

 University of Sadat City	Final Exam:		Course Code:	C-99	Percentage	60%
	Academic Year:	2017-2018	Academic Program:	Diploma(1)	N. of Exam Paper	2
	Level:	2 nd Term	Department:	Animal Biotechnology	Date	16-5-2018
	Course Name:	Practical Methods in The Basics of Molecular Biology	Total score:	60	Time allowed:	3h



Instructions of Exam:

1. Answer the obligatory questions.
2. Use the blue pen and pencil in answer sheet
3. Allow one sheet answer for every student
4. Is not allowed to borrow the tools (pen, pencils, drawing tools, calculator ...etc)
5. Is not allowed to use the cell phone or any of its application during the time of exam

C. 18/10/17 8:17

1st question: Put right or wrong and correct the wrong word :(score (15)

- 1) Genes are the basic physical and functional units of heredity.
- 2) Eukaryote organelle mRNA structure is polycistronic , modified 5' and 3' ends.
- 3) Alternative splicing can generate diversity of mRNA structures from a single gene which occurs in prokaryotes.
- 4) Polysomes consist of a variety of proteins and several small nuclear ribonucleoproteins (snRNPs) that recognize the splice sites.
- 5) In the Polymerase Chain Reaction (PCR) Step 1: Denature DNA At 95°C, Step 2: Primers Anneal At 72°C, Step 3: DNA polymerase extends the DNA chain by adding nucleotides to the 3' ends of the primers, At 40 - 65°C.
- 6) Long PCR: Used to amplify DNA over the entire length up to 25kb of genomic DNA segments cloned.
- 7) First step of RT-PCR - Synthesis of cDNA using oligo dT primers, that anneal to the poly A tails of the mRNA.
- 8) Real-time PCR uses a fluorescent reporter signal to measure the amount of amplicon as it is generated.
- 9) The Sanger method involves the synthesis of DNA which is terminated at specific nucleotides that are missing the 5' OH.
- 10) phosphodiester bond considered the primary bond in nuclear acids.

2nd question(A): Complete the following sentences score (12)

- 1) In DNA extraction we precipitate DNA with -----
- 2) Soap molecules and grease molecules are made of two parts -----, -----
- 3) Both soap and grease molecules organize themselves in -----
- 4) When ----- comes close to the cell, it captures the lipids and proteins
- 5) The DNA in the nucleus of the cell is molded, folded, and protected by proteins which remove with protease or precipitate with -----.

- 6) When ----- is mixed with the cell lysate, two phases form. DNA partitions to the (upper) aqueous phase, denatured proteins partition to the (lower) organic phase.
- 7) At high salt concentration, ----- are dehydrated, lose solubility and precipitate.
- 8) DNA concentration can be determined by measuring the intensity of absorbance by using ----

- 9) When load samples of DNA fragments into wells at the top of the agarose gel each band is a group of DNA fragments with the same -----.
- 10) Common sources for DNA isolation include: -----, -----, -----

2nd question (B): How are the functions of replication achieved during PCR (write in table)? **Score (3)**

3rd question:{Total score (15) }

- a- What the types of markers? **(5 marks)**
- b- Discuss applications of molecular markers? **(5 marks)**
- c- What the principle of organic extraction of total RNA and advantages & disadvantages? **(5 marks)**

4th question:{ Total Score (15) }

- a- Compare between chemical and enzymatic DNA sequence method? **(5 marks)**
- b- What can DNA sequence tell us? **(5 marks)**
- c- What the main steps of cDNA? **(5 marks)**

With best wishes

Professor of Course	Prof. Dr. Amal Abed Elaziz <i>Amal Abed Elaziz</i>	Course coordinator	Prof. Dr. Amal Abed Elaziz
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نموذج رقم: SQ000000F101002
الإصدار (٠/٢) ٢٠١٨/٠١/١٤

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