
	TANTA UNIVERSITY FACULTY OF PHARMACY DEPARTMENT OF PHARMACOGNOSY			
	FINAL EXAM FOR FIRST YEAR STUDENTS			
COURSE TITLE:	Pharmacognosy		COURSE CODE: 2135	
DATE:	29/5/2019	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 120 MINUTES

This exam is composed of two parts in 14 pages

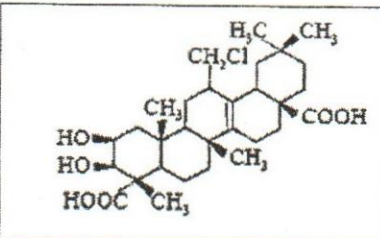
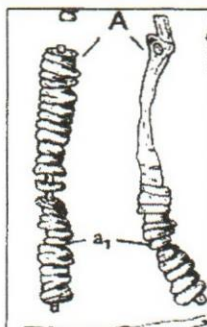
Part (I): Subterranean drugs (60 points, 50 minutes)


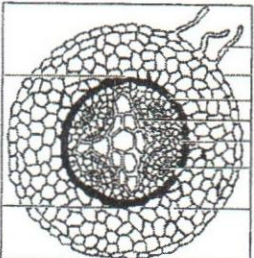
Part (II): Cultivation, preparation and quality control of herbal drugs (90 points, 70 minutes)

Please use only blue pen and select only one answer (100 MCQs) then mark your choice in the Answer Sheet at page 14

Part (I) Subterranean drugs

(60 points, 50 minutes)

<p>1-We could use rhubarb as purgative:</p> <p>a-for more than a month b-at very low dose c-followed by sedative effect d-for treatment of acute condition only e-as bulk forming fibers</p>	<p>2-Glabridin and liquiritin could be used as:</p> <p>a-anti-aging b-anti-cancer c-skin whitening drugs d-anti-inflammatory e-demulcent</p>
<p>3-This compound is formed from hydrolysis of:</p> <p>a-gentiopicroin b-senegin c-senegenin d-columbin e-glycyrrhizin</p> <div style="text-align: center;">  </div>	<p>4-Panaxans arefound in</p> <p>a-flavonoids, liquorice b-saponins, senega c-alkaloids, rauwolfia d-polysaccharides, ginseng e-polysaccharides, dandelion</p>
<p>5-Deoxyrhaponticin is found in:</p> <p>a-<i>Polygala senega</i> b-<i>Rheum palmatum</i> c-<i>Rheum rhaponticum</i> d-American podophyllum e-Indian podophyllum</p>	<p>6-This root contains:</p> <p>a-aconitine b-palmatine c-isoliquiritin d-cephaeline more than emetine e-emetine more than cephaeline</p> <div style="text-align: center;">  </div>

<p>7-This trichome is found in: a-rootstalks of senega b-rhizomes of filix-mas c-senega roots d-ginger rhizomes e-rootstalks of rhubarb</p>	<p>8-Couch grass and marshmallow have: a-soothing effect for mild irritation b-skin whitening effect c-analgesic effect d-hypertensive effect e-CNS depressing effect</p>
<p>9-Cathartic colon & melanosis coli are resulted from: a-long term use of nicotine b-long term use of anthraquinones laxatives c-excessive use of liquorice d-overdose of emodin e-high dose of Orizaba jalap</p>	<p>10-This picture is for: a-rhubarb leaves, rhizome & roots b-dandelion leaves c-filix-mas frond only d-filix-mas frond base & rhizome e-filix-mas frond, rhizome & roots</p> 
<p>11-The root tea of this plant is the best choice to improve liver functions: a-liquorice c-podophyllum e-calumba</p>	<p>12-Sclereids of gives green color with H₂SO₄ : a-calumba c-podophyllum e-senega</p>
<p>13-Type of vascular bundle in this T.S. is: a-collateral as in dicot rhizomes b-concentric c-radial as in dicot roots d-bicollateral e-radial as in dicot rhizomes</p> 	<p>14-Reserpine & protoveratrine could be used as: a-hypotensive drugs b-emollient drugs c-hepatoprotective d-cholagogue e-expectorant</p>
<p>15-This plant is used with elm bark to heal ulcers: a-turmeric c-ginger e-calumba</p>	<p>16-The difference between stem and root tubers is: a-only root has stomata b-buds are found in stem only c-scaly leaves could be seen in roots d-chlorophyll is present in stem e-trichomes are found in roots</p>
<p>17-Piliferous layer has no.... & found in..... a-stomata, cork cells b-intercellular spaces, roots c-suberin, wood d-trichomes, rhizomes e-fibers, frond base</p>	<p>18-Which of the following could be for corm: a-It is adventitious roots b-It contains a lot of reserve food c-It is reduced to a small disk d-It is erect short subterranean stem e-It contains fleshy scales</p>

<p>19-Concerning Russian liquorice: a-It has sweet taste without any bitterness b-It is smaller and thinner than Spanish type c-It is more fibrous d-It has more saponins e-It is more safe than Persian type</p>	<p>20-Colchicine has this effect: a-inhibits mitotic division so has anti-tumor effect b-anti-viral c-anti-rheumatic d-antiseptic in skin wound e-both a & c</p>
<p>21-Conserning starch granules: a-They are found in gentian roots b-Tubers of senega contains a lot of them c-They cause the hardness of ginger d-They have eccentric hilum in turmeric e-They cause the characteristic odor of gentian</p>	<p>22-Concerning Jalap root: a-the ether insoluble part of Vera Cruz jalap resin is jalapin b-scammnin is completely ether insoluble c-it has emetic effect d-Tampico jalap shows more lenticels e-both a & d</p>
<p>23-Red ginseng is better than white ginseng because it: a-has primary cortex b-has more lenticels c-has outer bark which also contains active principles d-is steamed before drying to improve the taste e-has better expectorant effect</p>	<p>24-Gentainose is composed of: a-glucose and rhamnose b-glucose and fructose c-glucose and fucose d-sucrose and galactose e-both a & d</p>
<p>25-Yellow gentian contains: a-curcumin as a coloring matter b-saponin glycoside c-inulin d-glycosidal resin e-gentisin which gives it the yellow color</p>	<p>26-To treat amoebic dysentery we could use: a-cephaeline hydrochloride b-columbin c-hydrastine sulphate d-emetine hydrochloride e-reserpine</p>
<p>27-We treat cardiac arrhythmia, extremities paralysis & hypertension due to high liquorice intake by: a-digoxin & continue liquorice intake b-spironolactone & stop liquorice intake c-corticosteroid drugs d-Na⁺ supplementation & continue liquorice intake e-taking less amount of liquorice</p>	<p>28-gentiopierin & palmarin could be used in: a-anorexia b-mental disorder c-dyspepsia with tannins intake d-flatulence & liver disorder e-anxiety & depression</p>

<p>29-Idioblast of acicular crystals of calcium oxalate is found in: a-rootstalks of senega b-outer bark of ginger c- ground tissue of filix-mas d-tubers of Cartagena ipecacuanha e- roots of Rio ipecacuanha</p>	<p>30-We use theof <i>Zingiber officinale</i>: a-roots & rhizomes b-only roots deprived from phloem c- stolons deprived from roots d-bleached rhizomes with outer bark e- only rhizomes deprived from cork cells</p>
<p>31-Filix-mas rhizomes should be used: a-as soon as possible after drying b-after fermentation c-after one year d-with castor oil e-both a & d</p>	<p>32-Dandelion roots contains: a-jateorhizine b-gentiobiose c-taraxacin & taraxerol terpenes d-protoveratrine e-mucilage</p>
<p>33-This tonic is better used with cardamom or orange peels: a-calumba b-gentian c-rhubarb d-marshmallow e-hydrastis</p>	<p>34-which of the following has anti-tumor effect: a-colchicine & berberine b-shagaols & podophyllotoxin c-teniposide & tritacin d-etoposide & panaxans e-gingerol & colchicine</p>
<p>35-Gritty taste of rhubarb powder is due to: a-crystal sheath b-phloem fibers c-starspots d-clusters of calcium oxalate e-sclereids cells</p>	<p>36-Cartagena ipecacuanha is: a-bigger, thicker & safer than Rio type b-with smaller starch granules than Rio type c-with sweeter taste than Rio type d-fermented to have more characteristic odor e-used fresh only</p>
<p>37-Filmarone is: a-hydrolyzed to aspidinol & filicic acid without losing its vermifuge effect b-not affected at all by time c- used as an emetic drug d- a phloroglucinol derivative found in <i>Rheum rhaponticum</i> e- an ester which could be hydrolyzed</p>	<p>38-Starspots are found at: a-cork cells of <i>Rheum palmatum</i> b-periphery of pith in peeled rhubarb c-the center of pith only d-xylem area of liquorice e-cortex area only in senega</p>
<p>39-Filix-mas is a member of with a-Ptridophtae, well defined vascular bundles b-Thallophytae, no organs differentiation c-Ptridophytae, dictyostele of about 9 meristeles d-Angiosperm, collateral vascular bundles e-Gymnosperm, tetra-arch xylem</p>	<p>40-American podophyllum contains: a-teniposide b-only podophyllotoxin c-alpha & beta peltatins d-acidic resin e-oleo-resin in oil cells</p>

Part II; Collection, Preparation and Quality control of Herbal drugs:
(90 points, 70 minute)

- 41- Cultivation of medicinal plants provides many advantages over wild plant.**
- a- Cultivation affords a valuable method of controlling the drug purity.
 - b- It conserves the genetic diversity of wild populations.
 - c- It assures a governmental control for certain cultivations e.g. opium.
 - d- It provides a regular and constant sufficient drug supply for market.
 - e- All of the above.
- 42- is a technique applied as an alternative to plant cultivation , which carried out under controlled aseptic conditions. It assures drugs good quality and strain's purity.**
- a- Development of bulbs.
 - b- Inoculation as in case of ergot
 - c- Tissue Culture
 - d- Grafting
 - e- Budding
- 43- Drying is an important step in drug preparation for commercial market:**
- a- It prevents enzymatic or hydrolytic reactions that might alter the chemical composition of the drug.
 - b- It facilitates drugs grinding and milling.
 - c- It enhances molding and action of bacteria
 - d- It facilitates packing, storage and transport of the drugs.
 - e- All except c
- 44- Determination of moisture content of herbal drugs can be done by:**
- a- Gravimetric method based on the loss on drying.
 - b- A number of quantitative chemical tests, e.g. acid and acetyl value.
 - c- Chemical methods.
 - d- Separation and measurement of moisture.
 - e- All except b
- 45-is the process of removal of extraneous matter from drugs such as sand, dirt and unwanted parts of plant.**
- a- Garbling
 - b- Admixture
 - c- Curing
 - d- Calibration
 - e- Cleaning
- 46- Factors affecting plant growth are:**
- a- Plant hormones
 - b- Plant nutrients
 - c- Environmental factor
 - d- The plant itself
 - e- All of the above
- 47- Why environmental factors have a great effect on the growth of senna leaves?**
- a- Rainy weather hastens the collection of senna leaves.
 - b- Short term drought increases the concentration of sennosides A and B.
 - c- Continuous rain can lead to a loss of water soluble substances from senna
 - d- Both b and c
 - e- None of the above

- 48-is an important environmental factor, which cause the increase of belladonna leaf content during its growth:
- a- Full sunshine
 - b- Altitude
 - c- Shade
 - d- Selection of good strain ripped seeds
 - e- None of the above
- 49- Why organic manures affect the plant growth?
- a- It blocks soil particles together
 - b- It considers as a source of some nutrient elements, e.g. nitrogen.
 - c- It decreases the soil's water capacity.
 - d- It is a good source of useful enzymes.
 - e- All except c
- 50- In propagation of plants by grafting the rooted plant is called, while the portion cut off is graft.
- a- Bud
 - b- Bulbs
 - c- Corm
 - d- Tubers
 - e- Stock
- 51- Nitrogen, phosphorus and potassium are
- a- Active elements needed at little amounts to increase the plant growth.
 - b- Macro-elements type plant nutrients.
 - c- Main nutrients found in the seed coat in sufficient amount for growth
 - d- Inactive elements
 - e- Micro-elements type plant nutrients.
- 52- Abscisic acid is
- a- A natural growth inhibitor present in plants.
 - b- Named according to its role in abscission proses of plant leaves.
 - c- A colorless gas, where its production increased during leaf fall.
 - d- A hormone that regulates the pattern of organ production.
 - e- Both a and b
- 53- General rules for the collection of drug organs include:
- a- Roots, rhizomes and bulbs should be collected at the end of the vegetative growth when their tissues are fully stored with reserve food.
 - b- Leaves are collected before maturation of flowers and fruits.
 - c- Flower should be collected expanded.
 - d- Barks are usually collected after periods of rain
 - e- All except c
- 54-is a physicochemical factor that affect deterioration of herbal drug during its storage:
- a- Moulds
 - b- Rodents
 - c- Oxygen
 - d- Bacteria
 - e- Insects
- 55- Prepared drugs should be kept in moisture - proof, air tight, light-proof containers at low temperature.
- a- True
 - b- False.

- 56- Several changes may occur on drugs during its drying which include:**
- a- Remarkable decreases in size and weight.
 - b- Softener of the texture of some drug's organ.
 - c- Color becomes darker on drying.
 - d- Both a and c
 - e- Both b and c
- 57- Curing may be defined as:**
- a- A process of fermentation or sweating applied to certain drugs before drying where certain changes of the active constituents take place, e.g., *Vanilla*.
 - b- Drugs brushing from sands and clay before drying.
 - c- A controlled process of herbal drugs drying by chambers.
 - d- Liming process of certain drugs
 - e- None of the above.
- 58- Fruits are collected**
- a- In full size, but before ripening
 - b- unripe
 - c- In full size, but after ripening
 - d- At dry climate
 - e- All except b
- 59- General Rules for preservation of drugs during its storage include:**
- a- Drugs containing volatile active constituents should be stored in cool places and kept in air tight tin -box, with a pressed lid.
 - b- Drugs should be stored in moisture - proof, air tight, light-proof containers at low temperature.
 - c- It is approved to store drugs in wooden cases or in paper bags.
 - d- All except c
 - e- All of the above.
- 60- The following method is the most commonly used for controlling the insects attach during storage of crude drugs.**
- a- Fumigation by volatile insecticidal agents in closed areas.
 - b- Exposure to alternate periods of low and high temperatures.
 - c- Exposing the drug to 60- 65 °C for killing insect eggs.
 - d- Liming of certain drugs.
 - e- Low temperature storage temperature.
- 61- Organoleptic examination used for standardization & quality evaluation of herbal drugs includes:**
- a- Microscopical examination of powdered drugs.
 - b- Macroscopical and sensory characters in case of whole drugs.
 - c- Methods of determination of moisture content of herbal drugs.
 - d- Certain standards for evaluation of volatile and fixed oils drugs
 - e- Both a and b
- 62- Which of the following terms are considered as toxic residues in standardization of herbal drugs?**
- a- Pesticides
 - b- Radioactive impurities
 - c- Xylene
 - d- Aflatoxins
 - e- All except c

70- Sophistication is the addition of an inferior material to any article with intention to defraud.

- a- True. b- False

71- Admixture may be defined as.....

- a- The deterioration of one article through accident and or ignorance.
 b- The addition of worthless powdered material.
 c- The presence of adventitious matters naturally present with the drug.
 d- The substitution of one article to exhausted drug.
 e- None of the above.

72-is the impairment of drug quality by abstraction, destruction of a valuable constituent through distillation, aging, moisture, heat, fungi and insects.

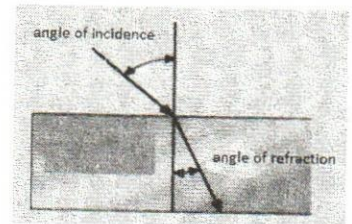
- a- Deterioration b- Drying c- Inferiority d- Curing e- Substitution

73-is the residue obtained after boiling the total ash with dilute HCl and igniting the remaining insoluble matter.

- a- Acid-insoluble ash; it is calculated by the difference in weight between the total ash and the residue after treatment of the total ash with acid.
 b- Acid-insoluble ash; it consists mainly of sand and siliceous earth.
 c- Acid soluble ash.
 d- Water-soluble ash e- Both a and b.

74- The following figure represents.....

- a- Refractive index
 b- Light reflection.
 c- The optical rotation of a liquid drug.
 d- Camera Lucida
 e- None of the above.



75- Vein – islet number is defined as the average number of palisade cells beneath each epidermal cell:

- a- True. b- False

76- According to the EP the allowed maximum detectable number of *Escherichia coli* per gram sample at the medicinal plant materials is:

- a- Zero b- Up to 10^5 mg c- 10^3 mg d- 10^9 ng e- Up to 10^9 mg

77- determinations are used for quality control of powdered ginger:

- a- Bitterness value b- Tannin content c- Crude fiber
 d- Starch e- Both c and d

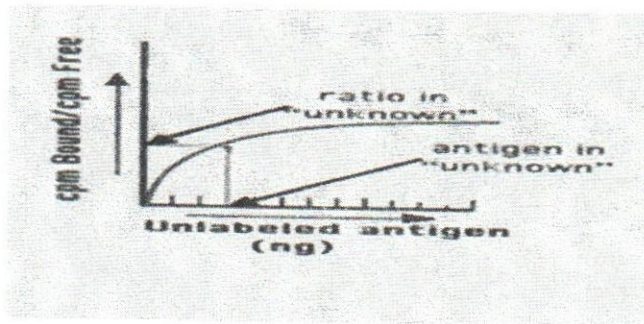
78- Which of the following values is used for standardization & quality evaluation of Galls powder?

- a- The refractive index b- Saponification value
 a- Iodine value d- acid value e- None of the above.

- 79- Adding limestone to asafetida is considered astype of adulteration.
- a- Addition of worthless heavy materials
 - b- Admixture
 - c- Deterioration
 - d- Spoilage
 - e- Curing

- 80- Stomatal index is more reliable than stomatal number in distinguish between allied herbal drug.
- a- True
 - b- False.

- 81- Regarding to the RIA assay, which of the following sentences is false:
- a- RIA assay is an antigen antibody interaction
 - b- RIA is a quantitative assay used for quality control of certain herbal drugs
 - c- The following figure represents the resultant calibration curve.



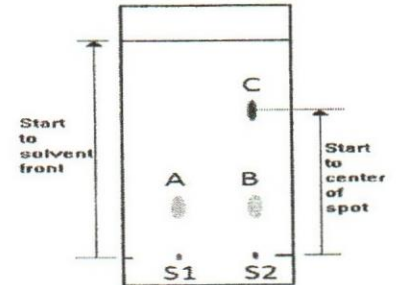
- d- A sample containing a higher concentration of the unknown antigen will have a lower CPM
 - e- None of the above
- 82- Swelling index is defined in the BP as the volume in milliliters occupied by 1 gram of a drug, including any adhering mucilage, after it has swollen in an aqueous liquid for 4 h.
- a- True.
 - b- False.
- 83- R_F value at TLC chromatogram is defined as:
- a- Rate of flow; the distance moved by solvent divided by distance moved by solute front
 - b- Rate of flow; the distance moved by solute divided by distance moved by solvent front
 - c- Rate of reflection
 - d- Rate of refraction
 - e- None of the above
- 84- The bitterness value of herbal drug is determined by comparison with a quinine hydrochloride solution as a standard.
- a- Organoleptically
 - b- Chemically
 - c- Biologically
 - d- Amperometrically
 - e- None of the above

85-are apparatus used for microscopical measurements of herbal drugs.

- a- Micrometer
- b- Camera lucida
- c- Both a and b
- d- Refractometers
- e- Gas chromatography

86- The following figure represents TLC analysis of two samples S1 and S2, we can concluded that:

- a- Sample S1 is a pure drug, while sample S2 is a mixture.
- b- Compound C is less polar than compound A.
- c- Compound B has lower R_f value compared to compound C.
- d- Compound A and B are identical; with the same R_f value and polarity.
- e- All of the above.



87- GC is an important method for moisture determination because

- a- This method is specific as each type of compound has its own R_f value
- b- The amount of water in the sample can be calculated through the area of the peak at the chromatogram.
- c- This method is more convenient for volatile samples.
- d- Each type of compound has certain R_t value at GC chromatogram.
- e- All except a

88- Optical rotation of liquid samples depends on:

- a- Temperature
- b- The thickness of the layer examined
- c- Nature of the light employed
- d- Stability of the examined compound
- e- All except d

89- Which of the following apparatuses is used during the gravimetric determination of moisture content of powdered Digitalis

- a- Soxhlet
- b- Camera lucida
- c- Micrometer
- d- Desiccator
- e- High temperature oven

90- Eyepiece micrometer is used to calibrate the stage micrometer.

- a- True.
- b- False.

91- The Soxhlet extractor is used for:

- a- Quantitative determination of volatile oil in herbal drugs.
- b- Drug extraction by maceration.
- c- Continuous drug extraction.
- d- Qualitative determination of volatile oil in herbal drugs.
- e- Both b and c

92- Why the presence of aflatoxins in plant material can be hazardous to health if absorbed even in very small amounts

- a- It's a toxic plant product.
- b- It's a carcinogenic agent produced by microbial contamination of the herbal drugs during storage.
- c- It's a type of pesticide applied to plant during cultivation.
- d- It's a toxic plant hormone.
- e- None of the above

93- The stomatal index value can be calculated by the equation;

$I = S \times 100 / E + S$; this sentence is true if:

- a- S is number of stomata per unite area
- b- E is the number of ordinary epidermal cells in the same unites area.
- c- E is the number of vein – islets per mm^2
- d- Both a and b
- e- Both a and c

94- are microscopical numerical values used for standardization of herbal drug:

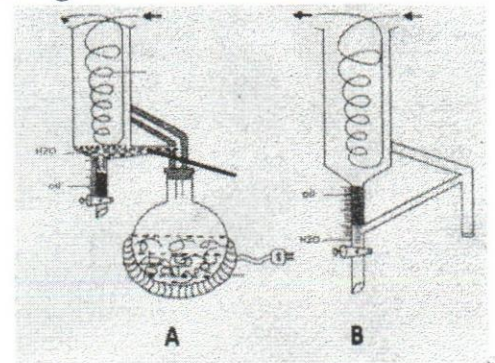
- a- Micrometer
- b- Vein – islet number
- c- Stomatal number
- d- Veinlet termination number
- e- All except a

95- Spectroscopic method can be used in quantitative determination of drug's

- a- Tannin content
- b- Bitterness value
- c- Moisture content
- d- Swelling index
- e- None of the above.

96- According to figures A and B, which of the following sentence is true:

- a- Figure A represented the distillation of volatile oil by solvent denser than water.
- b- Figure B represented the distillation of volatile oil by solvent lighter than water.
- c- This method is employed to separate and detect toxic residues at herbal drugs
- d- The disadvantage of this method is the requirement of large quantities of the sample.
- e- All except c.



97-is used for quantitative microscopical measurement of many herbal drugs.

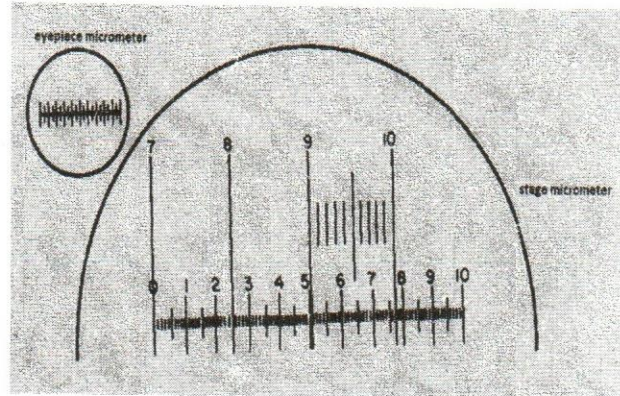
- a- Pollen grain
- b- CaOx
- c- Talc
- d- Lycopodium
- e- None of the above

98-are qualitative and quantitative standards applicable to volatile and fixed oils:

- a- Continuous drug extraction.
- b- Quantitative chemical tests
- c- Optical rotation
- d- Both a and b
- e- All of the above

- 99- According to the following figure, calculate the length of fiber if you know that it occupied 10 eyepiece division under the 4X lens:
 (N.B. one stage micrometer = 10 μm)

- a- 39 μm
- b- 3.5 mm
- c- 390 μm
- d- 524 μm
- e- None of the above.



- 100-The optical rotation of a liquid is the angle through which the plane of polarization of light is rotated when the polarized light is passed through a sample of the liquid.

- a- True
- b- False

Answer sheet

No.	a	b	c	d	e	No.	a	b	c	d	e
1						51					
2						52					
3						53					
4						54					
5						55					
6						56					
7						57					
8						58					
9						59					
10						60					
11						61					
12						62					
13						63					
14						64					
15						65					
16						66					
17						67					
18						68					
19						69					
20						70					
21						71					
22						72					
23						73					
24						74					
25						75					
26						76					
27						77					
28						78					
29						79					
30						80					
31						81					
32						82					
33						83					
34						84					
35						85					
36						86					
37						87					
38						88					
39						89					
40						90					
41						91					
42						92					
43						93					
44						94					
45						95					
46						96					
47						97					
48						98					
49						99					
50						100					

Good Luck