Date ....   Name ....   Group ....

Lab report from the practical lesson on biochemistry

Topic: **Hemoglobin and its derivatives, iron**

Task 1: Estimation of hemoglobin in blood

Principle of estimation:

Results: A_{sample} = ……………….

 $A_{standard}$ = ……………….

Calculation using molar absorption coefficient:

$$\text{Hemoglobin (g/l)} \quad = \quad \frac{A \times 1.61 \times 10^4 \times \text{Dilution of sample}}{1.1 \times 10^3 \times 10}$$

Hemoglobin (g/l) =

Conclusion:
Compare your result with reference values.

Task 2: Demonstration of blood and blood pigment in urine

Principle:

Results/observations:

Test	Urine with blood	Normal urine
'Benzidine' test	Native urine: Boiled urine:	
Heitz-Boyer test		
Diagnostic strip		

Conclusion:

Task 3: Spectrophotometric examination of hemoglobin derivatives

Principle:

Results:

From each recorded spectrum, find the absorbances for selected wavelengths as directed by the following table. Fill these values to the table. Find also all the absorption maxima and assess whether they match the theoretical expectations:

Wavelength (nm)	O₂-Hb	deoxy-Hb	MetHb	CO-Hb
500				
510				
520				
530				
540				
550				
560				
570				
580				
590				
600				
Color				
Maxima (nm)				

Use a piece of graph paper to draw the absorption spectra of the hemoglobin derivatives, sign your graph and attach to the report. Alternatively, recreate the spectra in Excel, an send the graph together with your report.

Conclusion:
(Do the recorded spectra match the theoretical predictions?)

Task 4: Colorimetric estimation of iron in serum

Principle of estimation:

Results:

	Serum sample (Tube No 1)	Standard (Tube No 2)	Blank 1 (Tube No 3)	Blank 2 (Tube No 4)
Absorbance:				

Calculation:

$$\text{S-Iron (µmol/l)} = \frac{A_{sample} - (A_{blank\ 1} + A_{blank\ 2})}{A_{standard} - A_{blank\ 1}} \times c_{standard}$$

S-Iron (µmol/l) =

Conclusion:
Compare your result with reference values.

Task 5: Demonstration of pulse oximeter
Principle:

Results and conclusion: