

2.2

Multiple choice

The following questions have one or more correct/acceptable answers. Use the notations given below:

- A: only the 1st, 2nd and 3rd are correct*
- B: only the 1st and 3rd are correct*
- C: only the 2nd and 4th answers are correct*
- D: only the 4th answers is correct*
- E: all of the answers are correct*

201. What are active agents?

- 1) Active agents are all those components of a pharmaceutical preparation devoted to the diagnosis and pharmacological influence of the therapy of a disease
- 2) Active agents are all those components of a pharmaceutical preparation devoted to pharmacological prevention of a disease
- 3) Active agents are all those components of a pharmaceutical preparation devoted to pharmacological influence of the structure and function of the human or animal organism
- 4) Active agents are pharmaceutical preparations suitable for direct application

202. What is the purpose of application of an excipient?

- 1) It serves as the vehicle, or a component of the vehicle of the active agent(s)
- 2) It can influence the stability and the biopharmaceutical profile of the product
- 3) It can influence the external properties and availability of the product for patients
- 4) It makes the production easier

203. What is required from an excipient?

- 1) It has its own pharmacological effect
- 2) It does not irritate, and does not cause allergy
- 3) It entirely influences the effect of the pharmacon
- 4) Compatibility with the active agent

204. Which of the following statements are typical of modified drug release dosage forms?

- 1) Modified drug release dosage forms can be prolonged, sustained and pulsatile drug release dosage forms
- 2) Modified drug release dosage forms are classified into the fourth generation of dosage forms
- 3) The production of modified drug release dosage forms needs special excipients or a special procedure, or perhaps both
- 4) Dissolution of the active agent of modified drug release dosage forms depends on its physicochemical properties

205. Which of the following statements are typical of incoherent (disperse) systems?

- 1) In incoherent systems, the disperse part is in the dispersion medium
- 2) In incoherent systems, a connective structure (usually solid), and an enclosed liquid or gas phase are present
- 3) In incoherent systems, the disperse part and also the dispersion medium can be in the gas, liquid or solid state
- 4) Structural elements of an incoherent system are connected by physicochemical binding forces

206. How can it be explained that extraction equivalent to that achieved by soaking for 6 days can be carried out by turboextraction in a short period of time?

- 1) The mixing resulting from the high rotation speed increases the diffusion surface
- 2) The temperature of the system is decreased due to the fast rotation, so the efficacy of extraction is decreased significantly
- 3) The time for concentration equalization between the menstruum and the percolate becomes shorter
- 4) As a result of swirling, overpressure develops, and it exerts a compressing effect on the concentrated extract inside the cells

207. Which of the following investigations are performed during preformulation investigations of pharmaceuticals?

- 1) Solubility investigations
- 2) Melting point investigations
- 3) Stability investigations
- 4) Relative harmlessness investigations

208. Which of the following statements relating to preformulation are correct?

- 1) Pharmaceutical stock material is widely characterized during preformulation investigations
- 2) During preformulation investigations, active agents are classified biopharmaceutically according to their solubility and intestinal permeability
- 3) Preformulation investigations belong in phase 0 in pharmaceutical development
- 4) Preformulation investigations belong in clinical phase I in pharmaceutical development

209. Which of the following statements are correct?

- 1) Original preparations which have undergone a simplified registration procedure are not defended by patent protection
- 2) Generics are preparations which are registered first with a simplified procedure
- 3) Generics are chemically equivalent, but biologically not equivalent to original preparations
- 4) Generics have the same active agents as the original preparations; they are bioequivalent and can replace other medicines with the same active agent content

210. Which of the following statements relating to the requirements of GMP are correct?

- 1) Requirements are listed for the necessary fields of carrying out all work processes safely
- 2) Guidelines are listed for avoiding changes and cross-contamination
- 3) Requirements are listed for personal and production hygiene

4) Requirements are listed for the control and documentation of production and production-related operations

211. Which of the following statements are correct?

- 1) The ISO quality assurance system is a voluntary system; it is general and is not demanded by the authorities
- 2) The GMP system is general and is not controlled by the authorities
- 3) The GMP system is professional; it is controlled legally and concerns pharmaceutical production
- 4) The Absolute Quality Policy System is a part of GMP

212. Which of the following statements relating to industrial pharmaceutical production are correct?

- 1) Intermittent operations are preferred in pharmaceutical production
- 2) In industrial pharmaceutical production, the quantity of raw materials is always equal to the quantity of products
- 3) In continuous operations, the state functions remain constant
- 4) Production procedures can be intermittent, continuous or both

213. Which of the following statements relating to real solutions are true?

- 1) The degree of dispersity is high
- 2) They are molecular disperse systems
- 3) The size of the dispersed particles is under 1 nm
- 4) The particles are submicroscopic

214. Which of the following statements are true?

- 1) According to Fick's first law, the rate of diffusion is directly proportional to the rate of dissolution of the material
- 2) According to Fick's first law, the rate of diffusion is inversely proportional to the rate of dissolution of the material
- 3) According to Fick's first law, there is a relation between the size/surface area of the particles and the diffusion rate
- 4) During solvation, the solvent molecules encircle the soluble material, for which they always extract energy from the environment

215. Which of the following statements are true?

- 1) The pH dependence of the solubility of weak acids and weak bases can be expressed by the Henderson-Hasselbalch equation
- 2) The solubility of a weak base increases with pH decrease
- 3) The solubility of a weak acid increases with pH elevation
- 4) For strong acids, $pK_a < 1$

216. Which of the following statements are true for solutions for oral use?

- 1) There is an opportunity for immediate absorption of the active agent

- 2) Perfect protection can be provided against micro-organisms
- 3) Easier administration for children is possible
- 4) Dosing accuracy is high

217. Which of the following statements relating to extraction are correct?

- 1) The solution built up from the extracting fluid entering the plant cells is named the menstruum and the extracting fluid surrounding the drug particles is named the percolate
- 2) Diffusion between the damaged cells and the menstruum is inhibited diffusion, while the concentration equalization through the cell membrane is free diffusion
- 3) The rate of diffusion is nearly constant throughout the whole extraction process
- 4) Extraction is primarily a process based on diffusion

218. Which of the following statements relating to molecular encapsulation are correct?

- 1) The pharmakon, as a guest molecule, can be partially or totally adsorbed on the host molecule
- 2) The cavernous internal part of cyclodextrin is polar, while the external part is apolar
- 3) Cyclodextrins are open-ring compounds built up from glucopyranose moieties
- 4) Cyclodextrins can be used advantageously to make inclusion complexes

219. What are the advantageous properties of cyclodextrin inclusion complexes?

- 1) They do not influence the solubility of the active agent
- 2) They cover the unpleasant taste of the pharmakon
- 3) Their preparation requires special equipment
- 4) They form systems with advantageous physical qualities

220. What are the causes of pseudoplastic flow?

- 1) Polymer chains are ordered in the flow direction
- 2) The deformation of liquid drops
- 3) The orientation of suspended solid particles in the flow direction
- 4) Polymer chains are ordered in clews in the flow direction

221. What is typical of the pseudo-dilatant phenomenon?

- 1) Pseudo-dilatant systems exhibit deformation accompanied by increasing viscosity
- 2) Pseudo-dilatant systems exhibit deformation accompanied by decreasing viscosity
- 3) The cause of the pseudo-dilatant phenomenon is the packing of particles due to shearing
- 4) The cause of the pseudo-dilatant phenomenon may be shearing of the solvate layer

222. What are typical characteristics of disperse systems?

- 1) Morphological properties
- 2) Energetic properties
- 3) Kinetic properties
- 4) Optical properties

223. Which of the following are opportunities for stabilizing disperse particles?

- 1) Formation of a macromolecular absorption layer
- 2) An electric double layer
- 3) Increase of the attractive force between particles by the lyosphere formed from the molecules of the medium
- 4) A macromolecular adsorption layer

224. Which of the following are criteria of thixotropy?

- 1) After cessation of the force effect (after a certain time has passed), the system returns to its original state
- 2) The viscosity increases through the increased shearing force
- 3) The return to the original state proceeds through hysteresis
- 4) The viscosity increases if a shearing stress of increasing duration acts on the material

225. How can an electric double layer be formed around the solid particles of suspensions?

- 1) The particles are charged as a matter of course
- 2) As a result of the attractive forces acting between the particles
- 3) Ions are adsorbed on the surface
- 4) As a result of the adsorption of apolar substances

226. What is (are) the disadvantage(s) of disintegrating operations?

- 1) Generally, no heat is developed during disintegrating operations
- 2) A decrease in particle size has a beneficial influence on the rate of dissolution of the pharmaceuticals
- 3) The mono- or polydisperse distribution of particle sizes has no influence on the drying process
- 4) A polymorphic modification can appear during milling

227. Which of the following statements are specific for the operation of ball mills?

- 1) In ball mills, milling is performed by a cataract and cascade effect
- 2) Cataract effect: the impact of the trajectory-describing bodies of grinding into the material to be milled
- 3) The shearing and rubbing effect of the bodies of grinding is called a cascade effect
- 4) The cataract effect is the highest when the critical rotation speed is reached

228. Which of the following are characteristic for colloid mills?

- 1) Due to centrifugal forces, the mill undergoes periodical vibratory movement
- 2) Particles smaller than 0.1 μm can be obtained with them
- 3) The main types of colloid mills are hammer, turbine and dial mills
- 4) The principle of their operation is based on the abrasion of particles at high speed

229. Which of the following modes of drying involve heat conduction?

- 1) Convection drying

- 2) Contact drying
- 3) Drying with radiation
- 4) Drying with internal heat conduction

230. What forces (interactions) can act between the surface of materials to be dried and the moisture?

- 1) Dispersion forces
- 2) Covalent bonds
- 3) Dipole-dipole interactions
- 4) Dative bonds

231. Which of the following ensure the homogeneous (quasi-homogeneous) distribution of components during mixing?

- 1) Conduction
- 2) Diffusion
- 3) Laminar movement of particles
- 4) Material flow

232. Which of the following do the energy requirements of liquid mixing depends on?

- 1) The size of the container
- 2) The rotation speed of the stirrer
- 3) The density of the liquid
- 4) The viscosity of the liquid

233. Which of the following factors do the power requirements of the mixer depend on in the case of stirring fluids?

- 1) The sizes of the stirring element and the container
- 2) The distance between the stirrer and the bottom of the container
- 3) The density of the stirred liquid
- 4) The rotation speed of the stirrer

234. Which of the following factors do **not** have to take into consideration in the mixing of solid particles?

- 1) The particle size
- 2) The shape of the particles
- 3) The moisture content of the material
- 4) The solubility of the stirred components

235. Which of the following processes are applied for the mechanical elimination of moisture content?

- 1) Pressing-out
- 2) Centrifugation
- 3) Filtration
- 4) Drying

236. Which of the following statements relating to the Hagen-Poiseuille law are correct?

- 1) The liquid volume which flows through in a period of time is inversely proportional to the length of the capillaries
- 2) The liquid volume is inversely proportional to the fourth power of the radius of the pores
- 3) The liquid volume is directly proportional to the pressure difference between the two sides of the filtering layer
- 4) The liquid volume is directly proportional to the viscosity of the liquid

237. What are centrifuges used for?

- 1) The separation of well-settling solid particles
- 2) The separation of non-miscible fluids
- 3) The wetting of solid systems
- 4) The separation of solids which settle down with difficulty

238. Which of the following statements relating to fluidization are true?

- 1) On fluidization, the state needed for development of the fluidized layer is called the minimum speed
- 2) The term fluidization originates from the mode of transporting materials
- 3) The speed is maximum when fluidization turns into pneumatic transportation
- 4) In pharmaceutical technology, fluidization is used exclusively for drying

239. Which of the following are the most important rheological properties of fluidized systems?

- 1) The pressure decrease of the fluid
- 2) The extent of the layer
- 3) The viscosity of the layer
- 4) The pneumatic transportation

240. Which of the following are technological processes performed by fluidization?

- 1) Solid phase mixing
- 2) Separation
- 3) Loosened particle fitting, mechanical mobile layer drying
- 4) Coating of particles and tablets

241. By which of the following processes can amorphous modifications occur?

- 1) Size reduction
- 2) Mixing
- 3) Compression
- 4) Dissolution

242. Which of the following statements concerning polymorphism are correct?

- 1) Polymorphism or multiformity is the appearance of the same compounds in different forms

- 2) The stability of certain modifications is the same
- 3) Technological processing is not disturbed by polymorphism
- 4) The physical properties of polymorphic modifications are different

243. Which of the following are characteristics of rectal solutions?

- 1) The volume of microenemas is about 2-10 mL
- 2) They are aqueous solutions which can also contain macromolecular excipients
- 3) Rectal solutions can be distinguished, according to their application, into pharmaceutical, nourishing and cleaning preparations
- 4) Components with strong effect can not be used in enemas because of the uncertainty of absorption

244. Which of the following statements are involved in the definition of ointments according to the Pharmacopoeia?

- 1) Ointments are semisolid pharmaceutical preparations
- 2) The components are in a dissolved, emulsified or suspended state
- 3) They are used for treatment of the skin surface or mucous membranes
- 4) Ointments can be hydrophobic, hydrophilic or water-soluble systems

245. Which of the following ointment bases are water-soluble?

- 1) Hydrocarbon gels
- 2) Lipogels
- 3) Silica gels
- 4) Macrogol gels

246. Which of the following are requirements of ointment bases?

- 1) They have to be colourless and odourless
- 2) Their stability must be satisfactory
- 3) They must be in a liquid state at body temperature
- 4) They must not take part in undesired interactions with the active agent used

247. Which of the following consistency-determining equipments are official in the Pharmacopoeia?

- 1) The rotational viscosimeter
- 2) The consistometer
- 3) The plastometer
- 4) The penetrometer

248. Which of the following are advantageous properties of hydrogels?

- 1) A transparent film is formed on the skin, and their application is therefore aesthetic
- 2) They display good microbiological stability even without preservatives
- 3) The protecting effect of the film formed on the skin is advantageous
- 4) Water-free gels have a good cooling effect

249. Which of the following are important requirements of suppository bases?

- 1) They should melt or dissolve in the intestinal juice at a temperature above 37 °C
- 2) It should be possible to prepare them both by moulding and by cold compression
- 3) They must harden slowly
- 4) They must not be incompatible with the rectally applied active agents

250. Which of the following statements relating to the apparatus of reverse osmosis (RO) are correct?

- 1) The purification of the water in the RO apparatus is achieved only by the semipermeable membrane
- 2) The RO apparatus can operate optimally only in periodic mode
- 3) With the RO apparatus, only water with narrow quality requirements can be produced
- 4) The appropriate module of the RO apparatus can decrease the pyrogen content significantly

251. Which of the following excipients are important in the production of nanocrystals?

- 1) Wetting agents
- 2) Aggregation inhibitors
- 3) Vehicles
- 4) Melting point-decreasing materials

252. With which of the following investigational methods can the habit of nanocrystals be determined?

- 1) Scanning electron microscopy
- 2) Laser diffraction particle analysis
- 3) Atomic force microscopy
- 4) Thermoanalytical methods

253. Which of the following are critical factors influencing the preparation of micro/nanoparticles?

- 1) The application of aggregation inhibitors
- 2) The active agent-excipient ratio
- 3) The type and quantity of the solvent
- 4) The temperature and humidity of the environment

254. Which of the following statements relating to coacervation microencapsulation are correct?

- 1) Coacervation always leads to monophasic microcapsules
- 2) When the wall material of the microcapsule is gelatine, coacervation occurs as a consequence of the effect of alcohol or salt (e.g. sodium sulphate)
- 3) Only gelatine can be used for the wall of the microcapsule
- 4) Simple or compound coacervation can be distinguished according to the number of macromolecular colloids

255. Which of the following statements relating to the characteristics of liposomes are correct?

- 1) Phospholipid molecules form the shell and the inner peel of the vesicles
- 2) Phospholipid molecules form a regular double membrane layer with their polar and apolar groups
- 3) Further lamellas can build on the double membrane layer; there are water layers between the layers
- 4) The phospholipid double layer, similarly to the cell membrane, is semipermeable

256. Which of the following statements concerning microcapsules are correct?

- 1) They form an intermediate system from a technological point of view
- 2) They can be applied for parenteral use if the particle size is smaller than 5 μm
- 3) Spray-drying is well applicable for their production
- 4) Drug release can be influenced with technological methods

257. Which of the following statements relating to pharmaceutical preparations applied by spraying are **false**?

- 1) The aerodynamic investigation of fine particles is important in the case of inhalation powders
- 2) Dosing is performed by a mechanical dosing apparatus in the case of inhalation powder preparations with a powder container
- 3) If the inhalation preparation contains a microbiological preservative, its efficacy is investigated and rated by the Pharmacopoeia
- 4) In the case of inhalers with a dosing apparatus, the number of doses can vary by $\pm 10\%$ from the nominal value indicated on the label

258. Which of the following properties are typical for haloalkane propellants of aerosols?

- 1) The boiling points of the haloalkanes are low
- 2) Haloalkanes are miscible with each other unrestrictedly
- 3) Haloalkanes are flammable
- 4) Haloalkanes are chemically inert, physiologically compatible molecules

259. Which of the following investigational equipment is suitable for the aerodynamic investigation of dry powder inhalers?

- 1) The scanning electron microscope
- 2) The Andersen apparatus
- 3) The laser diffraction particle analyser
- 4) The cascade impactor

260. On which of the following parameters does the rate of sedimentation spherical particles which are dispersed in gas depend?

- 1) The density of the dispersed particles
- 2) The viscosity of the dispersion medium
- 3) The radius of the dispersed particles

4) The diffusion rate coefficient of the particles

261. Which of the following factors determine the type of an emulsion?

- 1) The rate of sedimentation of the dispersed drops
- 2) The volume of the internal phase
- 3) The mechanical strength of the emulsifying agent film
- 4) The HLB value of the applied emulsifying agent(s)

262. In which of the following cases is it possible to apply Stokes' law for characterization of the distribution continuity of emulsions?

- 1) If the sizes of the drops are nearly the same
- 2) If the sizes of the drops are different
- 3) If the concentration of the dispersed phase is relatively low
- 4) If the concentration of the dispersed phase is high

263. Which of the following are reversible changes occurring in emulsions?

- 1) Demulsification
- 2) Coalescence
- 3) Phase inversion
- 4) Decantation

264. In which of the following cases is an active agent formulated as a suspension?

- 1) If the active agent is unstable in solution
- 2) If the active agent is stable only in liquid dosage form
- 3) If the active agent has an intense colour
- 4) If the active agent is only poorly soluble in water

265. Which of the following statements relating to suspensions are correct?

- 1) Suspensions are heterogeneous disperse systems in which a solid dispersed phase and a liquid dispersion medium exist
- 2) Liquid components possibly with low viscosity are applied in suspensions
- 3) Oral suspensions which contain mucilage are prepared by the addition of microbiological preservatives
- 4) Suspensions for parenteral use must be suitable for dry heat sterilization

266. Which of the following possibilities explain how an electric double layer can be formed around the solid particles of suspensions?

- 1) The polar molecules on the surface of solid particles are in definite directions
- 2) Dissociation occurs on the surface of solid particles
- 3) Ions are adsorbed on the surface of the solid particles
- 4) Solid particles are charged

267. Which of the following statements relating to aseptic medicine preparation are correct?

- 1) The staff can enter the aseptic workplace only after proper washing in defined protective clothing
- 2) The windows in aseptic workplaces can not be opened
- 3) The staff in aseptic workplaces must be totally healthy and under regular medical supervision
- 4) The air supply of aseptic workplaces is provided through DOPA filters

268. Which of the following are material conditions for aseptic medicine preparation?

- 1) Easy to clean, smooth surfaces
- 2) Appropriate chemical and microbiological purity of active agents and excipients
- 3) Regular control of the air purity
- 4) Hygiene of the staff

269. Which of the following can be uses of HEPA filters?

- 1) The elimination of filaments from large volumes of parenteral solutions
- 2) The elimination of pyrogens
- 3) The filtration of solutions of products which can not be sterilized by heat
- 4) Purification of the air of aseptic workplaces

270. Which of the following statements relating to ophthalmic preparations are correct?

- 1) The injections applied in ophthalmology can be subconjunctival or retrobulbar
- 2) Only anhydrous preparation bases can be applied for the production of semisolid ophthalmic pharmaceutical preparations
- 3) Single-dose eye drops are sterile in all cases
- 4) The therapy of the eye is in most cases systemic

271. Which of the following statements relating to the preparation of eye drops are correct?

- 1) Magistral eye drops can be sterilized with a dry heat sterilizer
- 2) Germs are eliminated from eye drops in all cases by bacterium filtration
- 3) The solvent of eye drops is purified water
- 4) Eye drops used for the treatment of injured eyes must be prepared according to the sterilization procedures in the Pharmacopoeia

272. Which of the following statements relating to ophthalmic preparations are correct?

- 1) Of the eye drops and eye ointments which are official in *FoNo*, the eye ointments have better microbiological stability
- 2) Gels can not be used as semisolid ophthalmic pharmaceutical preparations
- 3) Ophthalmic pharmaceutical lamellas are active agent vehicle systems in which the active agent is incorporated in a matrix or bound to a membrane which controls drug release
- 4) The micro-organism content of multiple-dose ophthalmic ointments is not determined by the Pharmacopoeia

273. Which of the following statements relating to the preparation of infusions are correct?

- 1) After the filling and closing of infusions, sterilization is performed

- 2) For the preparation of infusions, only type 1, neutral, high-resistance bottles can be used
- 3) Bottles which contain infusion solutions must be closed immediately with a closing device which ensures sterility
- 4) Infusions applied for volume expansion must be isotonic and isohydric

274. Which of the following infusions can be applied in hypertonic dehydration?

- 1) *Infusio salina*
- 2) *Infusio glucosi*
- 3) *Infusio trometamoli cryosiccata*
- 4) Isodex

275. Which of the following statements relating to lyophilization are correct?

- 1) Lyophilization is solvent elimination with sublimation
- 2) Dissolution of lyophilized products is quick
- 3) Appropriate vacuum in the work area and appropriate temperature of the products must be ensured during the process
- 4) The actual moisture content of the product must be monitored several times during lyophilization

276. Which of the following sequences of weighing are correct?

- 1) The weighing of powders is begun with the material with the higher volume
- 2) Volatile oils are weighed on powders
- 3) The weighing is begun with the coloured component
- 4) The last component weighed is the coloured component

277. Which of the following statements relating to granulation are correct?

- 1) A granulating liquid is always needed for granulation
- 2) Granules can be formed only by agglomeration
- 3) If binding bridges with the melt are formed, crust granules appear
- 4) A particle system with asymmetric size distribution can generally be achieved by granulation

278. Which of the following possibilities relating to wet granulation are correct?

- 1) Small amounts of water-soluble active agents can be particularized
- 2) The electrostatic charge of powder mixtures can be decreased
- 3) Wetting and drying can not be performed in the same apparatus
- 4) Strong structure-closing linkages can be formed

279. In which of the following cases is dry granulation generally used?

- 1) To form crust granules
- 2) If the ingredients of the granule are moisture-sensitive
- 3) Good flowability is needed
- 4) The materials in the wet granules are decomposed at the high temperatures of the drying process

280. Which of the following statements relating to dry granulation are correct?

- 1) No further excipients are needed for this process
- 2) It is suitable for the production of spherical granules
- 3) For briquettes, a small compressing force is needed
- 4) The mechanical hardness of tablets made from granules produced in this way is poorer than that when the granules are produced by wet granulation

281. Which of the following are typical properties of a high-shear granulating apparatus?

- 1) It is suitable for wet and dry granulation
- 2) A smaller amount of solvent is needed than in the fluidization method
- 3) It can operate continuously
- 4) There are several types of rotating parts in the working area

282. Which of the following statements relating to the types of granules are correct?

- 1) When crust granules are produced, the crystallized material ensures the adequate consistency of the granules by means of solid binder-bridges
- 2) When melt granules are produced, it is necessary to employ drying
- 3) For the production of cemented granules, macromolecular excipients can be used
- 4) Drying is needed for the preparation of sinter granules

283. Which of the following can be used to disperse a wet mass during granulation?

- 1) A hammer mill
- 2) Straining through a sieve
- 3) A kneader-mixer with a Z-arm
- 4) An oscillating apparatus

284. Which of the following statements relating to the particle size of granules are correct?

- 1) The average particle diameter is the arithmetic average of the linear dimensions of the particle
- 2) The morphological factor of a granule is typical of the sphericity of the particle
- 3) The equivalent diameter is the diameter of the circle which has the same area as the projection of the irregularly-shaped granule
- 4) The Feret diameter of particles is the distance which divides the examined particle into two parts in the direction of measurement

285. Which of the following statements relating to the particle size distribution of granules are true?

- 1) Homodisperse granule particle systems have the best space-feeding
- 2) Homodisperse granule particle systems have the best flowability
- 3) Homodisperse systems show symmetric distribution
- 4) Histograms of heterodisperse systems have several modes

286. Which of the following statements relating to sieve analysis are correct?

- 1) The purpose of sieve analysis is to separate the particle aggregates into homodisperse or almost homodisperse fractions with a sieve series
- 2) Mostly homodisperse systems can be characterized by sieve analysis
- 3) The cumulative diagram of particle fractions of sieve analysis shows what percentages of the particle system are particles larger or smaller than a given sieve size
- 4) A homodisperse particle system is one in which the sieve analysis fractions have equal weights

287. Which of the following statements relating to the density of granules are correct?

- 1) The tapped density is the weight of particle aggregates without a gap volume
- 2) The particle density (ρ_p) takes into consideration the volume of pores inside the particles
- 3) The poured density does not involve the volume of the gaps between the granules
- 4) Granules, like other heterogeneous materials, have only apparent density

288. Which of the following factors influence the flowability of granules?

- 1) Electrostatic forces
- 2) The shape of the particles
- 3) The moisture content of the particles
- 4) The surface of the particles

289. Which of the following are **not** typical of the Carr index?

- 1) The ratio of the tapped and real densities
- 2) The ratio of the tapped and apparent densities
- 3) The ratio of the poured and real densities
- 4) The ratio of the tapped and poured densities

290. Which of the following statements relating to the moisture content of granules and tablets are correct?

- 1) Too wet granules make tableting easier
- 2) In granules, water can be present only in the form of physically bound water bridges or condensed in capillaries
- 3) A too low water content increases the hardness of particles, and results in their increased electrostatic charge
- 4) The moisture content of granules influences the quality of the tablets significantly

291. The sterility of the tablets has to be ensured in the case of the applications listed below:

- 1) Sublingual tablets
- 2) Implantation tablets
- 3) Lozenges
- 4) Tablets prepared for parenteral use

292. Which of the following structural characteristics of particle aggregation are changed during compression?

- 1) Volume
- 2) Particle density
- 3) Porosity
- 4) Gap volume

293. Which of the following statements relating to tableting are correct?

- 1) The optimum compressing force needed for tableting changes with the composition
- 2) The compressing force to be applied is independent of the composition of the material to be pressed
- 3) Materials with low melting point in the material to be compressed can melt
- 4) The compression tool and the wall of the die must close hermetically

294. Which of the following statements relating to compression are correct?

- 1) The elastic deformation of crystals can occur only on compression
- 2) Plastic deformation is a favourable phenomenon in tableting
- 3) Elastic deformation influences the mechanical hardness of tablets unfavourably
- 4) Intra- and interparticular fragmentation occur

295. Which of the following are general quality requirements of excipients for tableting for oral use?

- 1) They do not irritate the mucous membrane of the gastrointestinal tract
- 2) They are compatible with other components of the tablet
- 3) They influence the effect of the pharmacon appropriately according to its therapeutic purpose
- 4) They are water-soluble

296. Which of the following excipients of tableting are superdisintegrants?

- 1) Cross-binding PVP
- 2) Carboxymethyl cellulose
- 3) Sodium starch glycolate
- 4) Cellulose acetate phthalate

297. Which of the following parameters of granules cause difficulties in the production of effervescent tablets?

- 1) The powder content
- 2) The lubrication ability
- 3) The moisture content
- 4) The particle size distribution

298. Which of the following are aims of the use of lubricants?

- 1) To improve disintegration of the tablet
- 2) To decrease the friction arising between the edge of the tablet and the wall of the die during compression
- 3) To improve flowability

4) To exert their best effect when the compressed material emerges from the dies

299. Which of the following excipients are suitable for the preparation of intestinosolvent coatings?

- 1) Methylcellulose
- 2) Eudragit L
- 3) Eudragit E
- 4) Cellulose acetate phthalate

300. Which of the following statements relating to pharmaceutical glass containers are correct?

- 1) Containers made from neutral glass are categorized into hydrolytic class type 2
- 2) Containers made from sodalime-glass are categorized into hydrolytic class type 1
- 3) Containers made from sodalime-glass the surface of which is modified are categorized into hydrolytic class type 3
- 4) Hydrolytic resistance is the resistance of the glass to chemical modifications due to the effects of water