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DEPARTMENT: PRECLINICAL SCIENCES

DISCIPLINE: PHARMACOLOGY

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TOPICS AND REFERENCES

1. Antibiotics
2. Antiparasitic and antifungal drugs
3. Anti-inflammatory drugs

REFERENCES

1. Riviere J.E., Papich M.G., (2017) -*Veterinary Pharmacology and Therapeutics -Tenth Edition*, Ed John Wiley& Sons
2. Draghici Alina, Course notes

QUESTIONNAIRE

**150 questions with five appropriate possible answers
(Single select multiple-choice questions)**

- 1 Tylosin, Spiramycin, Tilmicosin, Tulathromycin, Tildipirosin, Gamithromycin, Tylvalosin are active substances belonging to the group of:
 - a quinolones
 - b tetracyclines
 - c aminoglycosides
 - d macrolides
 - e lincosamides
- 2 Choose from the options below an antibiotic with bactericidal action.
 - a tetracycline
 - b gentamicin
 - c erythromycin
 - d azithromycin
 - e clindamycin
- 3 Choose from the options below the antibiotic with bacteriostatic action.
 - a neomycin
 - b ampicillin
 - c oxacillin
 - d doxycycline
 - e cefazolin
- 4 Choose from the quinolones below the one that is used only in veterinary medicine:
 - a norfloxacin
 - b enrofloxacin
 - c ciprofloxacin
 - d enoxacin

- e gemifloxacin
- 5 Choose the wrong answer:
 - a vancomycin is a glycopeptide with narrow spectrum of action
 - b vancomycin is effective in infections with Methicillin-resistant *Staphylococcus aureus*
 - c vancomycin has bactericidal action
 - d the most important side effects of vancomycin are nephrotoxicity and ototoxicity
 - e vancomycin is considered "Last resort" drug in veterinary medicine for the treatment of infections with *Staphylococcus aureus*
- 6 Deafness is the main undesirable side effect after prolonged use of:
 - a tetracycline
 - b penicillin
 - c streptomycin
 - d enrofloxacin
 - e cephalosporin
- 7 Choose an antibiotic that can be effective in treating infectious meningitis:
 - a ampicillin
 - b amoxicillin
 - c rifampicin
 - d tetracycline
 - e chloramphenicol
- 8 Choose from below the substance that is effective against anaerobic bacteria, but also against some protozoa:
 - a fluoroquinolones
 - b chloramphenicol
 - c cephalosporins
 - d polymyxins
 - e metronidazole
- 9 Choose the wrong answer: Chloramphenicol is:
 - a an antibiotic that acts by inhibition of protein synthesis
 - b rarely used in humans
 - c hematotoxic
 - d widely used in animals of economic interest
 - e an antibiotic with a broad spectrum of activity
- 10 Which of the antibiotics below has the broadest spectrum of action?
 - a polymyxin B
 - b cefazolin
 - c tetracycline
 - d oxacillin
 - e polymyxin E
- 11 Gram negative bacteria have natural resistance to:
 - a penicillins
 - b aminoglycosides
 - c fluoroquinolones
 - d penicillins, aminoglycosides, fluoroquinolones
 - e polymyxin E
- 12 Lincomycin should not be used in:
 - a food producing animals
 - b dogs
 - c cats

- d cats and dogs
 - e horses
- 13** Choose from the options below an antibiotic that belongs to Category B (Restrict):
- a enrofloxacin
 - b erythromycin
 - c clindamycin
 - d streptomycin
 - e polymyxin B
- 14** Choose from the options below: According to the recommendation of use, Vancomycin belongs to:
- a category A of antibiotics
 - b category B of antibiotics
 - c category C of antibiotics
 - d category D of antibiotics
 - e Vancomycin is not an antibiotic
- 15** „These reserved antimicrobials should be used only when there are no alternative antimicrobials authorized for the respective target species and indication”, is a statement that refers to:
- a fluoroquinolones
 - b cephalosporins
 - c fluoroquinolones and cephalosporins
 - d all fluoroquinolones and cephalosporins from the 3rd and 4th generation
 - e only fluoroquinolones and cephalosporins from the 3rd and 4th generation that reach in the systemic circulation
- 16** „For antibiotics whenever possible, individual treatment of the affected animal(s) (e.g. injectable treatments) should be preferred to group or mass treatment” is a recommendation made by EMA to reduce the risk of:
- a overdosing
 - b underdosing
 - c intolerance to the medicinal product
 - d resistance to the active substance
 - e toxicity
- 17** When should we not wait for the results of sensitivity tests to administer an antibiotic?
- a never
 - b when we suspect an etiological agent sensitive to the antibiotic that we intend to use
 - c if we use a broad-spectrum antibiotic
 - d when we have an emergency
 - e if we use the same antibiotic used at another farm where there were animals with similar clinical signs
- 18** Choose from the below options and complete the statement: “..... should be reserved for the treatment of clinical conditions which have responded poorly, or are expected to respond poorly, to other classes of antimicrobials.”
- a vancomycin
 - b enrofloxacin
 - c tetracycline
 - d rifamycins
 - e cefazolin
- 19** In relation to the current tendency to minimize the risk of developing and spreading antibiotic resistance, choose from the options below the wrong requirement:

- a the prescription and dispensation of antimicrobials must be justified by a veterinary diagnosis in accordance with the current status of scientific knowledge.
 - b antimicrobial susceptibility testing should be carried out to determine the choice of antimicrobial
 - c antibiotics will be used prophylactically whenever is considered necessary
 - d a narrow-spectrum antimicrobial should always be the first choice
 - e administering medication to an entire herd or flock should be avoided whenever possible.
- 20** Choose the wrong statement:
- a antimicrobial metaphylaxis should be prescribed only when there is a real need for treatment
 - b the veterinarian should justify and document the treatment on the basis of clinical findings on the development of a disease in a herd or flock
 - c antimicrobial metaphylaxis should never be used in place of good management practices
 - d metaphylaxis can be applied in all categories of animals
 - e metaphylaxis involves the administration of antibiotics to contact animals, without clinical signs of disease
- 21** Choose the correct statement: Critically important antibiotics :
- a can not be used in animals
 - b can not be used in pets
 - c can not be used in horses
 - d can not be used in food producing animals
 - e can be used only in young animals in order to increase the chances of survival
- 22** Currently in the treatment of bacterial meningitis it is recommended to use cephalosporins from the:
- a 1st generation
 - b 2nd generation
 - c 3rd and 4th generation
 - d 4th generation
 - e 5th generation
- 23** Which of the following antibiotics work by inhibiting nucleic acid synthesis?
- a enrofloxacin
 - b gentamicin
 - c penicillin V
 - d clindamycin
 - e polymyxin B
- 24** Chloramphenicol is prohibited in:
- a food- producing animals
 - b sheep
 - c cattle
 - d cats
 - e dogs
- 25** Inhibition of protein synthesis is not the mechanism of action for:
- a aminoglycosides
 - b tetracyclines
 - c macrolides
 - d aminopenicillins
 - e beta lactam antibiotics

- 26** Which of the following antibiotics works by inhibiting cell wall synthesis?
- a enrofloxacin
 - b gentamicin
 - c penicillin V
 - d clindamycin
 - e polymyxin B
- 27** Cephalosporins are bactericidal and they act :
- a by inhibiting the bacteria cell wall synthesis
 - b as protein synthesis inhibitor
 - c as an anti 50S-ribosome subunit
 - d as a DNA synthesis inhibitor
 - e as an anti 30S-ribosome subunit
- 28** An antibiotic will have a longer duration of action if:
- a C_{max} after administration is higher
 - b if the percentage of active substance molecules linked to plasma proteins is higher
 - c if the percentage of active substance molecules linked to plasma proteins is lower
 - d C_{max} after administration is lower
 - e T_{max} after administration is higher
- 29** MIC represents:
- a the maximum safe plasma concentration of an administered antibiotic
 - b the minimum safe plasma concentration of an administered antibiotic
 - c the minimum plasma concentration of an antibiotic at which the development of a microorganism is inhibited
 - d the maximum plasma concentration of an antibiotic at which the development of a microorganism is inhibited
 - e the maximum intermediate concentration of an antibiotic
- 30** Which is the most important side effect of antibiotics in the GI tract:
- a suppression of normal flora
 - b toxic effects
 - c the intensification of the peristalsis
 - d the decrease of the peristalsis
 - e antibiotics have no side effects on the GI tract
- 31** Which of the following practices increases the risk of developing antibiotic resistance?
- a exceeding the recommended dose
 - b underdosing
 - c justified administration of an antibiotic for more than 10 days
 - d extrapolation of the administration to other species than the target
 - e justified administration of an antibiotic for more than 5 days
- 32** What kind of resistance is that which is predictable and chromosomally mediated?
- a acquired resistance
 - b natural resistance
 - c resistance to a single antibiotic
 - d multiple resistance
 - e cross-resistance
- 33** Extrachromosomal mutations - are very often (90%). This type of mechanism of resistance to antibiotics consists in transmission of plasmids from one bacteria to another by:
- a conjugation
 - b phage transduction

- c transformation
 - d conjugation, phage transduction, transformation
 - e conjugation, transformation
- 34** Rimadyl Cattle 50 mg/ml Solution for Injection is a medicinal product that contains carprofen. This product is used in the treatment of:
- a infections of the mammary gland of the cattle in the dry period, as the main treatment
 - b mastitis of the cattle in the lactation period, as the main treatment
 - c as an antiinflammatory drug in acute infectious respiratory disease
 - d heart disease
 - e carprofen is not indicated in cattle
- 35** Alomec 18.7 mg/g Oral Paste for Horses contains Ivermectin and it is not indicated in the treatment of infestation with:
- a large strongyles
 - b small strongyles
 - c pinworms
 - d stomach bots
 - e lice
- 36** Bayvarol 3.6 mg Bee-hive strips for Honey Bees is an antiparasitic medicinal product containing flumethrin. It is indicated in the treatment of:
- a american foulbrood of honey bees
 - b european foulbrood of honey bees
 - c small hive beetle infestation (*Aethina tumida*)
 - d Tropilaelaps infestation of honey bees
 - e varroosis of honey bees
- 37** Phenoxyethylpenicillin belongs to the following category of antibiotics:
- a A
 - b B
 - c C
 - d D
 - e none
- 38** Choose the exception: How can healthcare professionals help prevent the spread of antibiotic resistance?
- a prescribing an antibiotic only when it is likely to benefit the patient
 - b prescribing an antibiotic that targets the bacteria that is most likely causing the patient's illness
 - c encouraging patients to use the antibiotic in the line of the package leaflet
 - d collaborating with each other, office staff, and patients to promote appropriate antibiotic use
 - e encouraging patients to use the antibiotics for prevention
- 39** Which of the anti-inflammatories below act through a special mechanism of blocking a receptor (EP4) for prostaglandin:
- a robenacoxib
 - b mavacoxib
 - c celecoxib
 - d nimesulid
 - e grapiprant
- 40** Classical NSAIDs:
- a inhibit Cox1
 - b inhibit Cox 2

- c inhibit Cox 1 and Cox2
 - d inhibit Cox1 and stimulate Cox2
 - e stimulate Cox1 and inhibit Cox2
- 41** Cyclooxygenase 2 could be found in:
- a normal tissues
 - b inflamed tissues
 - c both types of tissue
 - d none of the 2 types of tissues
 - e in greater quantity in inflamed tissue and in smaller quantities in normal tissue
- 42** Ketoprofen works by inhibiting synthesis of:
- a PGI₂
 - b PGE₂
 - c PGF₂ α
 - d PGI₂, PGE₂, PGF₂ α
 - e PGE₂, PGF₂ α
- 43** Quadrisol 100 mg/ml Oral Gel for Horses is a medicinal product that contains vedaprofen. It is indicated in the treatment of:
- a inflammation
 - b pain
 - c inflammation and pain
 - d bacterial infection
 - e viral infection
- 44** Which of the following effects are not specific for NSAID:
- a a strong anti-inflammatory
 - b analgesic
 - c antipyretic
 - d antiemetic
 - e prevent aggregation of blood platelets
- 45** One of the most common side effect to NSAIDs is:
- a liver failure
 - b kidney failure
 - c GI disorders
 - d skin reactions
 - e behavioral disorders
- 46** Administration of an NSAID increases the risk of hypoglycaemia when is associated with:
- a oxicams
 - b another NSAID
 - c furosemide
 - d acepromazine
 - e some sulfonamides
- 47** From the list below choose the best analgesic:
- a acetylsalicylic acid
 - b ibuprofen
 - c metamizole
 - d carprofen
 - e ketoprofen
- 48** Agranulocytosis is one of the secondary reactions of:
- a acetylsalicylic acid

- b ibuprofen
 - c metamizole
 - d carprofen
 - e ketoprofen
- 49** The anti-inflammatory that can cause liver necrosis due to prolonged use is:
- a paracetamol
 - b diclofenac
 - c carprofen
 - d ketoprofen
 - e indomethacin
- 50** From the examples below, the analgesic of first intention in young animals and in pregnant animals could be:
- a ketoprofen
 - b carprofen
 - c ibuprofen
 - d paracetamol
 - e metamizole
- 51** Choose the correct and complete answer: Ketoprofen 100 mg/ml is an:
- a anti-inflammatory medicinal product
 - b NSAID
 - c antibiotic
 - d corticosteroid
 - e anti-inflammatory product among classic NSAIDs
- 52** Which of the following active substances is not recommended to be used in the treatment of inflammation in cats:
- a aspirin
 - b carprofen
 - c ketoprofen
 - d piroxicam
 - e meloxicam
- 53** Which of the following is an anti-inflammatory active substance that can selectively inhibit Cox2?
- a meloxicam
 - b nimesulide
 - c celecoxib
 - d meloxicam, nimesulide, celecoxib
 - e meloxicam and nimesulide
- 54** Choose the wrong answer: Glucocorticoids inhibit inflammation, by:
- a decreasing primary and secondary response of macrophages
 - b inhibiting the activation of component C3 of the complement
 - c inhibiting the production of collagenase
 - d increasing the release of histamine
 - e inhibiting the production of elastase and cytokines
- 55** Which of the following substances does not fit with the others in the group of inhibitors of cyclooxygenase-2 ?
- a meloxicam
 - b nimesulide
 - c robenacoxib
 - d celecoxib

- e carprofen
- 56** Choose the wrong answer: Trocoxil 95 mg chewable tablets is a medicinal product:
 - a that contain celecoxib
 - b indicated for the treatment of pain
 - c indicated for the treatment of inflammation associated with degenerative joint disease
 - d for dogs
 - e for cases where continuous treatment exceed one month
- 57** Thrombostop is a drug indicated for the treatment and prophylaxis of thromboembolic disease. The association with NSAIDs is:
 - a recommended
 - b not recommended
 - c contraindicated
 - d there are no reactions between the 2 active substances
 - e the 2 substances cancel each other
- 58** Choose the wrong answer: Flunixin is:
 - a a corticosteroid
 - b a NSAID
 - c an analgesic
 - d an antinarcotic
 - e an antiendotoxic
- 59** In order to reduce the risk of ulcer in dogs in case of long-term administration of antiinflammatory drugs, it is preferable to use:
 - a oral solutions with paracetamol
 - b suppository with diclofenac
 - c tablets with mavacoxib
 - d tablets with carprodil
 - e tablets with aspirin
- 60** Glucocorticoids can influence:
 - a carbohydrate metabolism
 - b protein metabolism
 - c water retention
 - d salt retention
 - e all answers are correct
- 61** Choose the correct answer: Other effect of glucocorticoids, besides anti-inflammatory, is:
 - a antialergic action
 - b decreases the synthesis of lymphocytes by the thymus, lymph nodes, spleen
 - c increases hemoglobin concentration
 - d action on digestive system by stimulating gastric secretion of pepsin and hydrochloric acid
 - e all answers are correct
- 62** Choose from the options below a short-acting glucocorticoid:
 - a hydrocortisone
 - b prednisone
 - c methylprednisolone
 - d dexamethasone
 - e triamcinolone
- 63** Choose from the options below a long-acting glucocorticoid:
 - a hydrocortisone

- b prednisone
 - c methylprednisolone
 - d dexamethasone
 - e triamcinolone
- 64** Choose from below what is the most important side reaction following a long term glucocorticoid administration:
- a steroid diabetes
 - b fluid retention
 - c decreases the ability of the body's defense
 - d steroid diabetes, fluid retention, decreases the ability of the body's defence
 - e glucocorticoids have no side effects
- 65** Choose from the following examples a glucocorticoid obtained from natural sources:
- a prednisone
 - b prednisolone
 - c hydrocortisone
 - d methylprednisolone
 - e paramethasone
- 66** In animals with thrombocytopenia it is contraindicated to administer:
- a cephalosporins
 - b fluoroquinolones
 - c macrolides
 - d NSAIDs
 - e any antibiotic
- 67** Choose the wrong answer: Ketofen 10% solution for injection is a product that contains ketaprofen and it is indicated for:
- a treatment of infectious mastitis of the dry cows
 - b the alleviation of inflammation and pain associated with musculoskeletal disorders
 - c the alleviation of visceral pain associated with colic
 - d reduction of the pyrexia and distress associated with bacterial respiratory disease when used in conjunction with antimicrobial therapy as appropriate
 - e reduction of pain associated with lameness
- 68** Easotic Ear Drops Suspension for Dogs - Multidose is a veterinary medicinal product that contains the following active substances: hydrocortisone aceponate, miconazole nitrate and gentamicin sulphate. In what kind of condition can the product be ineffective?
- a acute otitis externa caused by a bacteria
 - b acute exacerbation of recurrent otitis externa caused by *Malassezia pachydermatis* associated with a bacteria
 - c acute otitis caused by *Malassezia pachydermatis*
 - d acute otitis caused by *Otodectes cynotis*
 - e acute otitis caused by *Candida albicans*
- 69** Betamethasone valerate is a potent synthetic corticosteroid (dexamethasone-analogue) used for topical application. It is indicated for the treatment of:
- a pyoderma caused by *Staphylococcus aureus*
 - b intertrigo (allergic contact dermatitis)
 - c fungal dermatitis
 - d viral infection
 - e demodicosis
- 70** Mastiplan LC, 300mg/20mg (Cefapirin/Prednisolone), intramammary suspension for

lactating cows is a medicinal product used for the treatment of clinical mastitis in lactating dairy cows. Taking into account the indication and the active substances from the product, identify the type of etiological agent that cannot be affected by the product.

- a Staphylococcus aureus
 - b Escherichia coli
 - c Fusobacterium necrophorum
 - d Streptococcus agalactiae
 - e Streptococcus dysgalactiae
- 71** A dog infected with Microsporum canis can be treated with:
- a Imaverol 100 mg / ml Concentrate for Cutaneous Emulsion, a product containing enilconazole
 - b Fungizone 10 %, oral solution, a product containing amphotericin B
 - c Macmiror ointment, a product containing nistatin
 - d any of the mentioned products
 - e an endectocide
- 72** Which of the following species has a higher sensitivity to Griseofulvin?
- a cattle
 - b sheep
 - c dog
 - d cat
 - e goat
- 73** Griseofulvine is not effective in the treatment of:
- a infection with Trichophyton verrucosum,
 - b infection with Microsporum canis
 - c infection with Microsporum gypseum
 - d infection with Malassezia pachydermatis
 - e ringworms
- 74** The mechanism of action of ketoconazole consists of:
- a disruption of multiplication of the fungi
 - b inhibition of the synthesis of ergosterol
 - c increasing the permeability of fungal cell membrane as a result of the modification of the ergosterol structure
 - d modification of the nucleic acid synthesis process
 - e the mechanism of action is unknown
- 75** Amphotericin B acts by:
- a disruption of multiplication of the fungi
 - b inhibition of the synthesis of ergosterol
 - c increasing the permeability of fungal cell membrane as a result of the modification of the ergosterol structure
 - d the modification of the nucleic acid synthesis process
 - e the mechanism of action is unknown
- 76** Identify the "intruder" of the group:
- a fluconazole
 - b itraconazole
 - c clotrimazole
 - d terbinafine
 - e thiabendazole
- 77** To which groups of active substances do Miconazole, Enilconazole and Clotrimazole

belong?

- a polyenes
 - b antibiotics
 - c allylamine derivatives
 - d azole
 - e they belong to another group
- 78** Which one from below affirmations is not correct when we speak about an ideal anthelmintic? An anthelmintic should have:
- a high therapeutic index
 - b a narrow/targeted spectrum of activity
 - c a short withdrawal period
 - d minimum/no side effects
 - e accessible price
- 79** The mechanism of action of benzimidazoles consists of:
- a bind to beta-tubulin and so they compromise the cytoskeleton
 - b inhibit the mitochondrial phosphorylation
 - c inhibitors of glycolysis
 - d GABA agonists
 - e inhibitors of acetylcholinesterase
- 80** Choose from the substances below which one is highly effective against immature *Fasciola hepatica* in the liver parenchyma and against the mature stage in the bile ducts:
- a albendazole
 - b triclabendazole
 - c fenbendazole
 - d oxibendazole
 - e thiabendazole
- 81** Choose from the following substances the one that could be effective against adult flukes, tapeworms and roundworms:
- a albendazole
 - b febantel
 - c fenbendazole
 - d flubendazole
 - e mebendazole
- 82** Which active substance from the examples below is effective only against roundworms?
- a triclabendazole
 - b mebendazole
 - c oxfendazole
 - d ricobendazole
 - e oxibendazole
- 83** If we use Levamisol in a cow, we will not have results if the animal is infected with:
- a *Thelazia* spp.
 - b *Dicrocoelium lanceolatum*
 - c *Ostertagia ostertagi*
 - d *Haemoncus contortus*
 - e *Dictyocaulus viviparus*
- 84** The mechanism of action of levamisol consists of:
- a inhibition of nematode lymph nodes with paralysis of the musculature

- b disturbance of the energy metabolism of the parasite
 - c interruption of the reproductive cycle
 - d degradation of the integument of the parasite
 - e the mechanism of action is unknown
- 85** Which of the anti-inflammatories below is indicated when the treatment exceed one month?
- a mavacoxib
 - b paracetamol
 - c celecoxib
 - d robenacoxib
 - e none
- 86** Which of the following active substances is most commonly found in combination with pyrantel for broadening the range of action in dogs?
- a morantel
 - b actamer
 - c praziquantel
 - d nitroscanate
 - e niclosamid
- 87** Choose from the following active substance the one that is effective in the treatment of Fasciolosis in sheep:
- a fenbendazole
 - b oxibendazole
 - c clorsulon
 - d morantel
 - e levamisole
- 88** Amitraz is an active substance that belongs to the group of:
- a organochlorines
 - b organophosphorics
 - c formamidines
 - d neonicotinoids
 - e synthetic pyrethroids
- 89** Choose from the pyrethroids below which one is used in the treatment of varoosis in bees:
- a deltamethrin
 - b flumethrin
 - c permethrin
 - d tetramethrin
 - e levamisol
- 90** Which of the following substances is not part of the group of Isoxazolines:
- a Afoxolaner
 - b Fluralaner
 - c Fipronil
 - d Sarolaner
 - e Lotilaner
- 91** Frontline contains fipronil. It is effective against:
- a fleas and ticks
 - b fleas, ticks and mange
 - c ticks
 - d fleas

- e mange
- 92** Diflubenzuron is part of the group:
 - a amidines
 - b synthetic pyrethroids
 - c benzoylureas
 - d macrocyclic lactones
 - e neonicotinoids
- 93** Neonicotinoids are not efficient against:
 - a fleas
 - b flies
 - c lice
 - d fleas, flies, lice
 - e mites
- 94** In the veterinary pharmacies there are products for dogs that contain fipronil and methoprene. These products are not efficient against:
 - a fleas
 - b flies
 - c lice
 - d fleas, flies, lice
 - e mites
- 95** An endectocide is an active substance efficient against:
 - a internal parasites
 - b external parasites
 - c internal and external parasites
 - d parasites from the GI tract
 - e parasites from respiratory tract
- 96** Choose the correct answer: Phenylpyrazoles
 - a are inhibitors of GABA
 - b are insecticide and acaricide
 - c are effective against fleas, flies, ticks, lice and mites
 - d are inhibitors of GABA, insecticide and acaricide, effective against fleas, flies, ticks, lice and mites
 - e are inhibitors of GABA, effective against fleas, flies, ticks, lice and mites
- 97** Which bacterial process(es) do quinolones and fluoroquinolones inhibit?
 - a DNA synthesis
 - b DNA synthesis and RNA synthesis
 - c Quinolones and fluoroquinolones do not affect nucleic acid synthesis
 - d RNA synthesis
 - e Quinolones and fluoroquinolones inhibit the protein synthesis
- 98** Natural penicillin that can be administered by oral route is:
 - a ampicillin
 - b methicillin
 - c amoxicillin
 - d phenoxymethylpenicillin
 - e ampicillin, methicillin, amoxicillin
- 99** Rifampicin exhibits the following antibacterial mechanism of action:
 - a inhibits bacterial RNA synthesis
 - b inhibits protein synthesis
 - c inhibits bacterial wall synthesis

- d substitution of paraaminobenzoic acid
 - e interferes with the bacterial membrane
- 100** Aminoglycosides diffuse well into the following biological liquids, with one exception:
- a pleural fluid
 - b pericardial fluid
 - c ascitic fluid
 - d cerebrospinal fluid
 - e synovial fluid
- 101** The group of avermectins includes:
- a abamectin
 - b doramectin
 - c eprinomectin
 - d selamectin
 - e abamectin, doramectin, eprinomectin, selamectin
- 102** What disease cannot be treated with metronidazole?
- a giardiasis
 - b trichomoniasis
 - c histomonosis
 - d trypanosomiasis
 - e coccidiosis
- 103** Neonicotinoides are not effective against:
- a fleas
 - b flies
 - c lice
 - d Ctenocephalides sp
 - e mites
- 104** Halofuginone is:
- a an antibiotic
 - b an antifungal
 - c an endectocide
 - d an antiprotozoal
 - e an antihelminthic
- 105** Toltrazuril is an active substance used for the treatment of:
- a coccidiosis
 - b bacterial infections
 - c inflammations
 - d viral infections
 - e contamination with Toxocara in dogs
- 106** Febantel is used especially in:
- a cats and dogs
 - b cattle
 - c horses
 - d ruminants
 - e birds
- 107** Spinosad is an ectoparasiticide authorized for use in:
- a birds
 - b cats and dogs
 - c horses
 - d cattle

- e sheep
- 108** Albendazole should not be administered in:
 - a cattle
 - b lactating cow
 - c dry cow
 - d horses
 - e sheep
- 109** Lotilaner is an active substance used against:
 - a ticks and fleas in cats
 - b mites in cats
 - c ticks and fleas in dogs
 - d mites in dogs
 - e lice in cats and dogs
- 110** Choose the exception: Selamectin is an active substance used in pets against:
 - a mites
 - b ticks
 - c fleas
 - d flies and mosquitoes
 - e heartworms
- 111** Frontline contains fipronil. It is not effective against:
 - a Ctenocephalides spp
 - b Pulex irritans
 - c Rhipicephalus sanguineus
 - d Ixodes ricinus
 - e Sarcoptes scabiei var canis
- 112** Griseofulvin is effective against:
 - a Microsporum canis
 - b Candida albicans
 - c Malassezia pachydermatis
 - d Pseudomonas aeruginosa
 - e Staphylococcus aureus
- 113** Nystatin is effective in the treatment of infections with:
 - a dermatophytes
 - b MRSA
 - c yeasts
 - d Microsporum gypseum
 - e Microsporum canis
- 114** Enilconazole is effective in the treatment of infections with:
 - a dermatophytes
 - b yeasts
 - c MRSA
 - d dermatophytes and yeasts
 - e Microsporum canis
- 115** Miconazole is effective in the treatment of infections with:
 - a dermatophytes
 - b yeasts
 - c MRSA
 - d dermatophytes and yeasts
 - e Microsporum canis

- 116** Albendazole in cattle is not effective against:
- a roundworms
 - b *Nematodirus* spp
 - c *Bunostomum* spp
 - d lungworms
 - e mites
- 117** Clotrimazol cream is used for the treatment of skin infections caused by:
- a *Sarcoptes scabiei*
 - b *Psoroptes scabiei*
 - c *Otodectes cynotis*
 - d *Chorioptes* spp
 - e *Trichophyton* spp
- 118** Oxibendazole is not effective against:
- a *Nematodirus* spp
 - b *Strongylus edentatus*
 - c *Strongylus equinus*
 - d *Strongylus vulgaris*
 - e *Fasciola hepatica*
- 119** Triclabendazole is effective against:
- a *Nematodirus* spp
 - b *Strongylus edentatus*
 - c *Strongylus equinus*
 - d *Strongylus vulgaris*
 - e *Fasciola hepatica*
- 120** Febantel is an active substance that is very often found in combination with other substances in medicinal products for:
- a sheep
 - b cattle
 - c horse
 - d birds
 - e dogs
- 121** Which of the following combinations is found in veterinary medicinal products for dogs?
- a Febantel, Praziquantel, Pyrantel Embonate
 - b Febantel, Praziquantel, Pyrantel Embonate, Lotilaner
 - c Febantel, Praziquantel, Pyrantel, Pyrantel Embonate, Frontline
 - d Febantel, Praziquantel, Pyrantel, Pyrantel Embonate, Milbemycin
 - e Febantel, Praziquantel, Pyrantel, Pyrantel Embonate, Enilconazole
- 122** Doramectin is not recommended for the treatment of the parasite infestation in the following species:
- a cattle
 - b sheep
 - c pigs
 - d farm animals
 - e dogs
- 123** Eprinomectin is not effective against:
- a Pulmonary and gastrointestinal roundworms
 - b *Ostertagia* spp
 - c Roundworms

- d mites
 - e tapeworms
- 124** Startect Dual Active Oral Solution is a combination between Abamectin and Derquantel and it is recommended in:
- a sheep
 - b cattle
 - c cats
 - d dogs
 - e all species
- 125** Milbemycin oxime should be used only in:
- a pets
 - b farm animals
 - c horses
 - d cattle
 - e fish
- 126** Amphotericin B is effective against:
- a dermatophytes
 - b yeasts
 - c MRSA
 - d dermatophytes and yeasts
 - e Microsporum gypseum
- 127** Miconazol is not effective in the treatment of infections with:
- a Candida albicans
 - b Microsporum caninum
 - c Microsporum gypseum
 - d Trichophyton mentagrophytes
 - e Trematodes
- 128** Antibiotics are not effective in the treatment of infections with:
- a Sarcodina
 - b Salmonella
 - c Streptococcus
 - d Staphylococcus
 - e Escherichia
- 129** Antimicrobials are not effective in the treatment of infestation with:
- a Eimeria spp
 - b Trichomonas
 - c Trichuris
 - d Pseudomonas
 - e Trichophyton
- 130** Antimicrobials should not be used in the treatment of infections with:
- a Isospora
 - b Eimeria
 - c Coccidia
 - d Nematodirus
 - e Candida albicans
- 131** Antibiotics should not be used in the treatment of:
- a colibacillosis
 - b BRD
 - c mastitis

- d trichomoniasis
 - e urinary tract infections with *E. coli*
- 132** Albendazole is not effective against:
- a Nematodirus
 - b Dytioctylus
 - c Avitelia
 - d larval form of *Fasciola hepatica*
 - e adult form of *Fasciola gigantica*
- 133** Derquantel belongs to the group of:
- a spiroindoles
 - b amino-acetonitrile derivatives
 - c organophosphate
 - d imidazothiazoles
 - e none
- 134** Febantel cannot be used in cats to treat infestation with:
- a *Toxocara cati*
 - b *Toxascaris leonina*
 - c *Opisthorchis felinus*
 - d *Dipylidium caninum*
 - e roundworms
- 135** Praziquantel has high efficacy against cestodes of all species including dogs. It is also effective against an important fluke in dogs. This fluke is:
- a *Toxocara cati*
 - b *Toxascaris leonina*
 - c *Opisthorchis felinus*
 - d *Dipylidium caninum*
 - e *Aelurostrongylus abstrusus*
- 136** Antimicrobials should not be used in the treatment of infections with:
- a *Candida* spp
 - b protozoa
 - c *Trichophyton versutus*
 - d *Microsporum canis*
 - e helminths
- 137** Antibiotics should not be used in the treatment of:
- a infections with Gram negative bacteria
 - b infections with Gram positive bacteria
 - c infections with *Mycobacterium*
 - d GI protozoa
 - e infections with *Mycoplasma*
- 138** Product Doranor 5 mg/ml Pour-on Solution for Cattle contains doramectin. It is not effective against:
- a *Fasciola hepatica* - adult form
 - b *Trichostrongylus axei*
 - c *Thelazia* spp
 - d *Hypoderma bovis*, *H. lineatum*
 - e *Damalinia (Bovicola) bovis*
- 139** Product Dectomax 10 mg/ml Solution for Injection for Cattle and Sheep contains doramectin. It cannot be effective against:
- a *Haematopinus eurysternus*, *Linognathus vituli*, *Solenopotes capillatus*

- b *Psoroptes bovis*, *Sarcoptes scabiei*, *Chorioptes bovis*
 - c *Damalinia (Bovicola) bovis*
 - d *Hypoderma* spp
 - e All species of internal parasites
- 140** Product Eprinex Multi 5 mg/ml Pour-on for Beef and Dairy Cattle, Sheep and Goats contains eprinomectin. It is not effective against:
- a *Oesophagostomum* spp.
 - b *Thelazia* spp
 - c *Fasciola hepatica*
 - d *Bunostomum phlebotomum*
 - e *Nematodirus helvetianus*
- 141** Animec Super 10 mg/ml / 100 mg/ml Solution for Injection for Cattle contains clorsulon and ivermectin. Compared to products containing only ivermectin, the product is also effective against:
- a large strongyles
 - b small strongyles
 - c *Fasciola* spp
 - d pinworms
 - e ascarids
- 142** Product Milbework 4 mg/10 mg Film-coated Tablets for Small Cats and Kittens contains Milbemycin Oxime and Praziquantel. Praziquantel from these combination will kill the following types of parasites:
- a *Echinococcus multilocularis*, *Dipylidium caninum*, *Taenia* spp
 - b *Dipylidium caninum* and *Taenia* spp.
 - c *Taenia* spp. and *Echinococcus multilocularis*
 - d *Ancylostoma tubaeforme*, *Toxocara cati*
 - e *Ancylostoma tubaeforme*, *Toxocara cati*, *Dirofilaria immitis*
- 143** Choose the quinolone from the options below:
- a neomycin
 - b oxacilline
 - c enrofloxacin
 - d cefazolin
 - e doxycycline
- 144** Toltrazuril is a drug used in chickens and turkeys for the treatment of infections with:
- a *Candida* spp
 - b *Eimeria* spp
 - c *Nematodirus* spp
 - d *Cooperia* spp
 - e *Giardia* spp
- 145** Vecoxan 2.5 mg/ml Oral Suspension is a medicinal product that contains diclazuril and it is indicated in sheep for the treatment of infections with:
- a *Eimeria* spp
 - b *Trichostrongylus* spp
 - c *Fasciola hepatica*
 - d *Teladorsagia circumcincta*
 - e *Dictyocaulus viviparus*
- 146** Amproline 400 mg/mL Solution for Use in Drinking Water for Chickens and Turkeys is a medicinal product that contains amprolium. This product is indicated for the treatment of infections with:

- a Mucobacterium
 - b Trichomonas
 - c Eimeria
 - d viruses
 - e Hexamita columbae
- 147** Levacur SC 3% Oral Solution is effective against mature and developing immature stages of levamisole susceptible worm species in cattle and sheep. One of the species below is an exception:
- a Dictyocaulus spp.
 - b Cooperia spp.
 - c Chabertia spp.
 - d Dicrocoelium spp
 - e Oesophagostomum spp.
- 148**is part of the avermectin`s family:
- a eprinomectin
 - b moxidectin
 - c milbemycin oxime
 - d deltamethrin
 - e methoprene
- 149** Vectra Felis 423 mg/42.3 mg Spot-on Solution for Cats is a medicinal product that contains Dinotefuran and Pyriproxyfen. In cats the product can be used for:
- a treatment and prevention of infestations with Ctenocephalides felis
 - b treatment and prevention of infestation with Ixodes ricinus
 - c treatment and prevention of infestation with Pulex irritans
 - d treatment and prevention of infestation with Rhipicephalus sanguineus
 - e treatment of lice infestations
- 150** Inhibition of the synthesis of the DNA is the mechanism of action specific for:
- a enrofloxacin
 - b gentamicin
 - c penicillin V
 - d clindamycin
 - e polymyxin B

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