جامعة طنطا
كلية الصيدلة

Tanta University
Faculty Of Pharmacy
Department Of Pharmaceutical Technology

Examination For Third Year Pharmacy Students

Course Title: Pharmaceutical Formulation

Date: 6/1/2014	**Term : First**	**Total Marks: 150** **Total pages: 12**	**Time allowed:** **2 hours**

You are provided with **100 MCQs** together with answers for each question. You need to select one answer for each question and blacken the corresponding square in the provided answer sheet.

Answer sheet

No	A	B	C	D	No	A	B	C	D	No	A	B	C	D
1					35					69				
2					36					70				
3					37					71				
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32					66					100				
33					67									
34					68									

1. ***Preformulation is the most important step in the formation of the drug as a pharmaceutical dosage form. It includes:***
   A. Investigation of physical and chemical properties of drug substance.
   B. Investigation of physical and chemical properties of drug substance when combined with excipient.
   C. Investigation of physical and chemical properties of drug substance alone and in the finished dosage form.
   D. All of the above.
2. ***Solubility of the drug in various solvent is the first step which is normally determined by equilibrium solubility which defined as:***
   A. Saturated solution of the drug obtained by stirring in a solvent till equilibrium at constant temperature.
   B. Saturated solution of the drug obtained by stirring excess drug in constant volume of a solvent till equilibrium at constant temperature.
   C. Saturated solution of the drug obtained by stirring excess drug in a solvent till equilibrium.
   D. Saturated solution of the drug obtained by stirring excess drug in a solvent till equilibrium at constant temperature.
3. ***Solubility of the drug in different pH media can help for determination the structure of the drug:***
   A. Increase the solubility in acid which is lowered in alkali than in water indicates basic drug.
   B. Increase the solubility in base than in water and not changed in acid indicates basic drug
   C. Increase the solubility in both than in water indicates zwitter ion drug
   D. All of the above.
4. ***Intrinsic solubility is the fundamental solubility when the drug is completely unionized i.e.:***
   A. The purity of acid drug can be assured from its solubility in acid.
   B. The purity of basic drug can be assured from its solubility in base.
   C. Both statements are right.
   D. Both statements are wrong.
5. ***The solubility should be done at two different temperature which give indication about:***
   A. Particle size growth of the drug in the suspension form.
   B. The ideal stability condition of the dosage form.
   C. The ideal transport condition of the drug.
   D. All of the above
6. ***Dissociation constant of the drug indicates the ionization and the solubilisation of the drug within pH range 1 to 10 to predict:***
   A. The absorption of aspirin occurred only from stomach.

B. The high solubility of diclofenac sodium in the stomach.
C. The effect of large surface area of small intestine on the absorption of aspirin.
D. All of the above.

7. ***As a general rule" high soluble drug has better absorption". Accordingly salt formation of drug will enhance its solubility but:***
   A. Aspirin is weak acid drug has minimal solubility and minimal absorption from stomach. Its sodium salt increases its solubility.
   B. Aspirin suspension can used as a dosage form with long expire date.
   C. Aspirin solution can used as a dosage form with long expire date.
   D. None of the above.
8. ***Partition coefficient is ratio of drug distribution between organic phase and aqueous phase. It has the following application:***
   A. Solubility of the drug which is constant all over GIT.
   B. Drug absorption in vivo for drug absorbed by active transport mechanism.
   C. Partition chromatography of mixture of solvent.
   D. None of the above.
9. ***Melting point of the drug can also used for purity determination of the drug. Some changes like colour change.... indicate some phenomena like:***
   A. Polymorphism transition or desolvation of the drug.
   B. Degradation of the drug as result of oxidation or decarboxylation.
   C. All of the above
   D. None of the above.
10. ***Hygroscopic drug is one of big problem facing the preformulator because the drug hygroscopicity effect on:***
    A. Stability of the drug and its storage condition.
    B. Method of preparation and packaging of the finished product.
    C. Selection of the drug additive.
    D. All of the above.
11. ***Complexation between the drug and ligand determined by phase solubility technique. It is formed by donar acceptor mechanism. But cyclodextin worked by:***
    A. Acceptor donar mechanism.
    B. Occlution mechanism.
    C. Both mechanism
    D. None of both.
12. ***Prodrug approach has a lot of application in the Preformulation of the drug. Examples of application of prodrug are:***
    A. Decrease the solubility of ara-A using format ester of ara-A.
    B. Increase metronidazol solubility using phosphate salt.
    C. Increasing chloramphenicol solubility using it fatty acid ester.
    D. All of the above.

13. ***Rate of drug dissolution is the rate at which the drug goes into solution. It has greater interest than equilibrium solubility due to:***
    A. As general it has relation to the drug concentration in the blood.
    B. Control it reduce the side effect of the drug.
    C. Control it reduce the dose regimen.
    D. All of the above.
14. ***From Noyes-Whitney equation there is a correlation between the amount of drug released and equilibrium solubility which should be:***
    A. The amount of drug released should be no more than 10% to 20% of equilibrium solubility.
    B. The amount of drug released should be more than 20% of equilibrium solubility.
    C. The amount of drug released should equal equilibrium solubility.
    D. None of the above.
15. ***In Noyes-Whitney equation (D) which is the diffusion coefficient of the drug which means:***
    A. Diffusion of the drug from the tablet to the dissolution medium.
    B. The dissolved drug moving away from the solid.
    C. All of the above
    D. None of the above.
16. ***In Noyes-Whitney equation(h) is:***
    A. Thickness of the thin film of solution around the surface of solid.
    B. Thickness of the tablet or the solid.
    C. All of the above
    D. None of the above.
17. ***Data obtained from the basic physic-chemical studies specially pka and dissolution rate provide an indication about:***
    A. The mechanism of drug absorption.
    B. The amount of drug may be absorbed.
    C. The absorption of the drug as a general.
    D. All of the above.
18. ***Membrane permeability test can be predicted by a technique named " Evert intestinal sac" because:***
    A. A segment of small intestine of a rat everted would be used.
    B. The drug dissolved in the external fluid and taken for analysis.
    C. It is not necessary to tied off the end of the sac.
    D. None of the above.
19. ***Solvents used in the pharmaceutical formulation are:***
    A. Water miscible solvent like ethyl alcohol to change the polarity of water.
    B. Solvents mixed with water for extraction and analysis like methanol.
    C. Solvent don't miscible with water used for emulsion dosage form.

D. All of the above.

20. ***Preformulator needs some rapid method of analysis which help him in the qualifications of the drug:***
    A. UV as rapid method for drug concentration determination.
    B. X ray diffraction to study the crystallinety of the drug.
    C. IR for the drug chemical structure.
    D. All of the above.
21. ***Polymorphism is the drug has more than one crystal form. These forms have:***
    A. Different solubility.
    B. Similar melting point.
    C. Similar x ray diffraction pattern.
    D. Different chemical structure.
22. ***When the drug is polymorph, one form is interested for the formulator which is:***
    A. The lowest melting point one.
    B. The highest soluble form one.
    C. The highest unstable one.
    D. All of the above.
23. ***The crystal form of the drug may incorporate molecules of crystallization solvent which :***
    A. Can be identified by using IR or loss weight by thermo gravimetric analysis.
    B. Hydrated form of drug has higher solubility than anhydrous form because it is already wetted with solvent.
    C. Organic solvate drug has lower solubility than anhydrous one as a result of the presence of organic solvent.
    D. None of the above is correct.
24. ***Some physical tests is essential to be done to assure the effectiveness of the drug and should be consider during preparation and storage like:***
    A. Optical activity of the drug because some drug may have only one active form and other inactive.
    B. Thermal and light stability which control preparation process, packaging and storage process.
    C. pH stability profile which is essential in liquid dosage form.
    D. All of the above.
25. ***The flow of powder is essential to study because:***
    A. It is the only factor controlling the filling of die during tableting and filling of capsule.
    B. Powder flow and bulk density controlling the weight variation.
    C. Powder flow, tape density, particle shape and size controlling the weight variation.
    D. None of the above.
26. *Capsules are solid dosage form in which:*

A. The medicament encapsulated within a gelatin shell.
B. The medicament may be powder, liquid or semisolid mass.
C. It taken orally or inserted rectally or virginally
D. All of the above.

27. ***Chloroamphinicol has extreme bitter taste. It can be formulated:***
A. Insoluble form in suspension for children and capsule for adult.
B. Since gelatin insoluble in acidic pH, capsule form is suggested.
C. Gelatin dissolve in intestine, then it will filling for the better taste.
D. All of the above.

28. ***Nitrofurantion when rapid release in stomach leads to vomiting. It is not advice to be encapsulated in gelatin capsule before change the formula to become sustained release because:***
A. The swelling of gelatin in stomach lead rapid increase of the drug.
B. The solubility of gelatin in the stomach leads rapid release of the drug.
C. The insolubility of gelatin in stomach lead delays the drug in stomach.
D. None of the above.

29. ***The type of gelatin depend on the method of preparation from its sources:***
A. Gelatin A produced from basic hydrolysis of bovine bones.
B. Gelatin B produced from acid hydrolysis of animal skins.
C. Gelatin A is protein which can be coloured and need preservative.
D. All of the above.

30. ***Hard gelatin consists of two parts cap and body. The volume inside determined the amount of drug which can be encapsulated:***
A. The volume of the capsule increased with decrease the no. of capsule.
B. Different size gives the chance to select the correct one to swallow.
C. The capsule volume can be controlled by using the suitable mould.
D. All of the above.

31. ***The filling of hard gelatin capsule as a general has the same steps. The difference is only in the capsule filling machine used:***
A. Full automatic machine in which the filling process occurred stepwise.
B. Half automatic machine in which the filling process occurred one step.
C. Manual machine in which filling is stepwise and occurred manually.
D. All of the above.

32. ***What do you mean about this kind of idea?***
A. Preparation of chloroamphenicol in soft gelatin capsules.
B. Encapsulation of ferrous chloride in soft gelatin capsule.
C. None of the above
D. All of the above.

33. ***Soft gelatin can be formulated to produce different drug delivery systems:***
A. Oral administration capsules containing solution or suspension.

B. Chewable capsule to chewed or suckable to be sucked.
C. Twist off capsule or meltable designed to be inserted in body cavity.
D. All of the above.

34. Soft gelatin capsules production include the following procedure:

A. Gelatin dissolved in water then plasticizer added then other additives.
B. The hot gel mass changes to two separate ribbons.
C. Each ribbon will be half of the soft capsule in rotator of machine.
D. All sequences above are right.

35. Seamless soft gelatin capsule is the modern method for producing soft gelatin capsules:

A. The essential parts of the apparatus are two concentrated tubes.
B. Through outer tube flow medicament and the inner gelatin solution.
C. The spherical capsules would be formed although gelatin the inner part
D. All sequences above are right.

36. Gelatin sustained release capsules can be achieved by:

A. Change the chemical structure of the gelatin as a capsule wall.
B. Formulation of the drug to be sustained then encapsulated.
C. Both techniques can be done.
D. There is no chance to prepared sustained release capsules.

37. The physic-chemical structure of gelatin is the most interest to the shell manufactures:

A. Bloom strength gives indication about the firmness of the gel.
B. It measures by bloom gelometer.
C. It is the weight in gram required to depress the plunger fixed distance.
D. All of the above.

38. Viscosity of gelatin solution is the second test which should be measure because of its effect on the cast film thickness:

A. Determined using 3% solution at 60°C.
B. Determined using rotary viscometer.
C. It has to be between 60 and 90 millipoise.
D. None of the above.

39. The sequence of two-piece hard gelatin capsule shell manufacture is the following order:

A. Dipping, drying, cutting, spinning, joining and stripping.
B. Dipping, spinning, drying, stripping, cutting and joining.
C. Dipping, spinning, stripping, cutting, drying and joining.
D. None of the above.

40. Content uniformity is one of the most important test in the capsule quality control:

A. 30 capsules should select and 20 of those are assayed.
B. 20 capsules should select and assayed.
C. 30 capsules should select and 10 of those are assayed individually.

D. None of the above.

41. ***Weight uniformity is also one of the quality control test:***
    A. It is determined as an average of 30 capsules weight.
    B. It is determined as an average of the content of 20 capsules.
    C. It is determined by the average of the weight the content of 20 capsules individually.
    D. None of the above.

42. ***Disintegration test is determined whether the tablet or capsules disintegrate with the prescribed time. The capsule passed the test if:***
    A. No residue remains in the apparatus.
    B. The residue remains consists of fragment of shell on the screen.
    C. The residue is soft mass mixed with the core on the screen.
    D. All of the above.

43. ***Dissolution test is the most essential test in the quality control test because it reflects the drug absorption. For comparison the test must done:***
    A. In the official dissolution apparatus USP or NF.
    B. The mesh of the basket should be 40.
    C. Dissolution medium must be 1000ml and at 37°C.
    D. All of the above.

44. ***Failure in the weight test maybe due to:***
    A. Failure in the physical character of the powder like tap density.
    B. Failure in the physical character of the powder like flow of powder.
    C. Failure in the physical character of the powder like bulk density.
    D. Failure in the flow of the powder and its bulk density.

45. ***Failure in the content uniformity test may be due to:***
    A. Failure in weight variation test.
    B. Failure in the mixing step.
    C. Failure in chemical analysis test
    D. All of the above.

46. ***Failure in the disintegration test may be due to:***
    A. Gelatin capsule shell.
    B. Sticking of the drug with shell forming non-disintegrable mass.
    C. Solubility of gelatin in the oil content of the capsule.
    D. All of the above.

47. ***Failure in the content uniformity of the first 10 capsules lead to analysis the rest 20 individually:***
    A. The test passed when 27 capsule content lower than 85-115%.
    B. No one above 70-130%
    C. Both.
    D. Only A.

48. ***The limits of weight variation test is depend on the average weight of the capsule:***

A. 15% is allowed if the capsule average weight is less than 300 mg
B. 10% is allowed if the capsule average weight is more than 300 mg
C. 12.5% is allowed if the capsule average weight is less than 300 mg
D. None of the above.

49. Factors affecting the availability of drug from the capsule are:

A. Dissolution rate of the shell.
B. Mixing of drug and dissolution media
C. Deaggregation of the drug powder.
D. All of the above.

50. It could be expected the drug release from soft gelatin will be more than hard gelatin. That is may be due to:

A. The colouring agent used.
B. Gelatin particle size used.
C. The plasticizer added to soft one
D. None of the above

51. Tablets are characterized by:
A. Can contain small amount of liquid B. Not suitable for patient undergoing radiotherapy
C. Tamperproof D. All of them

52. Lisinopril is best formulated with:
A. Lactose B. Anhydrous lactose C. Spray dried lactose D. All of them

53. Optimum and uniform particle size distribution will affect except:
A. Disintegration time B. Ingredient compatibility
C. Drying rate D. Stability

54. Direct compression of tablet is suitable for:
A. Material with low cohesive forces B. Plastic material
C. Elastic material D. Non of them

55. Glidants can be used with the following except:
A. Direct compression B. Slugging C. Wet granulation D. Non of them

56. Problems to be avoided during direct compression:
A. Discoloration B. Stratification C. Static charge D. All of them

57. Dry granulation is suitable for:
A. Aspirin B. Thermo-labile materials
C. Materials with insufficient cohesive properties D. All of them

58. Roller compactor will produce:
A. Dry powder B. Wet granules C. Dry granules D. Non of them

59. Wet granules are characterized by:
A. Over wetting results in soft granules B. Under wetting results in hard granules
C. Lubricants or glidants are added after granulation
D. The dry mass is forced through a 6 or 8 mesh

60. Air permeability method is used for determination of:
A. Particle size B. Surface area C. Density D. Particle shape

61. Sodium chloride tablet is characterized by:
A. Prepared by direct compression B. 43 angle of repose
C. Low cohesive proprieties D. All of them

62. All the following are granulation properties except:
A. Friability B. Surface area C. Bulk density D. Content uniformity

63. Cam tracks function is:
A. Hold and feed granulation B. Define the size and shape of the tablet.
C. Guide the movement of the punches. D. All of them

64. Tablet manufacture contains two filling steps in:
A. Ring shaped tablet B. Cored tablet C. sublingual tablet D. Normal tablet

65. Factors affecting flow properties are:
A. Frictional forces B. Surface tension forces C. Electrostatic forces D. All of them

66. Rotary press machine composed of:
A. Feed frame B. Pull up cam C. All of them D. Non of them

67. Multiple compressed tablets are exemplified by:
A. Colonic tablet B. Gastro retentive tablet C. Inlay tablet D. Dental cone

68. Admixture of phenylephedrin HCl and ascorbic acid with paracetamol is best formulated as:
A. Layered tablet B. Floated tablet C. Dispersible tablet D. Non of them

69. Multi-layered tablets are characterized by:
A. Different feed frame
B. Dust extraction is essential
C. Exposed to pre-compression process
D. All of them

70. Compression coated tablets characterized by the following except:
A. Hardly compressed tablets
B. Contain enteric coated core tablets
C. Support delayed release
D. Visible core

71. Modified release tablets are characterized by:
A. Release the medicament rapidly for long time duration after administration of a single tablet.
B. Improve patient's compliance as the dosage frequency is increased
C. Side effects and toxicities are reduced
D. All of them

72. Ringcap tablets are characterized by except:
A. Constant release rate
B. Ring thickness moderate the release rate
C. Coated with a series of rings
D. Rapid drug release

73. Matrix technology for tablet is characterized by:
A. Zero order drug release
B. Exemplified with HPMC matrix
C. Decreased surface area with reduction in drug concentration
D. Non of them

74. Ion exchange as a release rate limiting depends on:
A. Ionic environment of resin
B. pH
C. Enzyme on absorption site.
D. All of them

75. Osmotic pressure as a release rate limiting is characterized:
A. Permeable membrane
B. Zero order release rate above saturation
C. Zero order release rate below saturation
D. Both A and B

76. Delayed action tablets are suitable for:
A. Aspirin
B. Erythromycin.
C. Intestinal vermifuge.
D. All of them

77. Aspirin caplets:
A. Released in the stomach
B. Affected by esterases and bile salts
C. Film coated
D. All of them

78. Ciprofloxacion tablets are best formulated as:
A. Gastro-retentive tablet
B. Implants
C. Colonic tablet
D. Non of them

79. Colonic tablets mechanisms are:
A. pH sensitive polymer e.g., polycarbophils
B. Biodegradable polymers that are sensitive to colonic bacteria.
C. Bioadhesive polymers e.g., Eudragit®S10
D. All of them

80. Antacid tablets are characterized by:
A. Taken at any time with or without water.
B. Mannitol used as A.I.
C. Chewable
D. All of them

81. Troches are characterized by:
A. Flat faced of about 8 mm diameter
B. Produced by candy molding
C. Gelatin solution imparts smooth taste.
D. Produce local only

82. Rapid decompression results in:
A. Capping
B. Sticking
C. Mottling
D. All of them

83. To overcome lamination:
A. Precompression
B. Rapid tableting
C. Using curved punches
D. All of the

84. Picking is caused by:
A. Punch tips engraving
B. Granular material is improperly wetted
C. Both A and B
D. Non of them

85. Weight variation in tablets is due to:
A. Arching or bridging B. Punch variation C. Rat holling D. All of them
86. Dispersible tablets are characterized by all the following except:
A. Disintegrate rapidly in water forming clear solution B. Exemplified by ibuprofen.
C. Disperse in the mouth to be swallowed without the aid of water. D. Fast onset of action
87. Sublingual tablets are characterized by:
A. Potentiate 1st pass effect B. Lightly compressed to keep them hard
C. Easily dissolved in mouth D. Exemplified by isoprinosine sulphate (vasodilator)
88. All the following are soluble tablet diluent except:
A. Avicel B. Lactose C. Spray dried lactose D. Mannitol
89. Lactose is characterized by:
A. Directly compressible B. Good flow properties.
C. Hardness increases on storage. D. All of them
90. Sta-Rx 1500 can be used as:
A. Diluent B. Binder C. Disintegrant D. All of them
91. PH 101 is characterized by:
A. Direct compression B. granular form C. water soluble D. All of them
92. All the following are superdisintegrants except:
A. Crosscarmellose B. Co_2 C. Ac- Di-Sol D. Sodium starch glycolate
93. Glidants and lubricants are characterized by:
A. Glidants promote the flow of granules to the die
B. Lubricants exemplified with magnesium stearate
C. Glidants exemplified with talc. D. All of them
94. The sub coating step involves the following except:
A. Done by adding bulky agent as $caco_3$ B. Gum is utilized in this step
C. CAP is added to the gum solution D. Round off tablet end
95. Film coating is characterized by:
A. Reduction in coat time and coast B. No increase in tablet weight
C. Diethyl phthalate overcome brittleness D. All of them
96. All the following are enteric coating polymers except:
A. Eudragits B. Cellulose acetate phthalate. C. Diethyl phthalate D. Polyvinyl acetate phthalate
97. Chipping problem of tablet coating is:
A. Dented film B. Film haziness C. Dull coating D. Film detachment
98. The tablet hardness test failed if it is:
A. 8 Kg B. 6 Kg C. 9 Kg D. Non of them
99. For attrition resistance test the following are true except:
A. No weight loss at all B. Twenty five RPM for 4 min is required
C. Loss must be less than 1% D. Tablet dropping through a distance of 6 inches
100. For weight uniformity test (BP):
A. Tablets weighing 200 mg, not more than 2 deviate by 7.5%
B. Tablets weighing 300 mg, not more than 2 deviate by 10%
C. Forty mg tablets, not more than 3, deviate by 5% D. All of them