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[NPTEL \(https://swayam.gov.in/explorer?ncCode=NPTEL\)](https://swayam.gov.in/explorer?ncCode=NPTEL) » [Quantitative Methods in Chemistry \(course\)](#)
[Announcements \(announcements\)](#)    [About the Course \(https://swayam.gov.in/nd1\\_noc20\\_cy02/preview\)](#)
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## Unit 14 - Week 11

### Course outline

How does an NPTEL online course work?

Week 0

MATLAB

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

## Assignment 11

The due date for submitting this assignment has passed. **Due on 2020-04-15, 23:59 IST.**  
As per our records you have not submitted this assignment.

1) In comparing High Performance Liquid Chromatography (HPLC) and Ultra Performance Liquid chromatography (UPLC), which of the following statement(s) is/are true?

- UPLC employs larger particles as stationary phase than HPLC
- The number of theoretical plates in UPLC is larger than in HPLC
- UPLC requires lower pump pressures than HPLC
- The plate height in UPLC is larger than that in HPLC
- Pressure drop across the UPLC columns is greater than those in HPLC columns

No, the answer is incorrect.

Score: 0

Accepted Answers:

*The number of theoretical plates in UPLC is larger than in HPLC*

*Pressure drop across the UPLC columns is greater than those in HPLC columns*

2) Comparing the binary pump and the quaternary pump, which of the following statement(s) is/are true? **1 point**

- Binary pump uses two pumps while quaternary pump uses a single pump
- A proportioning valve is used in quaternary pump
- A proportioning valve is used in the binary pump
- Binary pump offers lower dwell volume than the quaternary pump
- Quaternary pumps allow the use of up to 4 solvents simultaneously

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Binary pump uses two pumps while quaternary pump uses a single pump*

Practice of Chromatography - HPLC (unit? unit=106&lesson=107)

Practice of Chromatography - Gas Chromatography (unit? unit=106&lesson=108)

Supercritical Fluid Chromatography (unit? unit=106&lesson=109)

Detectors employed during chromatographic separations (unit? unit=106&lesson=110)

**Quiz : Assignment 11 (assessment? name=111)**

Quantitative Methods in Chemistry : Week 11 Feedback Form (unit? unit=106&lesson=112)

Lecture materials (unit? unit=106&lesson=128)

Assignment 11 solutions (unit? unit=106&lesson=132)

## Week 12

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*A proportioning valve is used in quaternary pump*

*Binary pump offers lower dwell volume than the quaternary pump*

*Quaternary pumps allow the use of up to 4 solvents simultaneously*

3) Which of the following detector(s) can be used during isocratic elution?

**1 point**

- Refractive index detector  
 UV-vis detector  
 Fluorescence detector  
 Mass detector  
 All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*All of the above*

4) The order of detector-sensitivity for a low molecular weight analyte is best given as:

**1 point**

- Evaporative Light Scattering Detector (ELSD) ~ Refractive Index (RI) detector < UV-vis < Fluorescence < Mass analyzer  
 UV-vis < Fluorescence < Mass analyzer < RI ~ ELSD  
 Mass analyzer ~ Fluorescence < UV-vis < RI < ELSD  
 RI < UV-vis < Fluorescence ~ ELSD < Mass analyzer  
 Fluorescence < Mass analyzer < ELSD < UV-vis ~ RI

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Evaporative Light Scattering Detector (ELSD) ~ Refractive Index (RI) detector < UV-vis < Fluorescence < Mass analyzer*

5) Which of the following gas(es) **cannot** be used as mobile phase in gas chromatography (GC):

**1 point**

- Carbon dioxide  
 Oxygen  
 Argon  
 Nitrogen  
 Compressed Air

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Oxygen*

*Compressed Air*

6) Which of the following chemical transformations will **not** help in improving the gas chromatography profile of an analyte?

**1 point**

- Esterification of a carboxylic acid  
 Ether formation from an alcohol  
 Imine formation from an aldehyde  
 Quaternization of an alkyl bromide  
 Hydrolysis of an ester

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Quaternization of an alkyl bromide*

*Hydrolysis of an ester*

7) Which of the following detectors is/are considered “universal” or capable of sensing a very wide range of analytes? **1 point**

- Fluorescence
- Thermal Conductivity
- Electron capture
- Flame ionization
- Refractive Index

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Thermal Conductivity*

*Flame ionization*

*Refractive Index*

8) Which of the following parameter(s) has/have **lower value(s)** in liquid chromatography (LC) when compared to gas chromatography (GC)? **1 point**

- Solvent Flow Rate
- Number of theoretical plates
- Pressure-drop across the column
- Plate height
- Length of the column

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Solvent Flow Rate*

*Number of theoretical plates*

*Plate height*

*Length of the column*

9) Supercritical fluid chromatography (SFC) using carbon dioxide can be used to elute out which of the following analytes? **1 point**

- Mannose
- Naphthalene
- Curcumin
- Triphenyl phosphine
- Amino acids

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Naphthalene*

*Curcumin*

*Triphenyl phosphine*

10) If signal in a UV-vis detector reaches the saturation value in 5 milliseconds, its response time is: **1 point**

- 1.36 microseconds
- 1.36 milliseconds
- 3.16 milliseconds
- 3.16 microseconds

1.84 milliseconds

No, the answer is incorrect.

Score: 0

Accepted Answers:

*3.16 milliseconds*