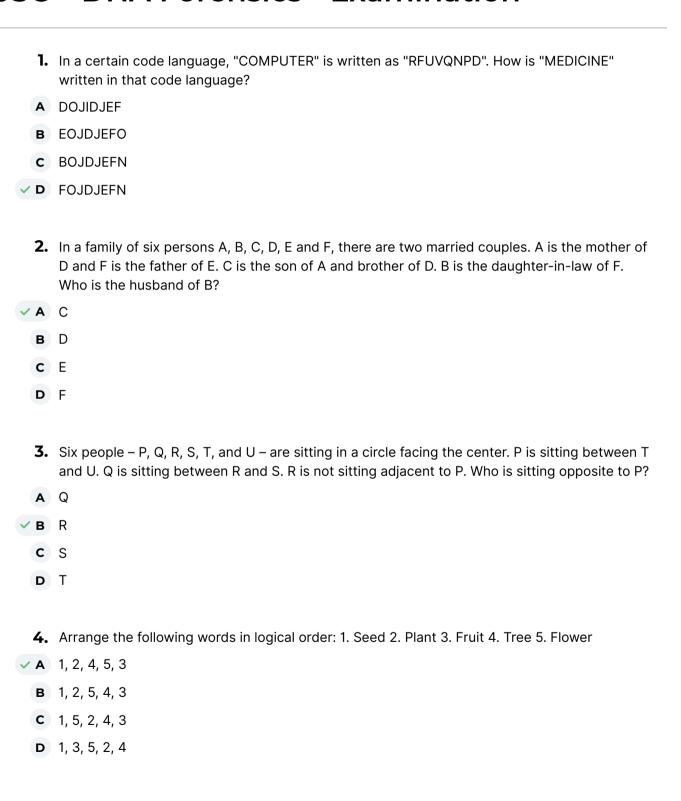
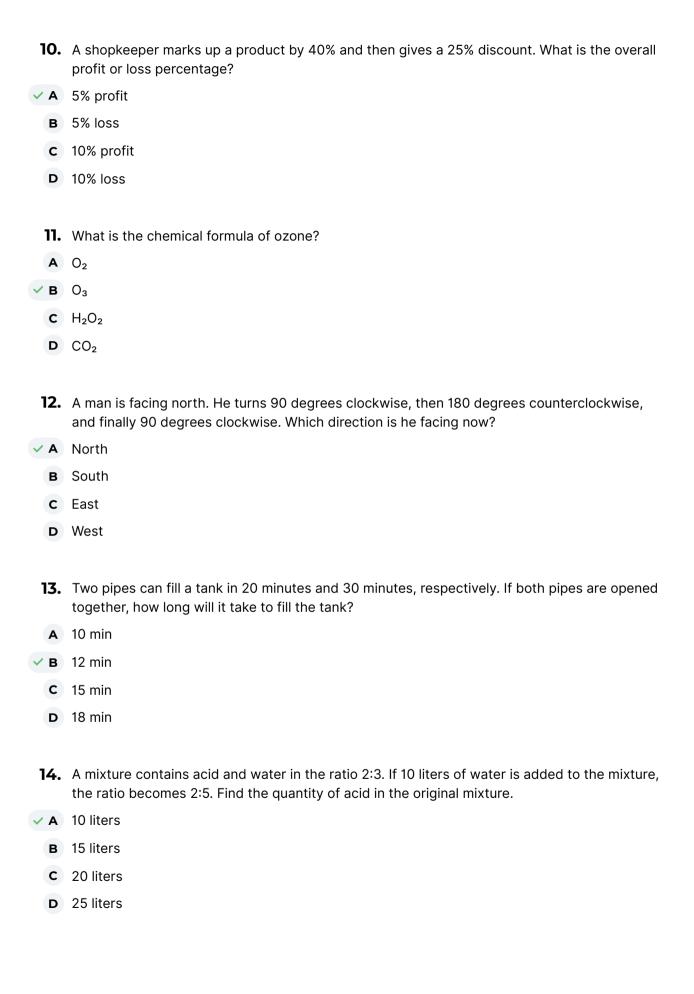


JSO - DNA Forensics - Examination



5.	In a row of 21 children, when Rohan was shifted by four places towards the right, he became 12th from the left end. What was his earlier position from the right end?
✓ A	14th
В	13th
C	12th
D	11th
6.	What is the next number in the sequence: 2, 5, 10, 17, ?
A	24
✓ B	26
C	30
D	35
7.	A is twice as old as B. Five years ago, A was three times as old as B. What is the present age of A?
A	10 years
В	15 years
✓ C	20 years
D	25 years
8.	Which type of mirror is used in vehicle rearview mirrors to provide a wider field of view?
A	Plane mirror
В	Concave mirror
✓ C	Convex mirror
D	Parabolic mirror
9.	A shopkeeper buys a product for ₹500 and sells it for ₹600. What is his profit percentage?
A	0.1
В	0.15
✓ C	0.2
D	0.25



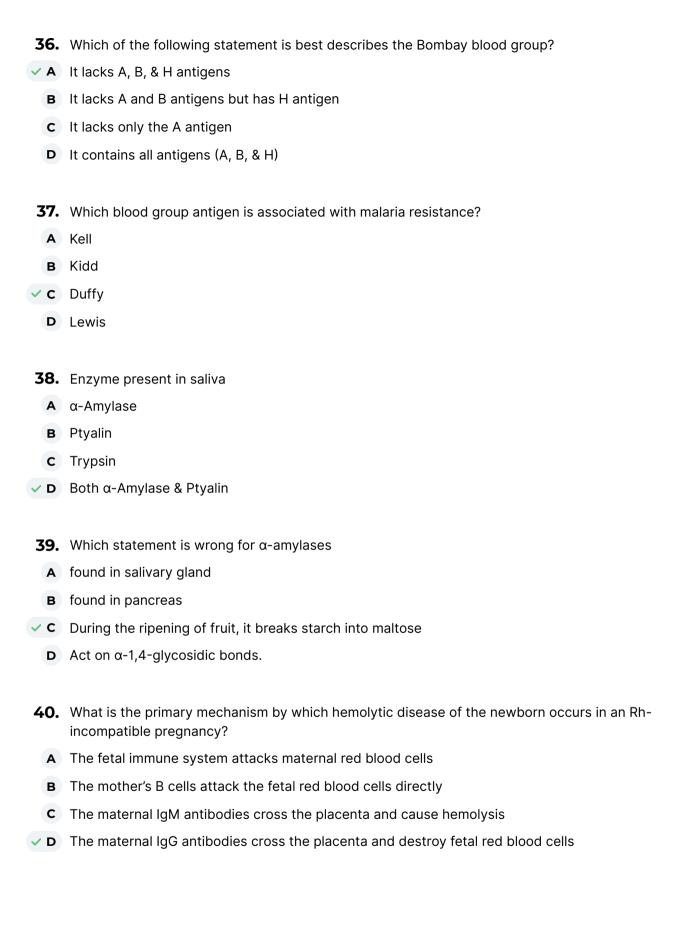
15.	If $3x + 7 = 22$, what is the value of x?
A	6
В	7
C	8
✓ D	5
16.	Identify the part of speech of the underlined word: She spoke confidently during the presentation.
Α	Adjective
✓ B	Adverb
C	Verb
D	Noun
17.	Which vitamin is primarily produced in the human body when exposed to sunlight?
A	Vitamin A
В	Vitamin B
✓ C	Vitamin D
D	Vitamin C
	What is the main function of red blood cells?
	Transport oxygen
	Fight infections
С	Digest food
D	Produce hormones
19.	Which of the following is the main component of natural gas?
Α	Ethane
✓ B	Methane
C	Propane
D	Butane

20.	Choose the correct passive voice transformation: "The teacher corrected the assignments."
A	The assignments is corrected by the teacher.
✓ B	The assignments were corrected by the teacher.
C	The teacher was corrected by the assignments.
D	The assignments correct the teacher.
21	What does the expression "To break someone's bubble" imply?
	To harm a person physically
	To destroy someone's illusions or dreams
	To burst a literal bubble
	To surprise someone with a gift
	Choose the word closest in meaning to "Ephemeral":
Α	Permanent
В	Significant
	Transient
D	Powerful
23.	Which buffer system is most common in human blood?
✓ A	Bicarbonate buffer
В	Phosphate buffer
C	Acetate buffer
D	Tris buffer
24.	Choose the correct spelling for the word:
Α	Carribean
В	Carribbean
✓ C	Caribbean
D	Caribean
25.	What is the pH value of pure water at room temperature?
Α	
В	9
С	12

✓ D 7

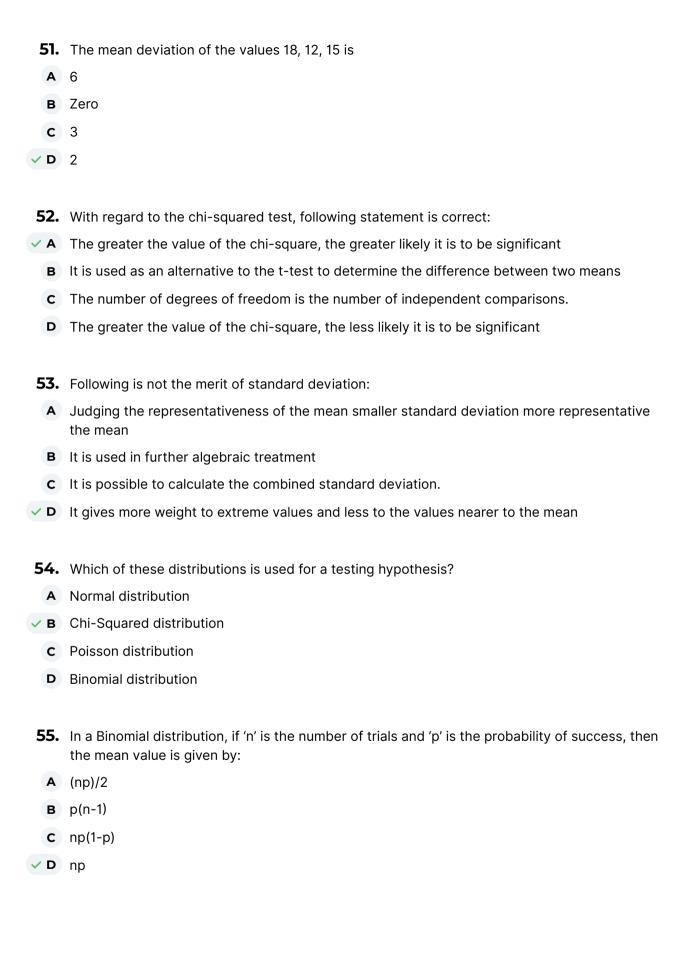
26.	Which of the following is an example of a non-reducing disaccharide?
✓ A	Sucrose
В	Cellobiose
C	Maltose
D	Lactose
27.	What is the term for an annual calendar containing important dates and statistical information?
A	Algorithm
В	Atlas
✓ C	Almanac
D	Agenda
28.	Which enzyme is responsible for removing RNA primers and filling gaps in the lagging strand during DNA replication?
✓ A	DNA polymerase I
В	RNA polymerase II
C	DNA polymerase III
D	Helicase
29.	The predominant antibody in saliva is
A	IgM
✓ B	IgA
C	IgG
D	IgD
30.	Which statement of the following is incorrect for human blood
A	Biconcave RBC
В	RBCs are produced in red bone marrow
C	Erythrocyte diameter is 7µm
✓ D	RBC count range is about 6.5- 7.5 million/mm³ of blood

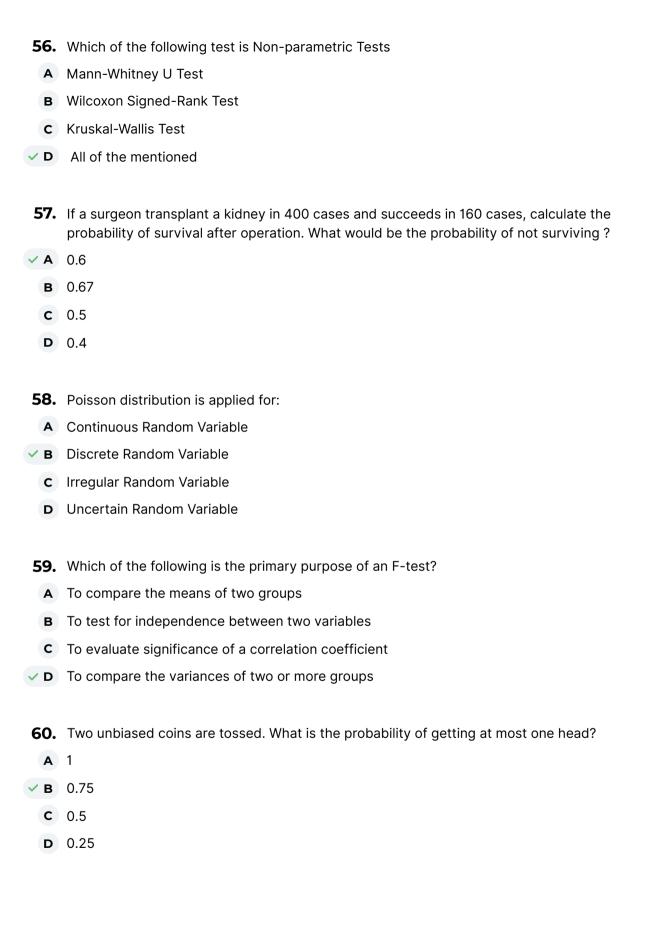
31.	Monoclonal antibodies differ from polyclonal antibodies in their property of reacting with	
✓ A	Specific epitope	
В	Specific antigen	
C	Specific clone of the cells	
D	All of the mentioned	
32.	An example of an agglutination test used in serology is that in which	
Α	The dissolved cells break open during lysis	
В	Viruses multiply within bacteria	
✓ C	A visible clump appears to the observer	
D	The body's B cells diminish in number	
33.	At the conclusion of the ELISA test	
Α	Radioactivity is produced	
В	A clumping reaction is seen	
C	Cells undergo lysis	
. / D	A colour change takes place	
V D	A colour change takes place	
	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34.	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype	
34.	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is- L^AL^B	
34. A B	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B C	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B C	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B C	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B C D 35.	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is-	
34. A B C D 35. A	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is- LALB LALO LBLB LBLO Semenogelins I and II are secreted by the Prostate gland Seminal vesicles	
34. A B C D 35. A B C	A man of group -B marry a woman of group- A. The group of first progeny is B, its genotype is- LALB LALO LBLB LBLO Semenogelins I and II are secreted by the Prostate gland Seminal vesicles Cowper's gland	

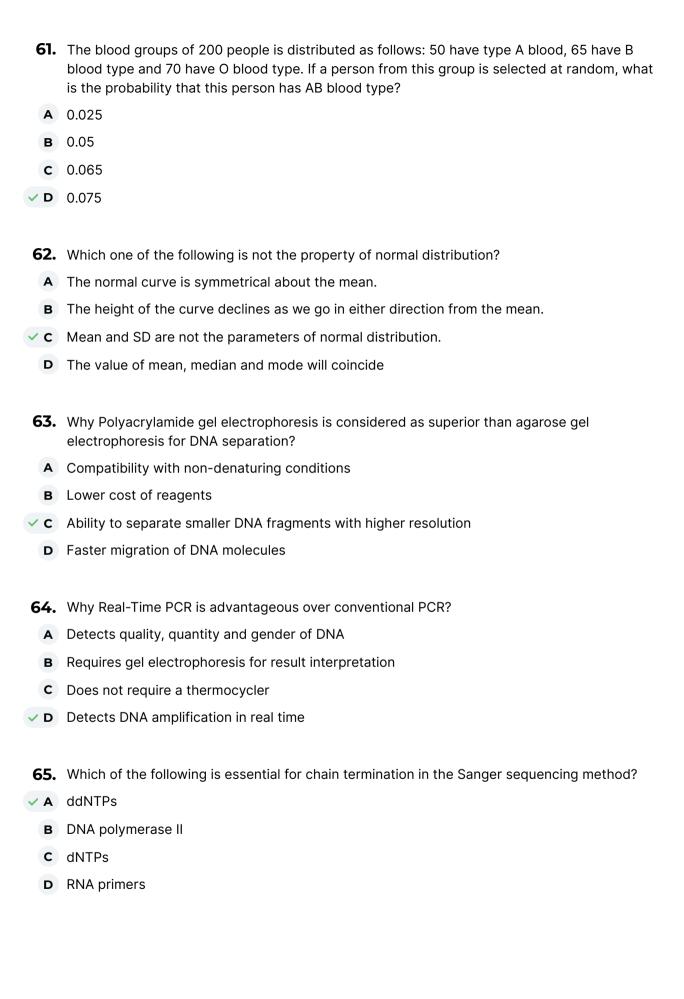


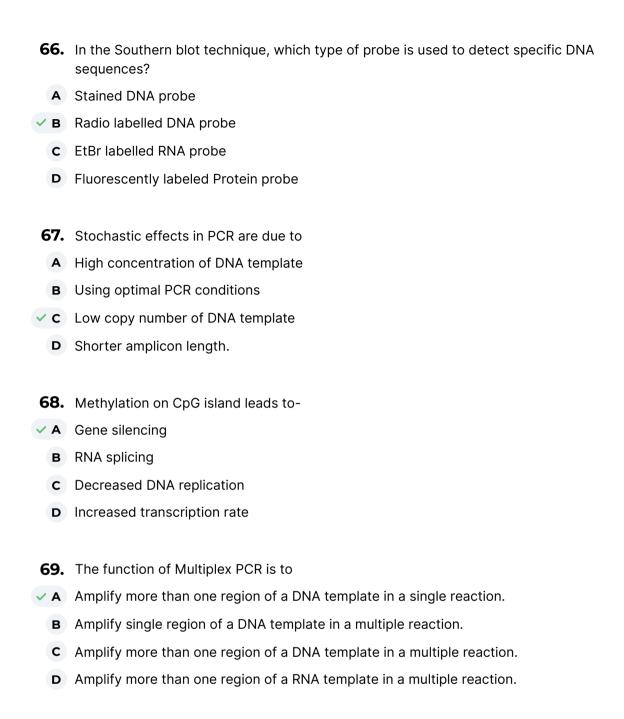
41.	Which statement is wrong about Prostatic specific antigen	
A	found in Prostate gland	
✓ B	Not found in female body	
C	also known as kallikrein-3	
D	More specific than the acid phosphatase tests for semen identification	
42.	Which of the following statements is wrong about a compound microscope?	
✓ A	The numerical aperture of the objective lens does not affect image resolution.	
В	It uses two sets of lenses to magnify the specimen.	
C	The resolving power of a compound microscope is limited by the wavelength of visible light.	
D	It can be used to view live cells with high contrast.	
43.	What is the primary advantage of a stereo microscope over a compound microscope?	
✓ A	Ability to observe 3D structures	
В	Higher magnification	
C	Better resolution through stereo wave beam	
D	Utilization of 3 D effects of phase contrast principles	
44.	In scanning Electron Microscope (SEM), to form an image of the specimen	
A	Electron should pass through the specimen	
✓ B	Electron are scattered from the surface of the specimen	
C	A thin film of heavy metal is evaporated	
D	Specimen are stained	
45.	Electron microscopes have higher powers of magnification than optical microscopes do because:	
Α	The electron beam is not subject to refraction	
В	The electron beam displaces electrons in the specimen	
✓ C	The electron beam operates at shorter wavelengths than light does	
D	The human eye is more sensitive to electrons than to light rays	

46.	In microscopy, resolution is a measure of	
✓ A	The ability of the lenses to separate two tiny details that are close together	
В	The total magnification power of the microscope	
C	The empty magnification of the microscope	
D	The ability of an electron microscope to determine the presence of the large number of elements	
47.	What is the main principle behind phase contrast microscopy?	
A	Use of phase light to enhance contrast.	
✓ B	Conversion of phase shifts in light passing through a transparent specimen into changes in intensity.	
C	Reflection of phase contrast light from the surface of the specimen.	
D	Detection of fluorescence emitted by labeled molecules.	
48.	What is the major limitation of fluorescence microscopy?	
A	Inability to detect live fluorescence cells	
✓ B	Rapid photobleaching of fluorescent dyes	
C	Poor resolution compared to light microscopy	
D	High cost of traditional light sources	
49 .	Standard deviation is the square root of	
A	Standard error	
✓ B	Variance	
C	Geometric mean	
D	Regression	
50.	Chi square is zero when	
A	Expected frequency is lesser than the observed frequency	
В	Expected frequency is greater than the observed frequency	
✓ C	Expected frequency is equal to the observed frequency	
D	Expected frequency is half to that of the observed frequency	









70. The Klenow fragment of DNA polymerase I lacks which activity?

A 5' to 3' polymerase activity

B 3' to 5' exonuclease activity

✓ C 5' to 3' exonuclease activity

D 3' to 5' polymerase activity

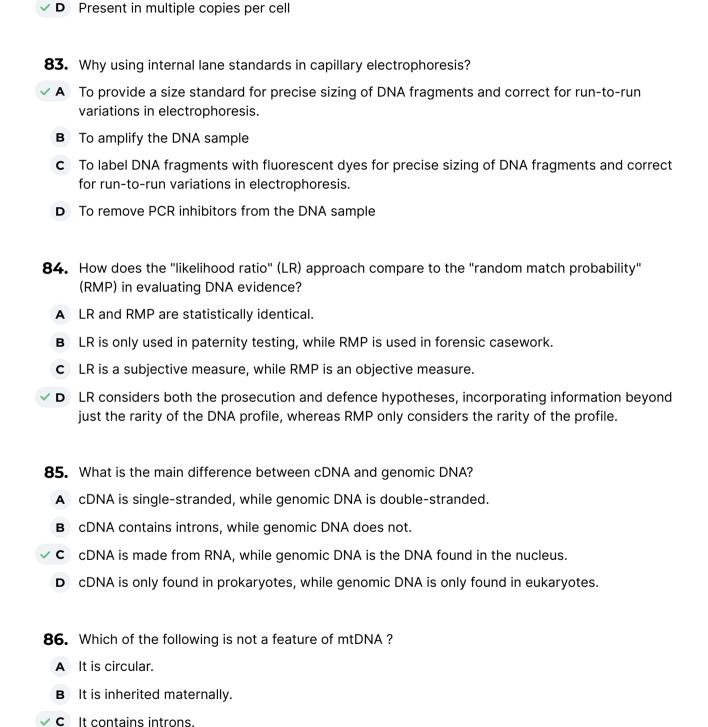
/ 1.	what is the function of the sliding clamp in DNA replications
Α	To unwind the DNA helix.
✓ B	To hold DNA polymerase in place.
C	To synthesize RNA primers.
D	To provide site for replication
72.	Which statement is best explaining the relationship between DNA denaturation and renaturation?
✓ A	Renaturation is dependent on complementary base pairing and is influenced by factors such as salt concentration and temperature.
В	Denaturation is an irreversible process, while renaturation is highly efficient under all conditions.
C	Denaturation involves the breaking of phosphodiester bonds, while renaturation involves the reformation of covalent bonds between bases.
D	Denaturation is primarily driven by changes in pH, while renaturation is driven by changes in salt concentration.
73.	Chelex 100 which is used for isolation of DNA is composed of
A	styrene divinyl hexane copolymers
✓ B	styrene divinyl benzene copolymers
C	styrene diphenyl hexane copolymers
D	styrene diphenyl benzene copolymers
74.	The function of chloroform in a phenol-chloroform extraction is to-
✓ A	increase the density of the organic phase and aid in phase separation
В	Decrease the density of the organic phase and aid in phase separation
C	precipitate single stranded DNA
D	denature DNA
75.	Which histone protein is not a part of the core nucleosome?
✓ A	H1
В	H3
C	H2A
D	H4

A	Separation of RNA molecules based on base pairing	
В	Separation of DNA fragments based on size	
∨ C	Separation of proteins based on charge at a specific Ph	
D	Separation of proteins based on molecular weight	
77.	What is the purpose of adding formamide in capillary electrophoresis?	
A	To increase fluorescence intensity	
В	To denature DNA and prevent degradation	
C	To decrease DNA degradation and secondary structure formation	
✓ D	To denature DNA and prevent secondary structure formation	
78.	Which of the following is a common detection method in Western blotting?	
✓ A	Immunodetection using antibodies	
В	3 Autoradiography	
C	Ethidium bromide staining	
D	D Silver staining	
79.	Commonly used chaotropic agent in DNA extraction is	
A	70% Ethanol	
В	Phenol	
∨ C	Guanidine thiocyanate	
D	Isopropanol	
80.	Which of the following is true for the major groove of DNA?	
A	It is primarily involved in the binding of histone proteins for DNA packaging.	
В	It is narrower than the minor groove and offers limited sequence-specific information.	
∨ C	It allows for direct access to the hydrogen bonding patterns of the base pairs.	
D	It is formed by the close proximity of the sugar-phosphate backbones.	
81.	Which of the following sentence explain the function of type II topoisomerases?	
A	They are responsible for the formation of supercoiled DNA.	
	They introduce double-strand breaks and pass one DNA segment through another.	

c They primarily function in the unwinding of DNA during replication.

D They introduce single-strand breaks to relieve torsional stress

76. What is the principle of isoelectric focusing?



82. Mitochondrial DNA is useful in forensic analysis because it is

A Found only in the nucleus

B Inherited from both parents

c Highly variable in individuals

D It has a high mutation rate.

87 .	Which of the following is a characteristic of heterochromatin?
A	Loosely packed DNA
✓ B	Tightly packed DNA
C	High level of gene expression
D	Rich in actively transcribed genes
88.	What is the function of reverse transcriptase?
✓ A	To synthesize DNA from an RNA template
В	To synthesize RNA from a DNA template
C	To degrade RNA
D	To repair damaged DNA
89.	The brown colour of faeces primarily results from the presence of
✓ A	Stercobilin
В	Biliverdin
C	Ferrous oxide
D	Hematin
90.	The Phadebas test is commonly used for detecting which body fluid?
A	Vomit
✓ B	Saliva
C	Urine
D	Vaginal secretions
91.	The Edelman Test is used for the forensic identification of which bodily fluid?
A	Saliva
В	Vomit
✓ C	Urine
D	Feces
92.	A polycistronic mRNA contains intercistronic regions which consist
Α	GUG, AUC
В	UAA, UGA
✓ C	UAA, AUG
D	AAA, CAC

93.	Which part of the spermatozoa is responsible for energy production, enabling motility?
A	Acrosome
✓ B	Middle piece
C	Nucleus
D	Centrioles
94.	The exit site of 70s ribosome exits
✓ A	Deacylated tRNA
В	Peptidyl tRNA
C	Deacylated rRNA
D	Aminoacyl-tRNA
95.	Primer annealing in PCR takes place at temperature
	93-95 degree
	70-75 degree
	50-70 degree
	90-95 degree
96	Sebaceous gland are
A	
	Holocrine
	Mesocrine
	Eccrine
97	What would be happen if vasa deferentia of man are cut
A	
В	Oligospermia
	Aspermia
	Azoospermia
98.	Write key difference between DNA replication in prokaryotes and eukaryotes?
✓ A	Eukaryotes use multiple origins of replication, while prokaryotes have a single origin
В	Prokaryotic DNA replication has multiple origins of replication
C	Eukaryotic DNA replication occurs only in the cytoplasm
D	Eukaryotic DNA polymerases synthesize DNA only in the 3' to 5' direction

- **99.** Which of the following statement about transcription is false?
- ✓ **A** RNA polymerase requires a primer to initiate transcription
 - B Transcription occurs in the nucleus of eukaryotic cells
 - **c** Transcription is regulated by promoter sequences
 - **D** The template strand of DNA is read in the 3' to 5' direction
- **100.** Which of the following is true regarding the role of ribosomes in translation?
 - A The ribosome moves along mRNA in the 3' to 5' direction
- ▼ B The small ribosomal subunit binds to mRNA first in both prokaryotes and eukaryotes
 - c The ribosome catalyzes peptide bond formation via RNA polymerase
 - D The ribosome directly synthesizes proteins without the help of tRNA