analgesics with examples, explain in detail Methadone and related compounds.
12. Draw the structure of morphine and marks the parts, explain structure activity?

13. What is Opium? Explain its action on CNS and G.I. tract.
14. Pento barbitone anesthesia in dogs.



Barbituric acid



Alterations in phenolic OH reduces analgesia and Resp. suppression, constipation, A stimulant action is noticed on CNS,
Alterations at alcoholic OH –increases narcotic and Resp.depression, enhance analgesia.
Substitution in either of the OH reduce Emetic action.
Replacement of CH3 on ethenamine ring by Allyl (CH2CH=CH2)become antagonist , Nallorphine. C