

## Previous Year Paper GPAT Pharmacist

1. Which one of the following is **not** applicable to non-linear pharmacokinetics ?
- The elimination or absorption half-lives change as doses are increased.
  - The area under the curve (AUC) increase in a proportional manner to the administered dose.
  - The composition and/or ratio of the metabolites of a drug may be affected by a change in the dose.
  - Elimination or absorption of drug does not follow simple first-order kinetics.

2. Presystemic metabolism :

- Occurs in liver as first-pass metabolism.
- Occurs in intestine and its walls.
- Occurs when drug is administered transdermally or by inhalation.
- Results in decrease in bioavailability.

Select the correct answer using the code given below :

- 1, 2 and 4
- 1, 3 and 4
- 1, 2 and 3 ✓
- 2, 3 and 4 ✗

3. An IV dose of 500 mg is administered to a patient. It was observed that 70% of the dose was recovered unchanged in the urine. The AUC (area under the curve) was found to be 362 mg.hr/L. What will be the total clearance rate (TCR), metabolic clearance rate (MCR) and renal clearance rate (RCR) ?

- TCR = 23 mL/min.; RCR = 16.1 mL/min.; MCR = 9.2 mL/min.
- TCR = 63 mL/min.; RCR = 44.1 mL/min.; MCR = 8.1 mL/min.
- TCR = 23 mL/min.; RCR = 16.1 mL/min.; MCR = 6.9 mL/min.
- TCR = 46 mL/min.; RCR = 32.2 mL/min.; MCR = 13.8 mL/min.

4. Which of the following statements are **not** correct regarding dissolution testing of solid dosage forms ?

- Dissolution tests are used to aid formulation development, check product quality and performance and to assess batch-to-batch quality of a drug with respect to drug product specifications.
- Dissolution test conditions are not selected based on properties of the drug and the type of drug form.
- Dissolution is often the rate-limiting step in the absorption of drugs with poor water solubility.
- Dissolution cannot be correlated to oral bioavailability whilst disintegration of dosage form is a strong indicator of oral bioavailability.

Select the correct answer using the code given below :

- 1 and 3 only
- 1 and 2 only
- 2 and 4 only
- 1 and 4 only

5. Which one of the following is **not** correct for dosage forms prepared using protein based drugs ?

- Trehalose and sucrose are ineffective in preventing protein denaturation
- Low pH, i.e. pH 3 – 6 prevents chemical degradation
- Cyclization of proteins makes them less susceptible to gut amino and carboxy peptidases
- Metal chelating agents can be used to enhance the stability

6. Which one of the following represents the correct sequential arrangement in a transdermal patch (rate-limiting membrane-type) from top to bottom ?  
(BL = backing layer; DR = drug reservoir; AD = adhesive; RRL = removable release liner; RLM = Rate-limiting membrane)
- (a) BL → AD → DR → RLM → RRL  
(b) BL → RLM → AD → DR → RRL  
(c) BL → DR → RLM → AD → RRL  
(d) BL → RRL → DR → RLM → AD
7. Inhalation aerosols should have particles which are :
- (a) Porous with large physical diameter and small aerodynamic diameter  
(b) Porous with small physical diameter and large aerodynamic diameter  
(c) Non-porous with large physical diameter and small aerodynamic diameter  
 (d) Non-porous with small physical diameter and large aerodynamic diameter
8. In 2015, the formulation "Spritam" approved by US FDA, is a :
- (a) 3D printed fast dissolving tablet  
 (b) 3D printed transdermal patch  
(c) 3D printed delayed release oral dosage form  
(d) 3D printed repeat action oral dosage form
9. Which one of the following statements regarding pharmaceutical powders is **not** correct ?
- (a) Hygroscopic powders absorb moisture from the air.  
(b) Deliquescent powders absorb moisture from the air and partially or wholly liquefy.  
 (c) Efflorescent powders absorb moisture from the air and form water molecules of hydration or crystallization.  
(d) Eutectic powders, upon mixing, become sticky or pasty or liquefy.
10. Which one of the following vehicles **cannot** be used for injection of drugs parenterally ?
- (a) Mineral oil  
(b) Corn oil  
 (c) Sesame oil  
(d) Castor oil
11. Capsules are available in various sizes (1, 2, 3, 4, 5, 000, 00E, 00, 0 and 0E) for human administration. Which of the following statements regarding capsule size is/are correct ?
- P. "000" is the largest capsule size.  
 Q. "5" is the smallest capsule size.  
R. "0" is the smallest capsule size.  
S. "5" is the largest capsule size.  
T. "000" is the smallest capsule size.
- Select the correct answer using the code given below :
- (a) S and T  
 (b) P and Q  
(c) R and S  
(d) P and R

12. 10 suppositories containing 300 mg acetaminophen have to be prepared using cocoa butter. Average weight of the blank cocoa butter suppository is 2 g and the average weight of medicated suppository is 1.8 g. What will be the actual weight of cocoa butter required to prepare the suppositories ?
- (a) 18.0 g  
 (b) 15.0 g  
(c) 18.6 g  
(d) 15.6 g
13. Microemulsions have droplets in the size range of :
- (a) 100 Å to 5000 Å  
(b) 100 Å to 1000 Å  
 (c) 1000 Å to 5000 Å  
(d) 5000 Å to 10000 Å
14. Which one of the following is the best technique to sterilize thermolabile and moisture-sensitive materials ?
- (a) Filtration sterilization ✓  
 (b) Gas sterilization  
(c) Dry heat sterilization ✓  
(d) Steam sterilization ✓
15. Diffusion is facilitated in suspensions via Brownian movement when the suspensions are :
- (a) Deflocculated with particle size in sub-micrometre range  
(b) Deflocculated with particle size in macrometre range  
(c) Flocculated with particle size in sub-micrometre range  
 (d) Flocculated with particle size in macrometre range
16. Medical devices under the Medical Devices Rules, 2017 have been classified in which of the following classes ?
- (a) Class 1, Class 2, Class 3, Class 4  
(b) Class O, Class P, Class Q, Class R  
(c) Class A, Class B, Class C, Class D  
(d) Class I, Class II, Class III, Class IV
17. Application for manufacture of cosmetics for sale/distribution is required to be made to the State Licensing Authority in :
- (a) Form COS-3  
(b) Form COS-5  
(c) Form COS-6  
(d) Form COS-7
18. The premises licensed for manufacturing cosmetics shall be inspected by Inspector appointed by the Central Government and State Government to verify the conditions of licence *not* less than :
- (a) Once in a year  
(b) Once in two years  
(c) Once in three years  
(d) Once in four years

19. Penalty for offences committed without obtaining a valid licence for manufacture and sale of drugs under the Drugs and Cosmetics Rules shall be **not** less than :

1. One year
2. Two years
3. Five years

4. Three years

and fine which shall **not** be less than :

- (i) ₹ 50,000
- (ii) ₹ 2,00,000
- (iii) ₹ 1,00,000
- (iv) ₹ 3,00,000

Select the correct answer using the code given below :

- (a) 1, (ii)
- (b) 2, (i)
- (c) 3, (iv)
- (d) 4, (iii)

20. To maintain perpetuity of a licence to manufacture drugs, application for its continuation is required to be made within :

- (a) 3 years
- (b) 2 years
- (c) 5 years
- (d) 7 years

21. An Indian pharmaceutical company wants to market a fixed dose combination (FDC) of two drugs for an indication for which those drugs are already approved and given together **not** as an FDC, but individually at same doses. What will be the data requirement for marketing permission ?

- (a) Marketing data to be submitted will be similar to data required for any new drug including clinical trials.
- (b) Chemical and pharmaceutical data as well as data on animal toxicology of new combination will be required.
- (c) Available data on pharmacological, toxicological, clinical data on the individual ingredients along with animal toxicity and pharmacological data of new combination should be submitted.
- (d) Chemical and pharmaceutical data as well as data showing the stability of the proposed dosage form should be submitted.

22. Which one of the following Schedules of Drugs and Cosmetic Rules, 1945 lists the requirements for the functioning and operation of a blood bank and/or for preparation of blood components ?

- (a) Schedule D
- (b) Schedule F
- (c) Schedule M
- (d) Schedule R

23. All of the following statements categorize the drug to be spurious **except** :

- (a) If it is manufactured under a name which belongs to another drug.
- (b) If it bears or contains, for the purpose of colouring only, a colour other than which is prescribed.
- (c) If its label bears the name of a company which does not exist.
- (d) If it is substituted in part by another drug.

24. Which one of the following statements regarding Phase II clinical trials is correct ?
- Phase II studies are called 'Pivotal Trials'.
  - Phase II study is primarily done to determine the toxicology and pharmacokinetics of the test drug.
  - Phase II study is the first controlled clinical study done to determine efficacy and safety in patients.
  - Phase II study begins with the submission of a New Drug Approval.
25. Which one of the following procedures may be preferred by FDA to speed up the drug development process for drugs that are used to treat both serious and less serious diseases so that there are major advances in treatment or provide a treatment where no adequate therapy exists ?
- Fast Track
  - Accelerated Approval
  - Priority Review
  - "Breakthrough Therapy" designation
26. Consider the following statements regarding active drug transport :
- Transport of drug depends on concentration gradient.
  - Transport requires energy.
  - The process is capacity limited.
  - The rate is slower than passive transport.
- Which of the statements given above are correct ?
- 1, 2 and 3
  - 2, 3 and 4
  - 2 and 3 only
  - 3 and 4 only
27. The increasing order of absorption from the available dosage form are :
- Capsule, suspension, emulsion, solution
  - Suspension, capsule, emulsion, solution
  - Emulsion, suspension, capsule, solution
  - Solution, capsule, emulsion, suspension
28. Which one of the following statements is correct for Level B correlation in *in vitro* - *in vivo* correlation (IVIVC) ?
- It is a single point-to-point correlation between a dissolution parameter such as percent drug dissolved and percent drug absorbed.
  - It involves convolution and deconvolution techniques.
  - Level B correlation alone can justify formulation modification and manufacturing site change.
  - It is a comparison between mean *in vitro* dissolution time and mean residence time or mean *in vivo* dissolution time as per the statistical moment theory.
29. Which one of the following properties is **not** exhibited by Narrow Therapeutic Index (NTI) drugs or critical dose drugs ?
- Difference between the minimum toxic plasma concentration and minimum effective dose concentration is very low.
  - Require therapeutic monitoring based on pharmacokinetic or pharmacodynamic measures.
  - Possess very high within-subject variability.
  - Sub-therapeutic concentrations lead to serious therapeutic failure.
30. Which one of the following is correct for drugs administered via extravascular route, at  $C_{max}$  (maximum plasma concentration) ?
- Rate of drug absorption is equal to the rate of drug elimination
  - Rate of drug elimination is higher than the rate of drug absorption
  - Rate of drug absorption is higher than the rate of drug elimination
  - Rate of drug absorption is zero

31. Separation of ions in Mass spectrometer is according to their :
- (a) Charge to mass ratio
  - (b) Mass to charge ratio
  - (c) Electron to proton ratio
  - (d) Proton to neutron ratio
32. Which one of the following plants is the major source for reserpine ?
- (a) *Gelsemium sempervirens*
  - (b) *Catharanthus roseus*
  - (c) *Colchicum autumnale*
  - (d) *Rauwolfia serpentina*
33. Which one of the following chemicals is used in the preparation of Dragendorff's reagent ?
- (a) Picric acid
  - (b) Iodine in potassium iodide
  - (c) Potassium bismuth iodide
  - (d) Potassio-mercuric iodide
34. Precision of an analytical method for assay of drugs in formulation within laboratory conditions like different days, different analysts, etc. is expressed as :
- (a) Repeatability
  - (b) Reproducibility
  - (c) Robustness
  - (d) Intermediate Precision
35. Which one of the following detectors is commonly used in FT-IR spectrophotometry ?
- (a) Thermocouple
  - (b) Pyroelectric detector
  - (c) Golay-pneumatic detector
  - (d) Photomultiplier tube
36. The non-aqueous solvent dimethyl formamide (DMF) belongs to which one of the following classes of solvents ?
- (a) Aprotic
  - (b) Amphiprotic
  - (c) Protogenic
  - (d) Protophilic
37. Which one of the following materials is used in construction of Attenuated Total Reflectance (ATR) cells ?
- (a) Germanium
  - (b) Sodium chloride
  - (c) Potassium bromide
  - (d) Potassium chloride
38. Which one of the following is a reasonable internal reference standard for PMR spectroscopic studies of solutions in water of D<sub>2</sub>O ?
- (a) Tetramethylsilane (TMS)
  - (b) Silicone grease
  - (c) Silicon dioxide
  - (d) Sodium 2,2-dimethyl-2-silapentane-5-sulphonate (DSS)
39. Mercaptoacetic acid in a solution buffered with ammonium citrate reacts to form a purple coloured complex with :
- (a) Arsenic
  - (b) Lead
  - (c) Mercury
  - (d) Iron
40. What will be the retention factor of an analyte analyzed by HPLC, if its retention time is 8.0 minutes and retention time of unretained peak is 2.0 minutes ?
- (a) 2.0
  - (b) 3.0
  - (c) 6.0
  - (d) 8.0
41. What will be the concentration of methyltestosterone solution in ethanol if its absorbance in 1 cm cell at 241 nm was found to be 0.890 ?  
(the A (1%, 1 cm) of methyltestosterone is 540 at 241 nm)
- (a) 0.020 g/100 mL
  - (b) 0.010 g/100 mL
  - (c) 0.001 g/100 mL
  - (d) 0.100 g/100 mL

42. In an assay of ferrous sulphate by titration against ceric sulphate using ferroin as an internal redox indicator, a red colour of solution in titration vessel before end point is due to :
- (a) 1,10-phenanthroline ferric ion complex  
(b) 1,10-phenanthroline ferrous ion complex  
(c) Oxidation product of ferrous sulphate  
(d) Reduction product of ceric sulphate
43. Head space gas chromatographic analysis is a very effective technique for the analysis of :
- (a) Non-volatile compounds  
(b) Mixture of volatile compounds  
(c) Non-volatile compounds in presence of high proportion volatile compounds  
(d) Volatile compounds in presence of high proportion non-volatile compounds
44. Iodine value of oils and fats is a measure of :
- (a) Average molecular weight of fatty acids  
(b) Degree of unsaturation present in fatty acids  
(c) Free fatty acids  
(d) Unsaponifiable matter
45. In an assay of boric acid by aqueous acid-base titration, glycerin is added :
- (a) To dissolve boric acid  
(b) To enhance the strength of boric acid  
(c) To suppress the ionization of boric acid  
(d) To prevent precipitation of reaction product of titration
46. Which one of the following does **not** provide passive immunity ?
- (a) Inactivated micro-organisms  
(b) Humanized monoclonal antibodies  
(c) Natural mother antibody transferred to foetus  
(d) Antitoxin
47. Consider the following vaccines :
1. DNA vaccine
  2. mRNA vaccine
  3. Live attenuated vaccine
  4. Inactivated vaccine
- The correct order of stability of vaccines given above is :
- (a) 1 > 3 > 4 > 2  
(b) 2 > 4 > 3 > 1  
(c) 1 > 4 > 3 > 2  
(d) 2 > 3 > 4 > 1
48. Which one of the following Human Leukocyte Antigens (HLA) encodes for major histocompatibility complex-II ?
- (a) HLA-A  
(b) HLA-B  
(c) HLA-C  
(d) HLA-D
49. Which one of the following clotting factors does **not** require vitamin K during blood coagulation process ?
- (a) Factor IX  
(b) Factor V  
(c) Factor VII  
(d) Factor X
50. Which one of the following proteins is mainly responsible for binding with drugs in plasma ?
- (a) Apolipoproteins  
(b) Albumin  
(c) Transferrin  
(d) Immunoglobulin G

51. Which one of the following methods is **not** used for the separation of plasma proteins ?

- (a) Flow cytometer
- (b) Precipitation by salting out technique
- (c) Ultracentrifugation
- (d) Electrophoresis

52. Match the List I with List II and select the correct answer using the code given below the lists :

*List I*  
(Type of Globulin)

*List II*  
(Function)

- |                                 |   |
|---------------------------------|---|
| A. High density lipoprotein     | 1. Carries triglycerols from liver to adipose tissue                  |
| B. Low density lipoprotein      | 2. Collects cholesterol from body tissues and brings it back to liver |
| C. Very low density lipoprotein | 3. Involved in cell-cell interactions                                 |
| D. Glycoproteins                | 4. Carries cholesterol from liver to cells of the body                |

Code :

- |                                      | A | B | C | D |
|--------------------------------------|---|---|---|---|
| <input checked="" type="radio"/> (a) | 2 | 4 | 1 | 3 |
| (b)                                  | 3 | 1 | 4 | 2 |
| (c)                                  | 2 | 1 | 4 | 3 |
| (d)                                  | 3 | 4 | 1 | 2 |

53. The level of mercury as preservative in the cosmetics intended for use only in the area of eye should **not** exceed :

(calculated as metal)

- (a) 0.005%
- (b) 0.007%
- (c) 0.009%
- (d) 0.010%

54. An applicant for grant of retail license in Form 20 or Form 21 or both is required to provide the premises which are in area **not** less than :

- (a) 8 m<sup>2</sup>
- (b) 10 m<sup>2</sup>
- (c) 12 m<sup>2</sup>
- (d) 15 m<sup>2</sup>

55. The permitted synthetic organic/natural organic colours used in the cosmetics shall **not** contain more than :

- (a) 1 ppm of arsenic, 10 ppm of lead and 50 ppm of heavy metals other than lead
- (b) 4 ppm of arsenic, 30 ppm of lead and 200 ppm of heavy metals other than lead
- (c) 2 ppm of arsenic, 20 ppm of lead and 100 ppm of heavy metals other than lead
- (d) 2 ppm of arsenic, 25 ppm of lead and 150 ppm of heavy metals other than lead

56. Toothpastes containing fluoride should **not** contain fluoride more than :

- (a) 500 ppm
- (b) 1000 ppm
- (c) 2000 ppm
- (d) 3000 ppm

57. Application for licence to manufacture drugs other than those specified in Schedules C and C(I) shall be made to the Licensing Authority of the State in :

- (a) Form 24B
- (b) Form 24
- (c) Form 24F
- (d) Form 24D



58. Licenses for retail sale of drugs other than Schedule X are issued by the State Licensing Authority in :  
(which require services of registered pharmacist)

- (a) Form 20, 21
- (b) Form 20B, 21B
- (c) Form 20F, 20G
- (d) Form 20A, 21A

59. The drugs specified under which of the following schedules to the Drugs and Cosmetics Rules, 1945 will **not** be sold by retail except on and in accordance with the prescription of a Registered Medical Practitioner :

- 1. Schedule U
- 2. Schedule Y
- 3. Schedule H
- 4. Schedule H1
- 5. Schedule X

Select the correct answer using the code given below :

- (a) 3 and 4 only
- (b) 3, 4 and 5
- (c) 1, 2 and 3
- (d) 2, 3, 4 and 5

60. The medical devices shall conform to the standards laid down by the :

- 1. WHO
- 2. US FDA
- 3. Bureau of Indian Standards (BIS)
- 4. ISO/IEC/Pharmacopoeial standards where BIS standards are not available

Select the correct answer using the code given below :

- (a) 1 and 2 only
- (b) 1, 3 and 4
- (c) 2 and 3 only
- (d) 3 and 4 only

61. Which one of the following is used for calibration of absorbance scale of UV-Vis spectrophotometer ?

- (a) Potassium chloride solution
- (b) Potassium chromate solution
- (c) Holmium perchlorate solution
- (d) Potassium dichromate solution

62. Which one of the following is **not** an example of utility software ?

- (a) Antivirus
- (b) WinZip
- (c) Google Chrome
- (d) Disk Defragmenter

63. Which one of the following programming languages is used to develop an android application for mobile device ?

- (a) Python
- (b) C
- (c) Java
- (d) C++

64. Which one of the following symbols represents the data flow in motion, used in data flow diagram (DFD) ?

- (a) Open-ended box
- (b) Square
- (c) Circle
- (d) Arrow

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  - Square
  - Circle
  - Arrow

65. Which one of the following is designed to control the internal operations of the computer system ?

- (a) Antivirus
- (b) Application software
- (c) Compiler
- (d) System software

66. Which one of the following performs the matching of domain names to IP addresses in the Internet services ?

- (a) HTTP
- (b) URL
- (c) DNS
- (d) HTML

67. Which one of the following statements regarding Anti-spyware software is correct ?

- (a) It edits the files to become not readable.
- (b) It is used to analyse the network traffic.
- (c) It scans all files before they are installed in the computer system.
- (d) It detects and removes all the programs installed illegally in the computer system.

68. Which one of the following is *not* a threat to cyber security ?

- (a) Denial of service
- (b) Phishing
- (c) RSA
- (d) Malware

69. Which one of the following is the synonym of the word written in capitals in the sentence : "The invaders who constantly raided India in the past and pillaged it were infamous for their RAPACITY" ?

- (a) Greed
- (b) Criminality
- (c) Exaggeration
- (d) Militancy

70. Which one of the following is the antonym of the word written in capitals in the sentence : "The impoverished children in the charitable school were treated to a SCRUMPTIOUS meal by the local administration on Independence Day" ?

- (a) Unpalatable
- (b) Appetizing
- (c) Hearty
- (d) Scanty

71. Consider the following jumbled words :  
/ himself / who / knows / succeeds / he /

A B C D E

Which one of the following order of words creates a meaningful sentence ?

- (a) BCEAD
- (b) EACBD
- (c) DCABE
- (d) EBCAD

72. Consider the following jumbled words :  
/ perfection / manifestation of / is the /

A B C

education / in man /

D E

Which one of the following order of words creates a meaningful sentence ?

- (a) CBDAE
- (b) ACDEB
- (c) DCBAE
- (d) EDCBA

73. Which one of the following parts of the sentence, 'It is widely acknowledged by general census that whereas failure is the stepping stone to success, successive failures are not successive stepping stones to success' has an error ?
- (a) It is widely acknowledged by general census  
(b) that whereas failure is the stepping stone  
(c) to success, successive failures are not  
(d) successive stepping stones to success
74. Which one of the following parts of the sentence, 'The visiting students who had just arrived in Srinagar decided that they would circumnavigate around the Dal Lake the following day' has an error ?
- (a) The visiting students who had just arrived  
(b) in Srinagar decided that they would  
(c) circumnavigate around the Dal Lake  
(d) the following day
75. Which one of the following is the most appropriate meaning of the idiom 'Break a leg' ?
- (a) To play a practical joke  
(b) To dance happily  
(c) To be violent with someone  
(d) To wish someone luck
76. Eriochrome Black T is :  
(a) Natural indicator  
(b) Metalochrome indicator  
(c) Redox indicator  
(d) Acid-base indicator
77. Which one of the following is an example of aminoglycoside antibiotic ?  
(a) Streptomycin  
(b) Clavulanic acid  
(c) Cefaclor  
(d) Azithromycin
78. Which one of the following is an example of reverse transcriptase inhibitor ?  
(a) Acyclovir  
(b) Cytarabine  
(c) Idoxuridine  
(d) Zidovudine
79. Reactive intermediate in  $S_N1$  reaction is :  
(a) Carbene  
(b) Carbanion  
(c) Free radical  
(d) Carbocation
80. Parameter that indicates polarity of a solvent is :  
(a) Dissociation constant  
(b) Dielectric constant  
(c) Boiling point  
(d) Freezing point
81. Vitamin B consists of which one of the following ring systems ?  
(a) Pyridine  
(b) Piperidine  
(c) Pyrimidine  
(d) Pyridazine
82. Nitric oxide is biosynthesized from :  
(a) L-Citrulline  
(b) L-Glycine  
(c) L-Arginine  
(d) L-Tyrosine
83. Chemical structure of Timolol has which of the following heterocycles ?  
(a) Morpholine and Thiadiazole  
(b) Morpholine and Triazole  
(c) Piperidine and Imidazole  
(d) Pyridine and Morpholine

84. Phenobarbitone is the active metabolite of :  
(a) Phenytoin  
(b) Primidone  
 (c) Phenoxybenzamine  
(d) Phenylephrine
85. Benzhydrol bromide is the starting material for the synthesis of :  
(a) Diphenhydramine  
(b) Diclofenac  
 (c) Diphenylhydantoin  
(d) Dipyridamole
86. Thyroxine can be synthesized from :  
(a) L-Tryptophan  
 (b) L-Tyrosine  
(c) L-Proline  
(d) L-Phenylalanine
87. Rochelle salt is :  
 (a) Potassium sodium tartrate  
(b) Silver nitrate  
(c) Sodium thiosulphate  
(d) Potassium chloride
88. 2,6-Xylidine is the reactant for the synthesis of :  
 (a) Benzocaine  
(b) Procaine  
(c) Lidocaine  
(d) Cinchocaine
89.  $\lambda_{\max}$  for conjugated dienes can be calculated by which one of the following rules/law ?  
(a) Woodward's rule  
 (b) Beer-Lambert law  
(c) Saytzeff's rule  
(d) Markovnikov's rule
90. Thalidomide, previously banned for its teratogenic activity is again introduced in the market for which one of the following uses ?  
(a) Sedative hypnotic  
(b) Anticonvulsant  
 (c) Leprosy reactions  
(d) Antibiotic
91. Which one of the following antiarrhythmic drugs produces brief therapeutic action and transient adverse effects ?  
 (a) Diltiazem  
(b) Propafenone  
(c) Esmolol  
(d) Adenosine
92. Which one of the following statements regarding Succimer is most appropriate ?  
(a) It produces less toxicity than Dimercaprol.  
 (b) It is ineffective orally.  
(c) It is effective for treatment of iron poisoning.  
(d) It is contraindicated for use in children.
93. Which one of the following monoclonal antibodies is specific for RANKL and is indicated for treatment of postmenopausal women with osteoporosis ?  
(a) Eculizumab  
(b) Palivizumab  
 (c) Ranibizumab  
(d) Denosumab
94. Which one of the following is the mechanism of action of bisphosphonates in the treatment of osteoporosis ?  
(a) Increasing the osteoid formation  
 (b) Decreasing the osteoclast mediated bone resorption  
(c) Increasing the mineralization of osteoid  
(d) Decreasing the parathyroid hormone secretion

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KLOS-F-PHRM

95. Which one of the following immunosuppressant agent does **not** cause bone marrow suppression as one of its adverse effects ?
- (a) Azathioprine  
(b) Cyclosporine  
(c) Sirolimus  
(d) Methotrexate
96. Which one of the following anti-diabetic drugs is mainly given to control postprandial hyperglycemia in type 2 diabetics ?
- (a) Metformin  
(b) Pioglitazone  
(c) Nateglinide  
(d) Dapagliflozin
97. Which one of the following anti-diabetic medicine undergoes metabolism by Cytochrome P450 enzymes and has drug interactions with Rifampicin ?
- (a) Acarbose  
(b) Metformin  
(c) Pioglitazone  
(d) Sitagliptin
98. All of the following drugs act by stimulating Glucagon-like peptide-1 (GLP-1) receptor and are useful for treatment of type 2 diabetes **except** :
- (a) Exenatide  
(b) Repaglinide  
(c) Liraglutide  
(d) Dulaglutide
99. Pegvisomant is used for treatment of which one of the following clinical conditions ?
- (a) Infertility  
(b) Pituitary dwarfism  
(c) Acromegaly  
(d) Turner syndrome
100. Which one of the following drugs is **not** commonly combined with Methotrexate for the treatment of Rheumatoid Arthritis ?
- (a) Sulfasalazine  
(b) Leflunomide  
(c) Azathioprine  
(d) Chloroquine
101. All of the following drugs can be used for diagnosis of Myasthenia gravis **except** :
- (a) Neostigmine  
(b) d-Tubocurarine  
(c) Edrophonium  
(d) Physostigmine
102. Which one of the following types of antagonism is observed between the actions of nitrites and cyanides ?
- (a) Physical antagonism  
(b) Physiological antagonism  
(c) Chemical antagonism  
(d) Competitive antagonism

103. Which one of the following schedules in Current Good Manufacturing Practice (CGMP) in India is used for Medical devices ?
- (a) M  
(b) M-I  
(c) M-II  
(d) M-III
104. In scale-up and post-approval changes, level 3 change indicates :
- (a) Changes that are unlikely to have any detectable impact on formulation quality and performance.  
(b) Changes that could have a significant impact on formulation quality and performance and usually require dissolution profile comparisons in multiple media.  
(c) Changes that could have a significant impact on formulation quality and performance and require conduct of bioequivalence study.  
(d) Changes that could have a significant impact on formulation quality and performance and lead to rejection of the product.
105. There is requirement of self-inspection under GMP to be carried out by the licensed manufacturers of drugs. A complete self-inspection should be carried out once in :
- (a) Two years  
(b) Three years  
(c) A year  
(d) Six months
106. Spironolactone has which one of the following ring system ?
- (a)  $\gamma$ -Lactone  
(b)  $\beta$ -Lactone  
(c)  $\beta$ -Lactam  
(d)  $\gamma$ -Lactam
107. Paracetamol was detected as a metabolite of :
- (a) Diclofenac  
(b) Ibuprofen  
(c) Ketoprofen  
(d) Phenacetin
108. Gutzeit test apparatus is used for which one of the following limit tests ?
- (a) Heavy metals  
(b) Iron  
(c) Arsenic  
(d) Sulphate
109. Benzene formation takes place during :
- (a) Nucleophilic aromatic substitution  
(b)  $S_N1$  reaction  
(c)  $S_N2$  reaction  
(d) Electrophilic aromatic substitution
110. Ruff degradation of (+) - Xylose yields :
- (a) (-) Glucose  
(b) (+) Fructose  
(c) (-) Threose  
(d) (+) Glucose
111. Formation of Acetyl-CoA is the link between which of the following ?
- (a) Glycolysis and Pentose shunt pathway  
(b) Glycolysis and Gluconeogenesis  
(c) Glycolysis and Citric acid cycle  
(d) Citric acid cycle and Electron transport chain

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112. Indole is synthesized by :

- (a) Sandmeyer reaction
- (b) Beckmann rearrangement
- (c) Skraup synthesis
- (d) Fischer synthesis

113. Primaquine induces hemolysis in some African patients deficient in which one of the following enzymes ?

- (a) Glucose-6-phosphate dehydrogenase
- (b) Carbonic anhydrase
- (c) Acetylcholinesterase
- (d) Chymotrypsin

114. Enalapril belongs to which one of the following esters of enalaprilic acid ?

- (a) Methyl
- (b) Ethyl
- (c) Benzyl
- (d) n-Propyl

115. Which one of the following is an example of Angiotensin II blocker ?

- (a) Fosinopril
- (b) Clonidine
- (c) Cosartan
- (d) Propranolol

116. The reaction between methylbromide and hydroxide ion to yield methanol is a/an :

- (a)  $S_N2$  reaction
- (b)  $S_N1$  reaction
- (c) E2 reaction
- (d) E1 reaction

117. Burimamide is a full antagonist of which one of the following receptors ?

- (a)  $H_1$ -receptor
- (b)  $D_2$ -receptor
- (c)  $H_2$ -receptor
- (d)  $D_1$ -receptor

118. The principal mechanism limiting anaesthetic duration after single dose of sodium thiopental includes :

- (a) Hepatic metabolism
- (b) Redistribution
- (c) Metabolism by pseudocholinesterase
- (d) Rapid clearance

119. Metoclopramide has the following actions on gastrointestinal tract *except* :

- (a) Increases tone of pyloric sphincter
- (b) Increases tone of lower esophageal sphincter
- (c) Increases gastric peristalsis
- (d) Increases intestinal peristalsis

120. The following antibiotics are commonly employed for the treatment of *Helicobacter pylori* associated peptic ulcer *except* :

- (a) Clarithromycin
- (b) Ciprofloxacin
- (c) Amoxicillin
- (d) Tinidazole



121. According to GCP guidelines, the minimum number of members required in quorum of Ethics Committee to review the protocol is :

- (a) 5
- (b) 6
- (c) 7
- (d) 9

122. According to GCP guidelines, which one of the following statements does *not* hold true for Ethics Committee ?

- (a) All members serving in Ethics Committee that oversees human research at an institution must be employed by that institution.
- (b) Ethics Committee should include at least one member whose primary area of interest is non-scientific.
- (c) Ethics Committee should have appropriate gender representation.
- (d) For review of each protocol the quorum of Ethics Committee shall be at least five members.

123. Which one of the following is *not* considered as the essential element in the study subject's informed consent documents according to GCP guidelines ?

- (a) Expected duration of the subject's participation
- (b) An explanation about whom to contact for trial related queries, rights of subjects and in the event of an injury
- (c) A statement that there is a possibility of failure of investigational product to provide intended therapeutic effects
- (d) A statement that the particular treatment or procedure may invoke risks to the subject, which are currently unforeseeable

124. As per ICH E6 GCP guidelines, all of the following should be complied *except* :

- (a) Information recorded in the investigator's reports should be complete, accurate and legible
- (b) Any missed study visits may not be noted in the reports
- (c) Subjects who were dropped from or failed to complete the study are noted in the report with the reason adequately explained
- (d) Informed consent should be adequately documented

125. As per ICH GCP guidelines, whose responsibility is it to ensure that investigators are qualified by education and experience and are trained on the conduct of the protocol ?

- (a) FDA
- (b) Study sponsor
- (c) Investigator
- (d) Ethics Committee

126. The document retention period as required by FDA following the date of marketing application approval or after the investigation is discontinued and the FDA notified, is :

- (a) One year
- (b) Two years
- (c) Three years
- (d) Five years

127. In indirect Enzyme-Linked Immunosorbent Assay :

- (a) A standardized monoclonal antibody is immobilized on the solid support for detection.
- (b) A standardized polyclonal antibody is immobilized on the solid support for detection.
- (c) Antigen-antibody complex is immobilized on the solid support for detection.
- (d) A standardized antigen is immobilized on the solid support for detection.

128. Which one of the following antibodies is responsible for allergic reactions ?

- (a) IgE
- (b) IgG
- (c) IgM
- (d) IgA

129. Which one of the following is *not* a bacterial vaccine ?

- (a) BCG vaccine
- (b) Pertussis vaccine
- (c) Meningococcal vaccine
- (d) Measles vaccine

130. Which one of the following statements regarding adjuvants is *not* correct ?

- (a) They increase the antigen specific immune responses.
- (b) They decrease the antigen specific immune responses.
- (c) They preserve antigen integrity.
- (d) They produce high affinity immune responses.

131. Which one of the following is the correct sequence of immunoglobulins on the basis of molecular weight (Dalton) ?

- (a) IgG > IgA > IgD > IgM > IgE
- (b) IgM > IgE > IgG > IgD > IgA
- (c) IgD > IgG > IgA > IgE > IgM
- (d) IgM > IgE > IgD > IgA > IgG

132. Ceruloplasmin is responsible for binding and transportation of which one of the following elements in the blood ?

- (a) Copper
- (b) Iron
- (c) Magnesium
- (d) Zinc

133. Erythropoiesis is the process of :

- (a) Development of red blood cells
- (b) Development of thrombocytes
- (c) Development of white blood cells
- (d) Development of monocytes

134. Which one of the following statements regarding blood group "O" is correct ?

- (a) It has agglutigen A only on the RBCs.
- (b) It has agglutigen B only on the RBCs.
- (c) It has agglutigen A and B both, on the RBCs.
- (d) It has agglutinin anti-A and anti-B in the plasma.

135. Consider the following statements regarding vaccines :

1. Polio-Salk is a live attenuated vaccine.
2. Polio-Sabin is an inactivated vaccine.
3. Hepatitis A is an inactivated vaccine.
4. Hepatitis B is a subunit vaccine (HBsAg).

Which of the statements given above are correct ?

- (a) 2 and 4
- (b) 2 and 3
- (c) 1 and 3
- (d) 3 and 4

recommend storage of pharmaceutical products at different temperatures and relative humidity in different zones. The temperature and humidity recommended for Zone IVb are :

- (a) 30°C/60% RH
- (b) 30°C/65% RH
- (c) 30°C/70% RH
- (d) 30°C/75% RH

137. When there is change in the equipment of the process, there will be need for :

- (a) Retrospective validation
- (b) Concurrent validation
- (c) Prospective validation
- (d) Revalidation

138. Which one of the following is *not* correctly matched as per the classification of Clean rooms ISO-14644 ?

- (a) Part 1 : Classification of air cleanliness
- (b) Part 3 : Test methods
- (c) Part 4 : Design, construction and start-up
- (d) Part 5 : Terms and definitions

139. Which of the following are correctly matched regarding registration of Pharmaceuticals for Human Use (ICH) ?

- 1. ICH guideline Q8 : Pharmaceutical Development
- 2. ICH guideline Q9 : Quality Risk Management
- 3. ICH guideline Q10 : Radio-pharmaceutical guidelines

Select the correct answer using the code given below :

- (a) 1 and 3 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

140. As per ~~Indian~~ Pharmacopeia, maximum number of particles per mL allowed for the Larger Volume Parenteral (LVP), labelled as containing 100 mL or more of a single dose large volume injection intended for administration by intravenous infusion with particle size *not* exceeding 10  $\mu$ m is :

- (a) 5 particles per mL
- (b) 25 particles per mL
- (c) 50 particles per mL
- (d) 10 particles per mL

141. In India, IP Reference Substances (IPRS) are issued by the :

- (a) Central Drug Research Institute, Lucknow
- (b) Chemical Laboratory, Pune
- (c) Indian Pharmacopoeia Commission, Ghaziabad
- (d) Indian Institute of Chemical Biology, Kolkata

142. Which one of the following classes of clean air is required for aseptic operation ?

- (a) Class 100
- (b) Class 1,000
- (c) Class 10,000
- (d) Class 100,000

143. Which one of the following antioxidant compounds is used in aqueous system cosmetics ?

- (a) Sodium bisulphite
- (b) Hydroquinone
- (c)  $\alpha$ -Tocopherol
- (d) Propyl gallate

144. Which one of the following application forms is applicable in case of manufacture for sale of Ayurveda, Siddha or Unani drugs ?
- (a) Form 25-E
  - (b) Form 24-D
  - (c) Form 26-D
  - (d) Form 25-D
145. Which one of the following guidelines are followed for analytical method validation, if the method of analysis is *not* official in any pharmacopeia or appear in other recognized references ?
- (a) ICH guidelines
  - (b) WHO guidelines
  - (c) GLP guidelines
  - (d) HACCP guidelines
146. Which one of the following sections represents misbranded cosmetics under manufacture, sale and distribution of drugs and cosmetics ?
- (a) Section 9A
  - (b) Section 9D
  - (c) Section 17C
  - (d) Section 14
147. Which one of the following antimicrobials is used in the preparation of deodorant soaps ?
- (a) Bithionol
  - (b) Propylene glycol
  - (c) Trichlorocarbanilide
  - (d) Titanium dioxide
148. The expert committee shall examine the report of serious event of death and give its recommendation to the licensing authority for the purpose of arriving at the cause of the adverse event within how many days of the occurrence of the adverse event ?
- (a) 150 days
  - (b) 30 days
  - (c) 90 days
  - (d) 105 days
149. According to New Drugs and Clinical Trials Rules, 2019, the sponsor is required to forward his report on serious adverse event of death after due analysis to the licensing authority and the head of the institution where the trial has been conducted within how many days of the occurrence of the event ?
- (a) Within 1 day
  - (b) Within 7 days
  - (c) Within 14 days
  - (d) Within 30 days
150. With regard to compensation in case of injury or death during clinical trial, all of the following statements are true *except* :
- (a) Financial compensation could be in the form of payment for medical management.
  - (b) Financial compensation is not provided for a child injured in-utero because of the participation of parent in clinical trial.
  - (c) In case of death, there is a provision to give financial compensation to the nominee(s) of the trial subject.
  - (d) Financial compensation shall be provided if injury or death occurs due to failure of investigational product to provide intended therapeutic effect where, the standard care, though available, was not provided to the subject as per the clinical trial protocol.