the Answer sheet.

the Answer sheet and do not use white-fluid or any other rubbing material

PHYSICS

e the correct answer :

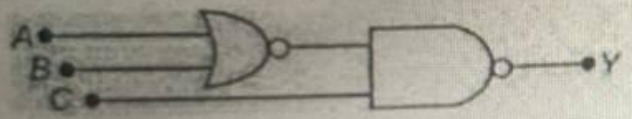
SECTION - A

Minimum number of NOR gates are used to form an OR gate?

(1) 1 (2) 2

(3) 3 (4) 4

The output Y, when all three inputs are first high and then low, will respectively be



(1) 1, 0

(2) 1, 1

(3) 0, 0

(4) 0, 1

3. Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength 6200 Å. Work function (ϕ_0) of the metal is

(1) 1 eV (2) 2 eV

(3) 2.5 eV (4) Zero

4. If the wavelength of electromagnetic radiation is doubled, then the energy of photon corresponding to above radiation will be

(1) Doubled

(2) Halved

(3) Remains same

(4) Four times the initial value

Test-II (Code-A)

5. Match the entries in the column I with corresponding correct entries in column II. (Where symbols have their usual meaning)

	Column I		Column II
(A)	de-Broglie wavelength	(i)	$K_{max} = h\nu - \phi_0$
(B)	Threshold frequency	(ii)	$\lambda = \frac{h}{p}$
(C)	Einstein photoelectric equation	(iii)	$\nu = \frac{\phi_0}{h}$

(1) (A)→(iii), (B)→(i), (C)→(ii)
(2) (A)→(ii), (B)→(iii), (C)→(i)
(3) (A)→(iii), (B)→(ii), (C)→(i)
(4) (A)→(ii), (B)→(i), (C)→(iii)

6. Electron volt (eV) is the unit of
(1) Energy
(2) Potential
(3) Charge
(4) Current

7. Which of the following force is responsible for α-particle scattering?
(1) Gravitational
(2) Nuclear
(3) Coulomb
(4) Magnetic

8. The ground state energy of an electron in a hydrogen atom is −13.6 eV. What is the potential energy of the electron in this state?
(1) −27.2 eV
(2) −13.6 eV
(3) +13.6 eV
(4) +27.2 eV

The energy equivalent to 5 milligrams of matter is
1) 45×10^{13} J
2) 45×10^{10} J
) 5×10^{10} J
(4) 4.5×10^{10} J

io of radii of Li^7 nucleus to Fe^{56} nucleus will

(2) 7 :

11. A N-type
(1) Positiv
(2) Negati
(3) Neutra
(4) Depen impuri

12. Current th
−5 V
(1) 20 m
(3) 30 m

13. We can
galvanor
(1) Incre
(2) Incre
(3) Dec
(4) All c

14. If the d
deuteriu
velociti
(1) 2
(3) 1

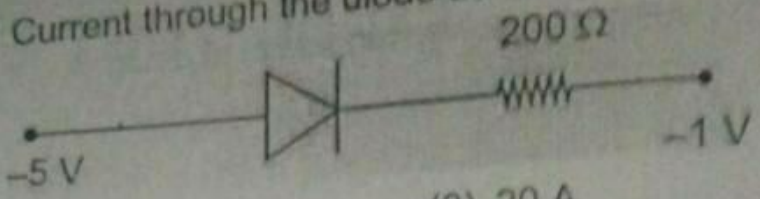
15. Which
vernie
their u
(1) V
(2) V
(3) V
(4) V

16. In res

CC-443

(2) Negative
(3) Neutral
(4) Depends on the concentration of the impurities

12. Current through the diode as shown below will be



(1) 20 mA
(2) 20 A
(3) 30 mA
(4) Zero

13. We can increase the sensitivity of a moving coil galvanometer by
(1) Increasing the area of the coil
(2) Increasing the magnetic field
(3) Decreasing the torsional constant
(4) All of these

14. If the de-Broglie wavelengths for a proton and a deuterium are equal, then the ratio of their velocities will be
(1) 2 : 1
(2) 4 : 1
(3) 1 : 3
(4) 1 : 4

15. Which of the following is correct relation for vernier constant (V.C.)? (Here symbols have their usual meaning)
(1) V.C. = 1 VSD + 1 MSD
(2) V.C. = 1 MSD – 1 VSD
(3) $V.C. = \frac{1\,MSD}{1\,VSD}$
(4) V.C. = 1 MSD × 1 VSD

16. In resonance tube first resonating length is 25 cm and second resonating length is 80 cm, then the value of end correction will be
(1) 5 cm
(2) 2.5 cm
(3) 15 cm
(4) 27.5 cm

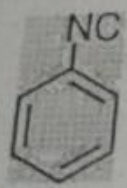
64. Match the vitamin in column I with their scientific name in column II and choose the correct option.

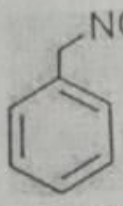
	Column I		Column II
a.	Vitamin B_6	(i)	Riboflavin
b.	Vitamin C	(ii)	Pyridoxine
c.	Vitamin B_2	(iii)	Ascorbic acid
d.	Vitamin B_1	(iv)	Thiamine

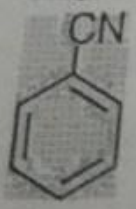
(1) a(ii), b(iii), c(i), d(iv) (2) a(ii), b(i), c(iv), d(iii)
(3) a(iii), b(i), c(iv), d(ii) (4) a(i), b(ii), c(iii), d(iv)

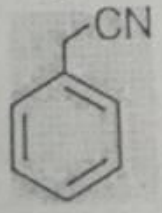
65. Which of the following bases is not present in DNA?
(1) Adenine (2) Uracil
(3) Guanine (4) Cytosine

66. When benzylamine is heated with chloroform in presence of ethanolic KOH then the major product obtained is

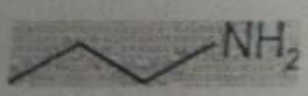
(1) 

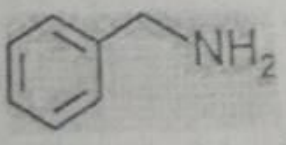
(2) 

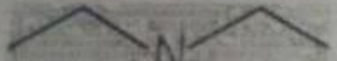
(3) 

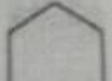
(4) 

67. Which compound among the following does not react with Hinsberg's reagent?

(1) 

(2) 

(3) 

(4) 

g statements.
esulphonyl chloride is used
f primary, secondary and

lbenzenesulphonamide is
e to absence of acidic

nents, choose the correct

statement II are correct
tatement II are incorrect
ct but statement II is
CC-443
but statement II is

ong the following is
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in B and C
D and K
eaction with

78. The number of moles of $KMnO_4$ required to completely oxidise one mole of $FeSO_4$ in acidic medium is

(1) 5 (2) $\frac{1}{5}$

(3) $\frac{2}{5}$ (4) 1

79. The compound which will not form iodoform on reaction with I_2/NaOH is

(1) CH_3CHO

(2) CH_3CH_2OH

(3) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$

(4) $CH_3CH_2-\overset{\overset{O}{\|}}{C}-CH_2CH_3$

80. The working pH range of phenolphthalein indicator is

(1) 3.1 to 4.5 (2) 6.2 to 8.2

(3) 4.2 to 6.2 (4) 8.2 to 10.2

81. Match the column-I with column-II and choose the correct option.

	Column-I		Column-II
a.	Group-VI	(i)	Fe^{3+}
b.	Group-V	(ii)	Mg^{2+}
c.	Group-I	(iii)	Sr^{2+}
d.	Group-III	(iv)	Pb^{2+}

(1) a(ii), b(iii), c(iv), d(i)

(2) a(i), b(iii), c(iv), d(ii)

(3) a(iv), b(ii), c(iii), d(i)

(4) a(ii), b(i), c(iv), d(iii)

82. Positively charged sol among the following is

(1) Silver sol (2) $Al_2O_3 \cdot xH_2O$

(3)	Ni^{2+}	–	Bright green
(4)	Mn^{2+}	–	Light pink

99. Given below are the two statements one is labelled as **Assertion (A)** and other is labelled as **Reason (R)**.

Assertion (A): A white gelatinous precipitate of aluminium hydroxide is soluble in excess of sodium hydroxide.

Reason (R): Formation of sodium aluminate takes place on reaction of $Al(OH)_3$ with excess of NaOH.

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(3) (A) is false but (R) is true

(4) (A) is true but (R) is false

100. Which among the following cations gives apple green colour to the flame test?

(1) Cu^{2+} (2) Sr^{2+}

(3) Ca^{2+} (4) Ba^{2+}

BOTANY

SECTION - A

101. Which among the following is considered as broadly utilitarian services that nature provides?

(1) Industrial product (2) Pollination

(3) Foods (4) Fibre

102. Recent extinction of Thylacine was from the region of

(1) Africa (2) Mauritius

(3) Australia (4) Russia

103. _____% of photosynthetically active radiation is being captured by plants in synthesis of organic matter.

Choose the option to **correctly** fill in the blank.

(1) >50 (2) 12-20

(3) <0.1 (4) 2-10

104. Earthworms are

(1) Detritivores (2) Parasites

(3) Producers (4) Top carnivores

105. Secondary succession

(1) Starts at the area where no living organism ever existed.

(2) Takes longer time than primary succession to reach climax

(3) Shows that establishment of pioneer communities is more easier.

(4) Starts at the barren area

106. Read the following statements and choose the **correct** option.

Statement A: Standing state is a certain mass of living material present at each trophic level at a particular time.

Statement B: According to Robert Costanza and his colleagues, the cost of climate regulation and habitat for wildlife are about 6 percent each of the total cost of ecosystem services.

(1) Both statements A and B are incorrect

(2) Both statements A and B are correct

(3) Only statement A is correct

(4) Only statement B is correct

Space for Rough Work

107. Match List-I with List-II.

	List-I		List-II
(a)	Sacred Groves	(i)	Rio de Janeiro, 1992
(b)	*Ex situ* conservation	(ii)	Wildlife safari parks
(c)	Earth summit	(iii)	Aravalli Hills
(d)	Hotspots	(iv)	High degree of Endemism

Choose the **correct** answer from the options given below:

(1) (a) (iii), (b) (iv), (c) (i), (d) (ii)

(2) (a) (iii), (b) (ii), (c) (i), (d) (iv)

(3) (a) (ii), (b) (iv), (c) (iii), (d) (i)

(4) (a) (iv), (b) (iii), (c) (ii), (d) (i)

108. Arrange the following major taxa of invertebrates in ascending order w.r.t. number of species present globally and choose the **correct** option.

(a) Molluscs

(b) Insects

(c) Crustaceans

(1) (b) < (c) < (a)

(2) (a) < (b) < (c)

(3) (c) < (b) < (a)

(4) (c) < (a) < (b)

109. Tropical regions are rich in biodiversity than temperate regions. One of the reasons is that, the former

(1) Areas have undergone frequent glaciation in the past

(2) Have less humid and cold temperature

(3) Have constant and predictable environment

(4) Show least niche specialisation

110. Read the following statements and select the **correct** option.

Assertion (A): Humus undergoes decomposition at an extremely slow rate.

Reason (R): There is no need of oxygen in the process of decomposition that forms humus as it is controlled mainly by chemical composition of detritus.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) Both (A) and (R) are false.

111. In Species-Area relationships equation log S = log C + Z log A

S represents

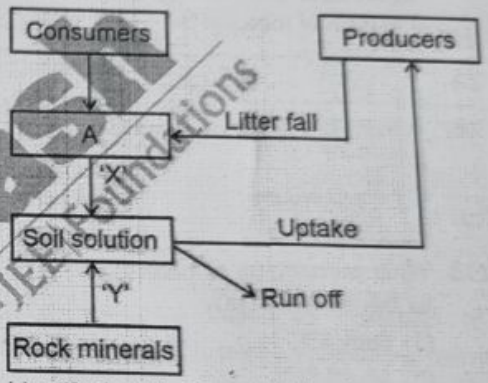
(1) Area in square km

(2) Species richness

(3) Regression coefficient

(4) Y intercept

112.



Identify the 'X', 'Y' and 'A' in above flow-chart and mark the option with their **incorrect** match.

(1) The substance represented by A is broken down by earthworms.

(2) Process represented by X is performed by microbes

(3) Process Y is performed by detritivores

(4) A represents detritus

Space for Rough Work

113. In an aquatic ecosystem all of the following are producers, **except**
(1) Phytoplanktons
(2) Algae
(3) Floating plants
(4) *Hydra* and Corals

114. National aquatic animal of India is
(1) Gangetic shark (2) River dolphin
(3) Sea horse (4) Blue whale

115. About 71% of the total global carbon is
(1) Found in atmosphere
(2) Found dissolved in oceans
(3) Present in microbes
(4) Found in dead organisms

116. Consider the following food chain.
Grass → Grasshopper → Frog → Snake
If 100 kJ energy is converted into biomass by producers, then energy available to the frog in the form of food will be
(1) 1000 J (2) 100 J
(3) 10 J (4) 1 J

117. Which of the given is **not** an exotic species in India?
(1) *Parthenium* (2) *Lantana*
(3) *Eichhornia* (4) Nile perch

118. What percentage of earth's land area is covered by the 34 hotspots?
(1) Only 8% (2) Less than 2%
(3) About 50% (4) More than 10%

119. Who popularized the term to describe the combined diversity at the levels of biological organization?
(1) Edward Wilson
(2) Alexander von Humboldt
(3) David Tillmann
(4) Paul Ehrlich

120. Select the **correct** relationship between primary productivity (NPP) and gross primary productivity.
(1) NPP = Gross primary productivity × Respiratory losses
(2) NPP = Gross primary productivity − Respiratory losses
(3) NPP = Gross primary productivity + Respiratory losses
(4) NPP = $\frac{\text{Gross Primary Productivity}}{\text{Respiratory losses}}$

121. If a tree supports large number of herbivorous birds which are eaten by hawks of that area, what shape of pyramid of number is obtained in this condition?
(1) Upright
(2) Spindle shaped
(3) Both upright or inverted
(4) Inverted only

122. Pioneer community in pond ecosystem is formed by
(1) Lichens (2) Shrubs
(3) Phytoplanktons (4) Bryophytes

123. For very large areas, such as entire continent, the value of regression coefficient obtained from species-area relationship curve is
(1) 1.3 to 1.5 (2) 0.1 to 0.2
(3) 0.3 to 0.5 (4) 0.6 to 1.2

124. India has 'A' biosphere reserves and 'B' National Parks.
Choose the **correct** option for A and B.
(1) A-14, B-90 (2) A-25, B-34
(3) A-448, B-34 (4) A-90, B-448

Space for Rough Work

125. Select the **correct** statement.
(1) *Rauwolfia vomitoria* results in the variations in potency and concentration of active chemical due to species diversity.
(2) The effect of reduction in biodiversity has been explained by Paul Ehrlich through Rivet popper hypothesis.
(3) Passenger pigeon has become extinct due to alien species invasion.
(4) Speciation is generally not a function of time.

126. Which among the following characteristic is **not** true for the organisms susceptible to extinction?
(1) Large body size
(2) Small population size
(3) Lower trophic level in food chain
(4) Low rate of reproduction

127. Which among the following statements is **false** w.r.t. primary productivity?
(1) It refers to the rate at which sunlight is captured by producers for synthesis of food during photosynthesis.
(2) It refers to the rate at which biomass or organic matter is produced by plants.
(3) It is available biomass for the consumption to carnivores.
(4) It can be further divided into two categories, *i.e.*, gross primary productivity and net primary productivity.

128. Carbon dioxide can be added into the atmosphere from all of the following processes, **except**
(1) Burning of forests and organic debris
(2) Combustion of fossil fuel in vehicles
(3) Respiration and decomposition
(4) Photosynthesis in higher plants

129. State **True (T)** or **False (F)** for the given statements.
(A) Saprophytes and detritivores are not given any place in ecological pyramids.
(B) Annual net primary productivity of whole biosphere is approximately 170 million tons.
(C) Energy at a higher trophic level is always more than at a lower trophic level.
(D) The function of reservoir is to meet with deficit which occurs due to imbalance in rate of influx and efflux.

Choose the **correct** option.

	(A)	(B)	(C)	(D)
(1)	T	F	F	F
(2)	F	F	F	T
(3)	T	F	F	T
(4)	T	T	T	F

130. Choose the option w.r.t number of estimated species found in the tropical Amazonian rain forest in South America.

	Birds	Reptiles	Fish	Amphibians
(1)	378	3,000	1,300	1300
(2)	1,300	378	3,000	427
(3)	427	300	More than 40,000	300
(4)	More than 1,25,000	378	1,300	427

131. India has more than (i) species of birds because most of the land area of our country lies in (ii) . Select the **correct** option to fill in the blanks (i) and (ii).

	(i)	(ii)
(1)	40,000	Tropics
(2)	35,000	Temperate areas
(3)	18,000	Temperate areas
(4)	1,200	Tropics

Space for Rough Work

132. The third stage of transitional communities in hydrarch succession is
(1) Scrub stage
(2) Submerged plant stage
(3) Reed-swamp stage
(4) Marsh-meadow stage

133. Increase in biodiversity of an ecosystem contribute to
(1) Increase in productivity
(2) Decrease in stability of the ecosystem
(3) High variation in total biomass from year to year
(4) Increase in susceptibility towards alien species invasions

134. Mark the statements as **true (T)** or **false (F)** and select the **correct** option.
a. Strict protection of biodiversity hotspots could reduce the ongoing mass extinctions by almost 30%.
b. Amazonian rain forest contributes 20% of total oxygen in the earth's atmosphere.
(1) a(T); b(F) (2) a(T); b(T)
(3) a(F); b(T) (4) a(F); b(F)

135. Read the statements A and B and select the **correct** option for them.
Statement A: Globally among the animal groups, the most species rich taxonomic group is of vertebrates.
Statement B: Globally among plants, the diversity of mosses is more than angiosperms.
(1) Only statement A is correct
(2) Only statement B is correct
(3) Both A and B statements are correct
(4) Both A and B statements are incorrect

SECTION - B

136. Red data book contains information on
(1) Threatened species
(2) Aquatic vertebrates only
(3) Economically important plants
(4) Only extinct species

137. In a terrestrial food chain, cow is
(1) Tertiary consumer
(2) Secondary consumer
(3) Primary consumer
(4) Primary producer

138. Read the following statements and choose the **correct** option.
Statement (A): The Western ghats have a greater amphibian species diversity than the Eastern Ghats.
Statement (B): Bioprospecting is exploring molecular, genetic and species-level diversity for products of economic importance.
(1) Both statements A and B are correct
(2) Only statement B is correct
(3) Only statement A is correct
(4) Both statements A and B are incorrect

139. Which of the following are ecosystem services?
(a) Generating fertile soils
(b) Providing wild life habitat
(c) Mitigating droughts and floods
(d) Providing storage site for carbon
The **correct** ones are
(1) (a) and (b) only (2) (c) and (d) only
(3) (b) and (d) only (4) All (a), (b), (c) & (d)

Space for Rough Work

169. DNA threads which have been precipitated by addition of chilled ethanol during their isolation are removed by
(1) RNA interference
(2) Splicing
(3) Spooling
(4) Elution

170. In a continuous culture system
(1) Fresh medium is not added to the culture
(2) Cells remain in physiologically inactive state throughout the process
(3) Larger biomass is produced as compared to closed culture system
(4) Used medium is recycled to obtain maximum yield

171. All of the following are methods of direct gene transfer, **except**
(1) Micro-injection
(2) Biolistics
(3) Electroporation
(4) Disarmed retrovirus mediated

172. Which of the following statements does not belong to the three critical research areas of biotechnology?
(1) Providing the best catalyst in the form of improved organism usually a microbe or pure enzyme.
(2) Creating optimal conditions through engineering for a catalyst to act.
(3) To file a biopatent on the developed novel research.
(4) Downstream processing technologies to purify the protein/organic compound.

173. All of the following are required for performing PCR, **except**
(1) Template DNA (2) dUTPs
(3) *Taq* polymerase (4) Primers

174. The host used by Eli Lilly to produce recombinant insulin was
(1) *Agrobacterium tumefaciens*
(2) *Bacillus thuringiensis*
(3) *Meloidogyne incognita*
(4) *Escherichia coli*

175. Consider the following :
(a) 'A' peptide
(b) 'B' peptide
(c) 'C' peptide
How many of the above mentioned chain(s) is/are absent in proinsulin?
(1) One (2) Two
(3) Three (4) Zero

176. The proteins encoded by the gene X controls corn borer and that of Y and Z control the cotton bollworms.
Select the **correct** option to fill in the blanks.

	X	Y	Z
(1)	*cryIIAb*	*cryIAb*	*cryIAc*
(2)	*cryIAc*	*cryIIAb*	*cryIAb*
(3)	*cryIAb*	*cryIAc*	*cryIIAb*
(4)	*cryIAc*	*cryIIAb*	*cryIIAb*

177. RNAi involves formation of which of the following molecules that binds to and prevents the translation of the target mRNA?
(1) dsDNA (2) dsRNA
(3) ssRNA (4) ssDNA

178. **Assertion (A):** Insulin is not taken orally by the diabetics.
Reason (R): Insulin is a peptide hormone that gets cleaved off by proteases present in the digestive juices before reaching the blood stream.
In the light of above statements, select the **correct** option.
(1) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(2) (A) is true; (R) is false
(3) Both (A) and (R) are false
(4) Both (A) and (R) are true and (R) is the correct explanation of (A)

Space for Rough Work

179. How many intra-chain disulphide bond(s) is/are present in pro-insulin and insulin respectively?
(1) One, Two (2) Two, One
(3) Three, Three (4) One, One

180. Select the **incorrect** match among the following.

(1)	Serum analysis	–	Conventional method of disease diagnosis
(2)	ELISA	–	Based on antigen-antibody interaction
(3)	PCR	–	*In vivo* method of gene cloning
(4)	Probe	–	A single stranded DNA or RNA tagged with a radioactive molecule

181. In gene therapy for ADA deficiency, functional ADA cDNA is introduced in 'X'. Identify 'X' and select the **correct** option w.r.t it.
(1) An agranulocyte which constitutes 20-25% of total WBCs in humans.
(2) A granulocyte which constitutes 0.5-1% of total WBCs in humans.
(3) An agranulocyte which constitutes 6-8% of total WBCs in humans.
(4) A granulocyte and the most abundant WBC in humans.

182. The toxin released by *B. thuringiensis* is able to kill certain insects but does not kill the bacteria itself because
(1) Bt toxin does not get activated as the gut of bacteria has alkaline pH.
(2) Bt toxin protein exists as an inactive protoxin in the bacteria.
(3) Bt toxin is not fatal to bacteria but makes them weak.
(4) Bt toxin is formed only after the death of the bacteria.

183. A probe is designed to differentiate between cells having mutated gene from cells having non-mutated gene.
In a cluster of cells, detection by autoradiography revealed that clones having mutated gene do not appear on the photographic film. This happened because
(1) Probe binds to non-mutated gene but did not appear.
(2) Probe has a complementarity with the mutated gene.
(3) Probe has no complementarity with the mutated gene.
(4) Probe has no complementarity with the non-mutated gene.

184. Match column I with column II.

	Column I		Column II
(a)	α-1-antitrypsin	(i)	Prepared by an American company, Eli Lilly
(b)	Human alpha lactalbumin	(ii)	Used to treat emphysema
(c)	Recombinant insulin	(iii)	Basmati rice
(d)	27 documented varieties grown in India	(iv)	Present in milk produced by 'Rosie'

Select the **correct** option.

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(iii)	(i)	(ii)	(iv)
(4)	(ii)	(iv)	(i)	(iii)

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185. The term which refers to the use of bio-resources by organisations with no proper authorisation from the people concerned and without compensatory payment is called
(1) Bioethics
(2) Biopiracy
(3) Biosafety
(4) Biodegradation

SECTION - B

186. A student wants to isolate the genetic material of a fungal cell. Which of the following combination of enzymes must be used by him?
(1) Lysozyme, DNase, Ribonuclease
(2) Chitinase, Ribonuclease, Protease
(3) Chitinase, DNase, Protease
(4) DNase, Lysozyme, Chitinase

187. Arrange the following steps in the correct sequence while genetically modifying an organism.
(a) Modification in a vector with same restriction enzyme as used for desired DNA.
(b) Maintenance of introduced DNA in the host cell.
(c) Identification and isolation of desired DNA.
(d) Introduction of desired DNA into the host cell.
(e) Transfer of desired DNA to progeny of host.
Select the **correct** option.
(1) (c) → (a) → (e) → (d) → (b)
(2) (a) → (c) → (e) → (b) → (d)
(3) (c) → (a) → (d) → (b) → (e)
(4) (a) → (c) → (d) → (e) → (b)

188. Which of the following sets of restriction enz produce sticky ends?
(1) *Bam*H I and *Eco* RV
(2) *Eco*R I and *Bam*H I
(3) *Hind* II and *Eco*R I
(4) *Eco* RV and *Pst* I

189. Consider the following statements.
(A) It is a pathogen of several dicot plants.
(B) It delivers T-DNA into plants and convert normal cells into tumor cells.
Select the organism for which the above-mentioned features are true.
(1) *Salmonella typhimurium*
(2) *Agrobacterium tumefaciens*
(3) Retrovirus
(4) *Meloidogyne incognita*

190. The enzymes responsible for restricting the growth of bacteriophages in *E. coli* belong to the same class as that of the enzyme characterised by the enzyme commission number
(1) 2.4.3.1
(2) 4.3.2.6
(3) 3.6.1.2
(4) 5.7.3.2

191. Quality control testing of a product prepared from biotechnological principles is placed under
(1) Upstream processing
(2) Biosynthetic stage
(3) Downstream processing
(4) Bioprocess engineering

192. All of the following are true for bioreactors, **except**
(1) It is a vessel in which raw materials are biologically converted into specific products.
(2) It provides optimal conditions for achieving the desired products.
(3) Large volumes of approximately 100-1000 L of culture can be processed in it.
(4) Oxygen bubbles dramatically increase the oxygen transfer area in a simple stirred-tank bioreactor.

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193. The plant part used for tissue culture is sterilized by
(1) Anti-microbial chemicals
(2) Ionising radiations
(3) Nutrient media
(4) Non-ionising radiations

194. The first human hormone produced by the recombinant DNA technology is
(1) Insulin
(2) Melatonin
(3) Testosterone
(4) Progesterone

195. A pathogenic DNA molecule in small amount was extracted from a blood sample. Which of the following techniques should be used to amplify the DNA found in the given sample?
(1) PCR
(2) Western blotting
(3) Northern blotting
(4) ELISA

196. If '*ori*' from a plasmid of an organism is replaced with an alien piece of DNA, then the consequence of this experiment will be that
(1) The alien piece of DNA will replicate.
(2) The alien piece of DNA will not be able to replicate.
(3) The alien piece of DNA will be produced with high copy numbers.
(4) The chromosomal DNA of the organism will provide genes for replication of the ligated alien DNA.

197. In a gene cloning experiment, a foreign gene encoding enzyme β-galactosidase is inserted at the site same as that of amp^R in vector pBR322, followed by its insertion in the host cell.
Select the **incorrect** statement w.r.t the obtained results after the completion of the above-mentioned experiment.
(1) Recombinants give blue coloured colonies in the presence of a chromogenic substrate and will not grow in ampicillin containing medium.
(2) Non-recombinants will give white coloured colonies in the presence of a chromogenic substrate.
(3) Non-recombinant transformants will be ampicillin and tetracycline resistant.
(4) Non-transformants will be ampicillin sensitive but resistant to tetracycline.

198. Read the following statements and select the **correct** option.
Statement (A): DNA molecules are lipophilic in nature.
Statement (B): In gel electrophoresis, the larger the DNA fragment the farther it moves from the cathode.
(1) Only statement (A) is correct.
(2) Both statements (A) and (B) are incorrect.
(3) Only statement (B) is correct.
(4) Both statements (A) and (B) are correct.

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199. **Assertion (A):** *Hind* II is the first restriction endonuclease to be isolated, not *Hind* I.

Reason (R): Each restriction endonuclease recognises a specific palindromic nucleotide sequence in the DNA.

In the light of above statements, select the **correct** option.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(3) (A) is true; (R) is false

(4) Both (A) and (R) are false

200. The DNA 'X' and 'Y' are treated with the same restriction enzyme. Both DNA have the same number of restriction sites for the used restriction enzyme. After performing the restriction digestion experiment, 3 fragments of 'X' DNA and 2 fragments of 'Y' DNA were observed. Select the **correct** option w.r.t. the shape of 'X' and 'Y'.

	'X'	'Y'
(1)	Circular	Linear
(2)	Linear	Circular
(3)	Linear	Linear
(4)	Circular	Circular

❑ ❑ ❑

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