TANTA UNIVERSITY
FACULTY OF PHARMACY
DEPARTMENT OF PHARMACOGNOSY

FINAL EXAM FOR CLINICAL PHARMACY-3RD LEVEL

COURSE TITLE:	Pyhtochemistry -2		COURSE CODE:PG 505
DATE: 24/1/2016	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

PART I: Alkaloids **20 points** **50 min**

Question A:

Draw the chemical structure of the following alkaloids: **8 points** **20 min**

1a-Cathinone

2a-Anatabine

3a-Scopine

4a-Thebaine

5a-Arecaine

6a-An indoline alkaloid

7a-Swainsonine

8a-Theophylline

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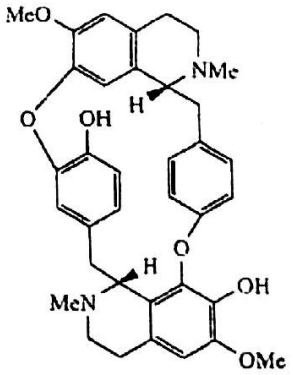
stion B: Identify the names of the following structures, answers should be listed in ble I: **5 points 10 min**



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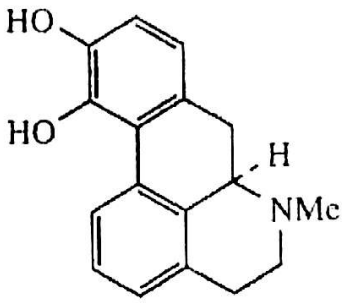

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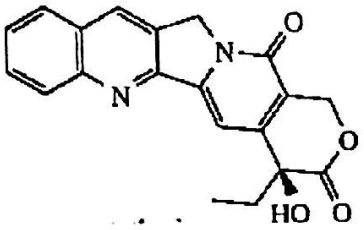

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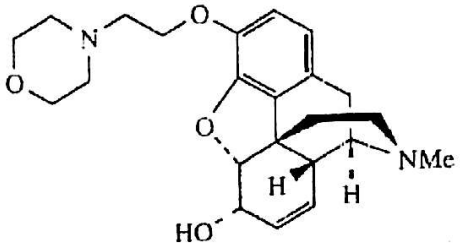

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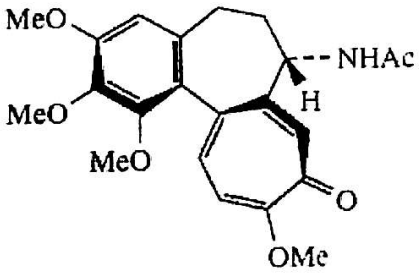

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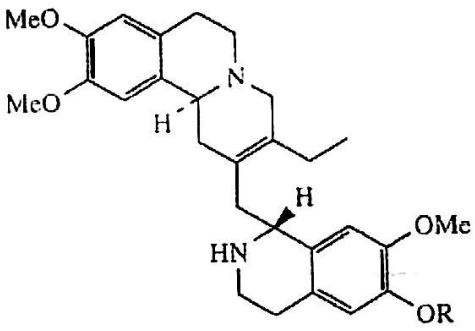

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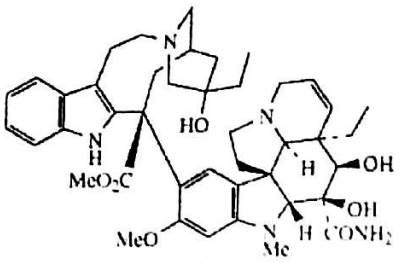

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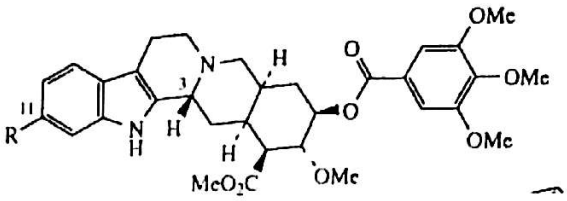

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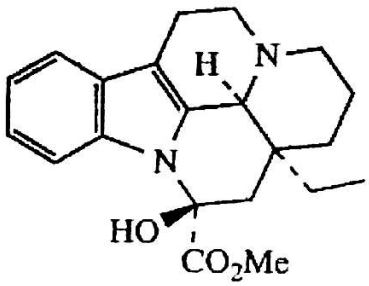

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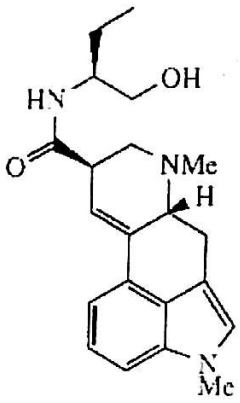

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Table I

No.	Name
1b	
2b	
3b	
4b	
5b	
6b	
7b	
8b	
9b	
10b	

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stion C: Match the number of the following statements with a correct swer in table 2 by writing the number of the statement in front of the orrect answer:

7 points **20 min**

1-Biological effect of compound 1a.
2-Precursor (s) of alkaloid 2a
3-Production of 3a.
4-Preparation of codeine from compound 4a.
5-A biosynthetic reaction involved in the biosynthesis of compound 1b.
6- Botanical source of alkaloid 5a.
7-An alkali used in preparation of alkaloid 6a.
8-Chemical class of alkaloid 7a.
9-Separation of compound 8a from theobromine.
10-Effects of compound 2b.
11-Chemical and biosynthetic class of compound 3b.
12-Assay of compound 5b.
13-Therapeutic advantage of compound 6b.
14-One use and source of compound 8b.
15-A contraindication of compound 9b.
16-Chemical class of compound 10b.
17-Separation of a mixture of hyoscine and hyoscyamine.
18-Intermediates in the biosynthesis of alkaloids 5b and 9b.
19-Chemical test for tropic acid esters
20-Use of compound 7b.
21-Alkali used in preparation of volatile liquid alkaloids.
22- Morpholinoethyl morphine
23-Recovery of alkaloids from complex with Dragenddorf's reagent.
24-A glyoxalin alkaloid.
25-One requirement for the activity of tropane alkaloids.
26-A risk posed by cocaine use by alcoholics
27-Separation of a mixture of Quinine and cinchonine
28-A terpenoid tetrahydroisoquinoline alkaloid effective against HIV.

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Table 2

Statement	Answer number
Sodium carbonate	
Hypotensive, *Rauwolfia canescence* (Apocyanaceae)	
Compound 4b	
Pilocarpine	
Vitalis	
CNS stimulant amphetamine like effect	
Ester group	
Use of ammonium hydroxide	
Readily excreted (non cumulative)	
Use of sodium hydroxide	
Trans esterification by liver esterases & formation of highly toxic derivative	
Phenolic oxidative coupling of R & S N-methyl coclaurine	
Cerebral tumor with intracranial hypertension	
Nicotinic acid	
Potent as anti parkinsonism agent, emetic	
Reaction with sodium potassium tartarate	
Acid catalyzed hydrolysis and reduction of the enol ether	
Treatment of acute lymphoid leukemia in children	
O-methyl psychotrine	
Indolizidine	
Use of sodium bicarbonate and extraction with ether.	
Pyrroloquinoline; Terpenoid indole	
Use of $BaCO_3$ followed by alkalinization	
Autumnaline and strictosidine	
Enzyme hydrolysis of hyoscine	
Ergoline	
Colorimetric with $FeCl_3$	
Seeds of *Areca catechu,* family Arecaceae	

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PART II: Glycosides and Chromatography.....(30 points, 70 min.)

You are provided with 60 statements, please select only one correct answer by filling in the blank space corresponding to each of the statements in the enclosed answer sheet:

1- The decrease of capillary fragility of some flavonoids may be explained by inhibition of:
A- Aldose reductase
B- COX-1& COX-2
C- 5-Liopxygenase
D- cAMP phosphodiesterse
E- None of them

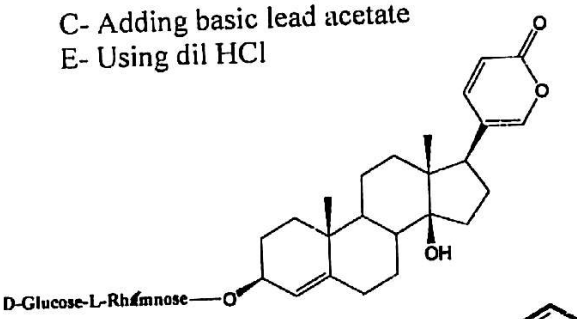
2- The plant glycosides which contain L-rhamnose are
A– α-glycosides
B- β-glycosides
C- OH on the anomeric carbon is replaced by an OR group
D- Both A & C
E- None of them

3- Some flavonoids have the following activities EXCEPT:
A-Anti-inflammatory activity
B-Radical scavenging activity
C- Decrease capillary fragility
D-Hemolytic activity
E-Enzyme inhibitors

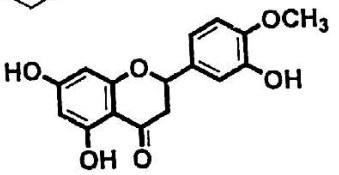
4- Stepwise hydrolysis of glycosidic sugars could be achieved by:
A- Acid hydrolysis
B- Alkali hydrolysis
C- Both A & B
D- Enzymatic hydrolysis
E- None of them

5- Extraction of glycosides from the plants could be achieved using the following conditions except:
A- Boiling with alcohol
B- Boiling with acetone
C- Adding basic lead acetate
D- Using petroleum ether
E- Using dil HCl

6- The opposite compound is
A- Scillaren A
B- Proscillaridin A
C- Occurs in *Digitalis lanata*
D- Occurs in toads
E- Both B and D



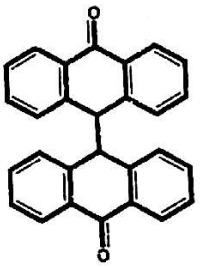
7- The opposite compound is
A-Belongs to flavanone
B-Occurs in onions
C-Flavone
D- Both A & B
E- None of them



8- Isoliquirtigenin is:
A- Found in licorice
B- Phytoestrogenic
C-Potent antitumor
D-Antioxidant
E- All of them

9- Quantification of flavonoids could be achieved using
A- Spectrophotometric methods
B- HPLC
C- UV shift reagents
D- Both A & B
E- All of them

10- Anthranol is
A- Reduced form of anthraquinones
B- Unstable
C- Both A and B
D- Oxidized form
E- None of them



11- The opposite compound is
A- Gave positive Bornträger's reaction
B- Occurs in dry senna
C- Formed after enzymatic reaction
D- Both B & C
E- None of them

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12- ..... can bind to the same receptors as estrogen.

A- Cyanidin chloride B- Taxifolin

C- Genistein D- Phytoestrogen E- Both C & D

13- A compound used to treat cardiac diseases and not absorbed when administered orally.

A-Compound (2) B- Compound (5) C- Compound (6) D-Both A & C E-None of them

14-.... is a primary glycoside occurs in Digitalis lanata.

A-Compound (2) B- Compound (5) C- Compound (6) D- Compound (10) E- None of them

15- ..... is a flavone inhibit the growth of human leukemia cells.

A-Compound (3) B- Compound (13) C- Compound (4) D- Compound (7) E- Compound (9)

16-..... has more antioxidant activity than quercetin.

A-Compound (1) B- Compound (3) C- Compound (9) D- Compound (13) E- None of them

17 -..... is sap pigment occurs in red fruits.

A-Compound (1) B- Compound (4) C- Compound (7) D- Compound (3) E- None of them

18-..... is non-steroidal phytoestrogens.

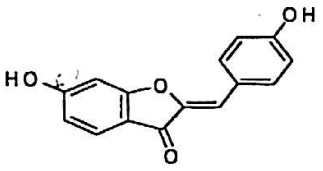
A-Compound (7) B- Compound (9) C- Compound (11) D- Compound (13) E- Compound (14)

19-..... is the chief constituent of Aloe.

A-Compound (12) B- Compound (8) C- Compound (14) D- Both A & B E- None of them

20- Compound (12) is:

A- Occurs in aloe B- Rheinoside A-B C- Rheinoside C-D D- Both A and B E- None of them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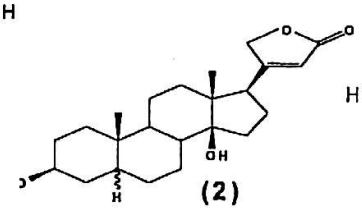
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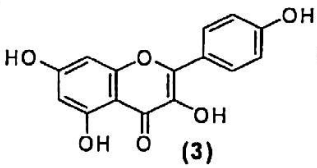
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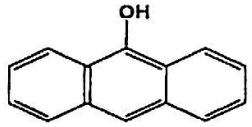
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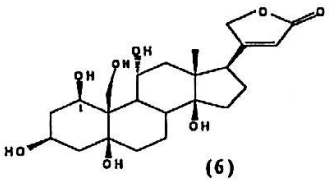
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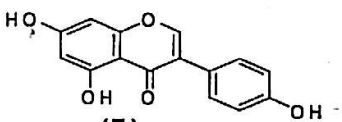
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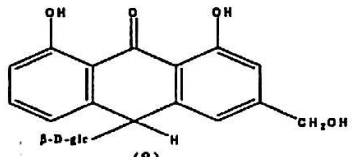
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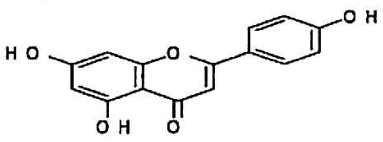
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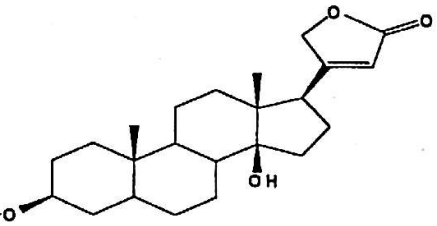

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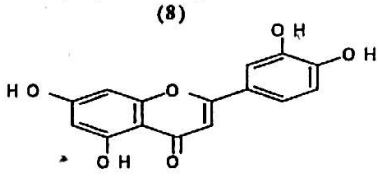
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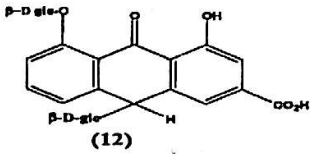
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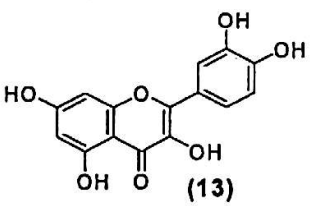
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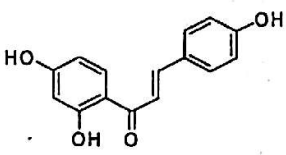
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21- Azaisoflavones are:

A- P-glycoprotein inhibitors B- Phytoestrogen C- Could prevent failures of chemotherapy
D- Both A and C E- All of them

22- Cardiac glycosides increase the force and speed of contraction of the heart via:

A- Positive inotropic B- Inhibition of Na/K atpase C- Both A and B
D- Negative chronotropic effect D- None of them

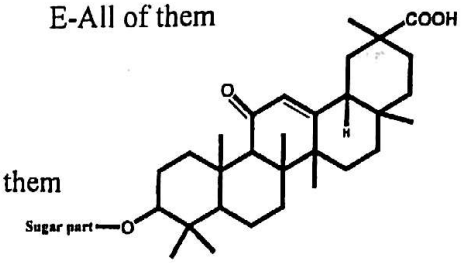
23-Vitexin is:

A- Neuroprotective B- Occurs in tea C- Hypoallergenic D- Both A and B E- None of them

24-Anthraquinone glycosides are

A- Pro-drugs B- Harsh compounds C-May cause colon ulceration
D- Both A & C E-All of them

25- The opposite compound is



A- Oleanoilc acid B- Occurs in ginseng
C- Occurs in licorice D- Both A &C E- None of them

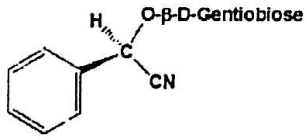
26- The cardiac activity of the glycoside is related to the

A- Polarity B- Glycone C- Glycoside D- Aglycone E- None of them

27- Quantitation of ouabainis depends on the color obtainedwith

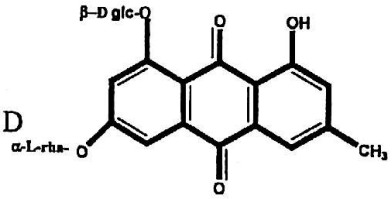
A- Keller-Kiliani reaction B- Kedde reagent C- Baljet reagent D- Both B and C
E- None of them

28- The opposite compound is



A-Useful in fibrotic kidney diseases B- Occurs in linseed
C-Occurs in *Cherry laurel* leaves D-Both A &C E- None of them

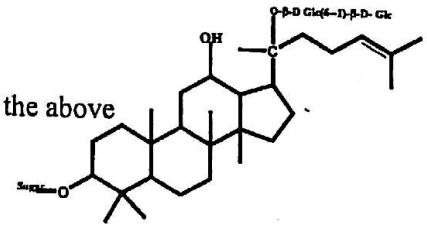
29- The opposite compound:



A- Monoside B-Frangulin A
C- Bioside D- Glucofranglin A E- Both C and D

30- The opposite compound is

A- Lanostanestriterpenoidalsaponins
B- Gives pink to red color with Liebermann reaction
C- Both A&B D- Occurs in Licorice E- All of the above



31- Homomethionine is the biosynthetic precursor of:

A- Sinigrin B-Sinalbin C- Linamarin D- Saponin E- None of them

32-..... is hydrolysed to D-glucose and saligenin by the enzyme emulsin.

A- Salicin B- Salicyl alcohol C-Populin D- All of them E-None of them

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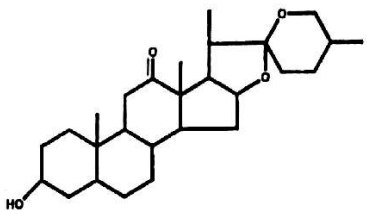
33- Glycyrrhetinic acid is

A- Aglycone of glycyrrhizin B- Anti-hepatotoxic activity
C- Both A and B D- Glycoside of glycyrrhizin E- All of them except A

34- The opposite compound:

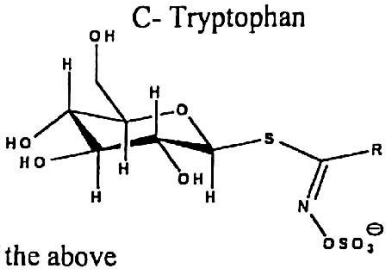


A- Could be used for production of steroidal hormones
B- Is useful for treating cough
C- Occurs in leaves of many Agave plants
D- Both A and C E- None of the above

35- Saponins could be arise biogenitically from

A- Tyrosin B- Homomethionine C- Tryptophan
D- All of the above E- None of the above

36- The opposite compound (R= Benzyl group) is



A- Yield BITC on hydrolysis
B- Occurs in ***Lepidium sativum***
C-Both A and B
D- Suppresses NO production E- None of the above

37- Neurotoxic effect of *Manihot esculenta* is due to its content of:

A- Linamarin B-Amygdalin C- Prunasin D- Both A and C E- Glucosinolates

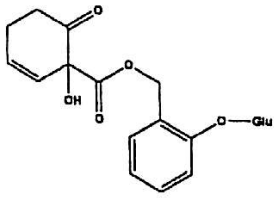
38- Hemolytic method could be used for:

A- Quantification of some saponins B- Characterization values of some saponins
C- Identification of some saponins D- All of them E- None of them

39- ..... is a cardiac glycoside which administered IV in emergency.

A- Ouabain B- Digitoxin C- k-Strophantidin D- Both A & C E- None of them

40- The opposite compound is:



A- Could be degraded to salicin B- Has anti-inflammatory effect
C- Could be considered as a prodrug
D- Both A and B E- All of them

41-The following techniques are based on adsorption chromatograph EXCEPT:

A- GSC B- TLC C- Affinity chromatography
D- Paper chromatography E- HPLC

42- The following techniques are based on partition chromatography EXCEPT :

A- Column chromatography B-Paper chromatography C- Affinity chromatography
D- HPLC E- DCCC

43-..... is an environment friendly technique for separation

A- Supercritical Fluid Chromatography B- Affinity chromatography
C- HPLC D- Electrophoresis E- None of them

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44- R_f Value is:

A- Constant for a particular compound under specified conditions

B- Variables at different mobile and stationary phases

C- Used to identify unknown compounds D- Both A and C E- All of them

45- The large No. of theoretical plates indicate:

A-Better separation B- Efficiency of the chromatographic process C- Length of the column

D- All of them E- None of them

46- Two-Dimensional PC is applied mainly for separation of....

A- Mixtures of amino acids B- Complex mixture C- Sugars mixture

D- All of the above E- None of them

47- Antimony trichloride in chloroform reagent is used mainly for detection of....

A- Steroids B- Some volatile oils C- Both A and B D- Amino acids E-Phenols

48- Preparative paper and thin layer chromatography are used mainly for:

A- Isolation of compounds B- Identification of compounds

C- Quantification of compounds D- All of them E- None of them

49- The label Silica gel GF indicates:

A- It contains fluorescent indicator B- It contains binder C- The spots appear dark

D- All of them E- Both A and C

50- The Problem of tailing in PC&TLC could be avoided by

A- Increase sample concentration B- Decrease sample concentration C- Adjust the pH

D- Both B and C E- Using authentic sample

51- Chromatotron is

A- Equivalent to chromatogram B- Used mainly for preparative work

C- Use the centrifugal force D- Both B and C E- None of them

52- The stationary phase in case of electrophoresis could be:

A- Polyacrylamide gel B- Buffered solid support C- Both A and B

D- Ion exchange resin E- None of them

53- ..... is used as a carrier to the stationary phase in partition Chromatography.

A- Cellulose Powder B- Kieselguhr C- Both A and B D- Alumina E- Silica gel

54- Normal phase column chromatography is used for separation of:

A- Non polar compounds B- Polar compound C- Alkaloids

D- Flavonoids E- All except A

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55- Octadecyl carbon chain stationary phase e.g ODS is used mainly for:

A- Normal phase column chromatography B- Reversed phase column chromatography

C- Flash Column chromatography D- Both B and C E- All of them

56- Very fine silica gel is used to increase the separation power in case of:

A- HPLC B- Flash column C- Classical column

D- All of them E- Both A and C

57- Regarding the mobile phase, good solvent system must produce R_f value:

A- Less than 0.6 B- 1.0 C- 0.9 D- 0.1 E- Both A and D

58- Regarding sample application, the wet method is applied in case of:

A- The sample is not soluble in the mobile phase

B- The sample is soluble in the mobile phase

C- In case of wet column backing

D- Both A and C

E- None of them

59- To improve the separation in chromatographic process, we have to follow the following conditions Except:

A- Reduce particle size

B- Use high pressure pumps

C- Use higher concentration of the sample

D- Use suitable adsorbent

E- Uniformly pack the column

60-In column chromatography, increasing the temperature may lead to:

A- Reduces the adsorption power of the stationary phase
B- Increase elution speed
C- Decrease in the efficiency of separation
D- All of them
E- None of them

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Answer Sheet

No	A	B	C	D	E	No	A	B	C	D	E
1						31					
2						32					
3						33					
4						34					
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29						59					
30						60					

Good Luck

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