Quantum Mechanics
PHYS1501
Fall, 2020

Assignment 1

Due date ： 2020. 09. 08 (Tuesday)

Name : Multipluz
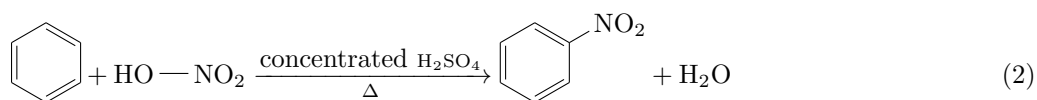Student ID : 45875852
Grade : _____

Problem 1 Score: _____. Show that this LaTeXtemplate support following functions：

(1) Mathematical formulas;

(2) Chemistry formulas.

Proof: (1) In three-dimensional space, the Schrödinger equation of a particle in a potential $V(\boldsymbol{r}, t)$ is

$$i\hbar\frac{\partial}{\partial t}\left|\psi(\boldsymbol{r},t)\right\rangle = -\frac{\hbar^2}{2m}\nabla^2\left|\psi(\boldsymbol{r},t)\right\rangle + V(\boldsymbol{r},t)\left|\psi(\boldsymbol{r},t)\right\rangle. \tag{1}$$

(2) Heating and using concentrated sulfuric acid as catalyst, benzene can react with nitric acid to produce nitrobenzene:

$$\text{benzene} + \text{HO} \!-\! \text{NO}_2 \xrightarrow[\Delta]{\text{concentrated } \text{H}_2\text{SO}_4} \text{nitrobenzene-NO}_2 + \text{H}_2\text{O} \tag{2}$$

□

Problem 2 Score: _____. Conduct following operation:

(1) Insert figures:

    (a) single figure, setting its position mandatorily;

    (b) two subfigures;

(2) Insert such a table:

    ▷ with merged multi-row and multi-column cells；

    ▷ three-line table;

    ▷ cross-page;

(3) Insert code;

(4) Cite a reference.

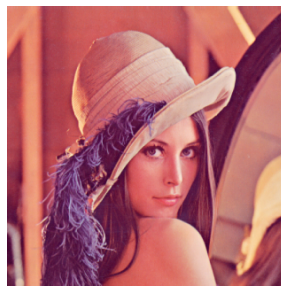**Solution:** (1) (a) As figure 1.

Figure 1: Lenna

(b) As the subfigures 2(a) and 2(b) in 2.

(a) lenna1   (b) lenna2

Figure 2: Lenna2

(2) As table 1.

Table 1: Exemplary table

merged multi-row cell	merged muti-column cell		merged muti-column cell	
	Column 1	Column 2	Column a	Column b
If	you	shed	tears	when
you	missed	the	sun	
you	also	miss	the	stars

(3) Code are shown as following:

```
1  program main
2      implicit none
3
4      write(*,*) 'hello world'
5  end program main
```

(4) This book [1] provides a good introduction to quantum mechanics.

□

References

[1] Claude Cohen-Tannoudji, Bernard Diu, Frank Laloe, and Bernard Dui. Quantum mechanics (2 vol. set), 2006.