Unit -IX

Chapter-11. Biotechnology Principles and processes

IMPORTANT POINTS

Biotechnology may be defined as the use of microorganisms animals of plants cells of their components to generate products and services useful to human beings.

Genetic engineering and maintenance of sterile condition in chemical engineering process have given the birth to modern biotechonology.

The basic principles of Recombinant DNA Technology involve the stages like generation of DNA fragments and selection of the desired pieces of DNA, insertion of the selected DNA into a cloning vector i.e. plasmid, to create a recombinant DNA, Introduction of the recombinant vectors into host cells (e.g. Bacteria), multiplication and reflaction of clones containing the recombinant molecules and expression of gene to produce the desired product. The tools required in the recombinant DNA technology include restriction enzymes, cloning vectors and competent host.

The term DNA recombinant technology refer to the transfer of segment of DNA from one organism to another organism (host cell) where it reproduce. The proces involve a sequence of steps like isolation of genetic material, Cutting of DNA at specific site, amplification of gene of interest using PCR, insertion of recombinant DNA into the host cell organism obtaining the foreign gene product and downstream processing.

(1)The enzymes that cuts specifically recognition sites in the DNA is known as

	(a) DNA ligase	(b) DNA Polymerase
	(c) Reverse transcriptase	(d) Restriction endonuclease
(2)	DNA can be introduced into	any cell by
	(a) Injection	(b) being complexed with Ca salts
	(c) gel electrophoresis	(d) being placed along with
(3)	Ability of a plant or animal ce organism is :-	Il to repeatedly divide and differentiate into a complete
	(a) cloning	(b) DNA finger printing
	(c) cellular totipotency	(d) mitosis
(4)	Restriction endonuclease is a	lso known as -
	(a) molecular glue	(b) DNA ligase
	(c) DNA Polymerase	(d) molecular scissors
(5)	Extra chromosomal small cir stranded DNA molecule in ba	lar double stranded DNA molecule in a bacterial cell is a cterial cell is
	(a) Plastid (b) Plasmi	d (c) Mitochondrion (d) Chloroplast

(6) I (((7) V	Introduction of foreign genes into plant or animal cells using micropipettes is(a) Electroporation(b) Chemical - mediated genetransfer(c) microinjection(d) Particle gunWhich one of the following is releated with genetic engineering ?(a) Mulations(b) Ribosomes(c) Mitochondria(d) PlasmidsIn bacteria, genes for antibiotic resistance are usually located in(a) Plasmids(b) Cytoplasm(c) Mitochondria(d) Nucleus
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(8) I	(a) Plasmids (b) Cytoplasm (c) Mitochondria (d) Nucleus
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(9) A	A technique used to make numerous copies of a specific segment of DNA quickly and accurately
((a) Translation (b) transcription
((c) Ligase chain reaction (d) polymerase chain reaction
(10) 7	The enzyme that cleaves DNA at specific sites, producing sticky ends is called
((a) Restriction endonuclease (b) Cleaving enzyme
((c) Lysing enzyme (d) Exonuclease
(11) V	Which of the Following is a genetic vector?
((a) Plasmid (b) Phage (c) Cosmid (d) All of these
(12) F	Restriction endonucleases are used in genetic engineering because -
((a) They can degrade harmful proteins
((b) They can join DNA fragments
((c) They can cut DNA at specific base sequences
((d) They can cut DNA at variable sites
(13) I	Ideal host for the amplification of DNA molecules is
((a) Viruses (b) Plants (c) Bacteria (d) Animals
(14) 7	Ti Plasmid naturally occurs in
((a) Agro bacterium (b) Corynebacterium (c) Staphylococcus (d) Vibrio
(15) 7	The sticky ends of Fragmented DNA molecules are made up of
((a) calcuim salts (b) endo nuclease (c) un paired bases (d) methyl groups
(16) V	Which of the following are the essential requirements for recombination?
((a) Single stranded DNA (b) DNA ligase
((c) DNA Polymerase I (d) All of the above
(17) 7	The Plasmid derived from E.Coli is
((a) PBR327 (b) PBR322 (c) both a above (d) None
(18)	Ti Plasmid is useful in
((a) bringing new genes into animal cells (b) bringing new genes into plant cells
((c) to nearly any sites on a chromosome (d) bringing tumour cells into plant cells
(19) N	Many copies of a DNA molecule in a test tube are procurred by
((a) Polymerase chain reaction (PCR) (b) Molecular chain reaction (MCR)
((c) Ephemeral chain reaction (ECR) (d) All of these
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(20)	Bam H I, ECo R I, Sal I are the type	es of
	(a) restriction endonucleasses	(b) restraction endoxidases
	(c) restriction exonucleases	(d) restriction polymerases
(21)	Retro viruses have genetic matetial w	/hich is
	(a) DNA (b) RNA	(c) both DAN & RNA (d) proteins
(22)	Genetic engineering is possile because	se
	(a) the phenomenon of transducation	n in bacteria is well understood
	(b) we can see DNA by electron mic	croscope
	(c) we can cut DNA at specific sites	by endonucleases like DNA ase I
	(d) restrication endonuclease purifie	d from bacteria can be used in vitro
(23)	Plasmids are the suitable vectors for	genetic cloning as
	(a) they are indispendable	
	(b) they are self replicating units	
	(c) they are essential for bacterial rep	producation
	(d) None of the above	
(24)	Which of the following is used in gen	etic engineering ?
	(a) Restrication endonuclease	(b) Mycobacterium
	(c) Entameha	(d) Pepsin
(25)	The first hormone artificially produce	ed by culturing bacteria is
	(a) Insulin (b) thyroxine	(c) Testosterone (d) Adrenaline
(26)	When the number of genes increases	s in response to some signal the effect is called
	(a) gene dosage	(b)Gene pool
	(c) gene amplification	(d) gene freaquency
(27)	Which one of the following pairs is c	orrectly matched ?
	(a) RNA polymerase - RNA primer	
	(b) Restrication enzymes - Genetic en	ngineering
	(c) Centeral dogma - codon	
	(d) okazaki fragments - splicing	
(28)	Plasmids are autonomously replicating	ng mini chromosomes found in
	(a) Bachterio phage lambda	(b) Leishmania donovani
	(c) Escherichia coli	(d) para moecium caudatum
(29)	Improvement of genotype of an orga	anism by addition of some foreigm gene is
	(a) genetic diversity	(b) gene handing
	(c) tissue cutlure	(d) genetic engineering
(30)	Two bacteria found to be very useful	in genetic engineering experiments are
	(a) Nitrosomonas and Klebsiella	(b) Escherichia and Agrobacterium
	(c) Nitrobacter and Azotobacter	(d) Rhizobium and Diplococcus

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(31)	Restriction enzymes are isolated	chielfy from
. ,	(a) Algae (b) Fungi	(c) Protozoans (d) Prokaryotes
(32)	There are special proteins that h	elp to open up DNA double helix in front of the
. ,	reaplication work . these protein	ns are
	(a) DNA gyrase	(b) DNA polymerase I
	(b) DNA ligase	(d) DNA topoisomerase
(33)	Technology which uses living co	omponents for the welfare of human being is
	(a) Biology (b) Botany	(C) Bioinformatics (D) Biotechnology
(34)	Which prosess is involved in ma	aking bread cheese, beer and wine ?
	(a) Respiration / hydrolysis	(B) Degradation
	(C) Fermentation	(D) Decomposition
(35)	EFB stands for	
	(a) European Foudation of Biote	echnology
	(B) European Foundation of Bio	ology
	(c) European Foundation of Bio	otechnology
	(d) European Foundation of Bio	logy
(36)	The organism whoes gene have	been artificially altered for desired efect is called as
	(a) genetically mutant organism	(b) gene transfer
	(c) genetically modified organism	n (d) Genetically transferred organism
(37)	The sequence of DNA that rea	ids the same backward and forward across the double strand
	is	
	(a) Recipient sequence	(B) palindromic sequence
	(c) Replicate sequence	(d) origin sequence
(38)	How many restriction enzymes	are known to be isolated ?
	(a) more than 800	(b) more than 700
	(c) more than 600	(d) more than 900
(39)	Which of the following step is n	ecessary part of DNA recombination technology?
	(a) Insertion of DNA fragment	into vector
	(b) Insertion of vector into Bact	eria
	(c) multiplication of the clones c	ontaining the recombination molecule
	(d) All the above	
(40)	Restriction enzymes belong to w	vhich class of enzymes ?
	(a) Nucleolase (b) Ex	to nucleases
	(c) Nucleases (d) End	donucleases
(41)	A sequence of in a genome at w	hich replication is intiated in
	(a) origin of relpication	(b) selectable marker
	(c) cloning site	(d) origin of restriction

	Questionbank Biology
(42)	Genes which helps in the growth of transformants are
. ,	(a) orgin of replication (b) cloning site
	(c) origin of restriction (d) selectable marker
(43)	Ti Plasmid is a cloning vector which works with
	(a) All the plants (b) Dicots only
	(c) Monocots only (d) Thallophytes only
(44)	During which of the following techniques host cells are exposed to pulse of high
	voltage current ?
	(a) Electroporation (b) Particle Bombard ments
	(c) Micro injection (d) lipofection
(45)	Particle bombardment technique is also known as
	(a) Lipofection (b) Electroporation (c) Biolistic (d) Micro injection
(46)	Which enzyme is used to break the membrane to relase plant DNA?
	(a) Lysozyme (b) Chitinase (c) Cellulose (d) All the above
(47)	Which enzyne is used to break the membrane to relase animal DNA?
	(a) Lysozyme (b) chitinase (c) Celluose (d) All the above
(48)	Which is the first step in the process recombinant DNA technology?
	(a) denaturing of DNA (b) Annealing of DNA
	(c) Isolation of Donor DNA (d) Down streaming
(49)	Which primers are used in annealing during amplification of gene?
	(a) Reverse primers (b) Forward primers
	(c) Oligo nucleotide primer (d) Internal primers
(50)	What is temperature required for annealing of DNA molecule ?
	(a) $50-65^{\circ}$ C (b) $30-35^{\circ}$ C
	(c) $40-45^{\circ}$ C (d) $20-25^{\circ}$ C
(51)	Which of the following is related with genetic engineering?
	(a) Breeding (b) somatic hybridization
	(c) mutation (d) Transgenic
(52)	What is C - DNA ?
	(a) circular DNA
	(b) Cloned DNA
	(c) DNA produced from reverse transcription of RNA
	(d) Cytoplasmic DNA
(53)	Which of the bollowing statement is incorrect?
	(a) cosmid contains gene coding for viral protein
	(b) cosmid relpicates like plasmids
	(c) cosmid has antibioticresistant marker gene
	(d) cos sit has 12 bases helping to join complete genome to make it circular

- (54) The genetic recombinants obtained by in sertion of plasmid into 1 phage genome is called
 - (a) cosmid (b) plasmid
 - (c) phagmid (d) foreign DNA
- (55) TATAATG sequnce near the RNA start point of phokaryotic promoter is.....
 - (a) NICKS (b) DNA marker

(c) pallindrome (d) pribnow box

- (56) Exonucleases cleaving nucleotides one at a time from the end of polynucleotide chain are.(a) Specific for 5' end of RNA strand(b) specific for 3' end of RNA strand
 - (c) specific for both 5' and 3' ends of nucleotide strand
 - (d) Non-specific for 5' and 3' ends of nucleotide
- (57) Genes that are involved in turning on or off the transcription of a set of structural genes are called
 - (a) Polymorphic genes (b) operator gene
 - (c) Rebundant gene (d) Regulatory gene
- (58) This segment of DNA restuction sites I and II which create restriction fragments a,b and c which of the following gel (s) Produces by electrophoresis would represent the separation and identity of these fragments ?



- (59) Enzymes used in PCR is
 - (a) taq polymerase
 - (b) gyrase
 - (c) transcriptase
 - (d) hexokinase
- (60) What are structure labelled A & B respectively
 - (a) EcoRv restriction endonuclease and E coRv ligase
 - (b) EcoRv ligase and EcoRv nuclease and EcoRvmethlase
 - (c) Eco—Rv restriction endo EcoRv methylase
 - (d) EcoRv Polymerase and EcoRv methylase



(61) Can you pick up from the figure how bacteria protects its own genone from degradation by restreiction endonuclease ?



(a) site specific coupling

(b) site specific oxidizing

(c) site specific oxidizing

(d) site specific methylases

(62) EcorI, EcoRv and Sac I are types of restriction enzymes Three types of termini can be generated (1) 5¹ staggered and (2) Blund ends (e) 3¹ staggered ends 5¹ termini of each strand in the cleavage product retain phosphory, group from the phosphodiester bond 3¹ termini are hydroxylated which of the following is correct answer ?



- (a) All of these produce sticky ends
- (b) All of them produce blunt ends
- (c) Each one of them can produce sticky and blunt ends
- (d) All of them act on pallindromic sequences



- (63) This is figure of plasmid $_{P}BR322$ Identiby what represented by A, B, and C
 - (a) ATcR, B ApR and C EcorI
 (b) ATcR, B EcoRI and C ApR
 (c) A EcorI, B ApR and C TcR
 (d) AApR, B TcR and C EcoRz



Matching type questions

(64)	These	e are importa	ant set of enzy	ymes u	ised in t	oiotechnolog	gy Match them with exact role	
	Р	Taq DNa Polymerase			(i) cutting single stranded part of DNA			
	Q	S I nuclease	e		(ii) Lig	gase		
	R	Restriction	endo nucleas	se	(iii) Th	nermostable	enzyme	
	S	mole cular g	glue		(iv) cu	tting pallind	romic sequences	
					(v) uni	ion of pallin	dromic sequences	
		Р	Q	R		S		
	(a)	(iii)	(iv)	(i)		(ii)		
	(b)	(iii)	(v)	(iv)		(ii)		
	(c)	(iv)	(i)	(v)		(ii)		
	(d)	(iii)	(iv)	(i)		(ii)		
(65)	Matc	atch the column I and column II						
	Р	Radio active andibody (a)		(a)	substance that can be constructed in the labora			
					tory			
	Q	Artificial gen	ne	(b)	substa	nce that car	n be used to identify colonies	
					of gen	eticully eng	ineered bacteria that makes	
					particu	ular gene pro	oduct	
	R	Amplification	n	(c)	Abnor	rmal enhanc	ed replication of a plasmid	
					many	copies of pla	asmid in each cell	
	S	To produce	clones	(d)	A larg	e population	n of idential cells	
	Т	short gun cl	oning	(e)	The us	se of entire a	array of genes of an organis-	
					m in o	rder to obta	in particular gene product	
		Р	Q	R		S	Т	
	(a)	b	a	с		d	e	
	(b)	a	c	b		d	e	
	(c)	a	c	d		b	e	
	(d)	b	c	e		d	a	

 Assertoin- Reason type Questions A is assertion R is reasoning (a) A is correct, R is explanation of A (b) A is correct, R is correct but it is not exlpanation of A (c) A is correct, R is false. (d) A is wrong, R is wrong (e) A is wrong, R correct 	<i>n</i> tth
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 (b) A is correct, R is correct but it is not exlpanation of A (c) A is correct, R is false. (d) A is wrong, R is wrong (e) A is wrong, R correct 	<i>n</i> tth
 (c) A is correct, R is false. (d) A is wrong, R is wrong (e) A is wrong, R correct 	<i>n</i> tth
(d) A is wrong, R is wrong (e) A is wrong, R correct	<i>n</i> tth
(e) A is wrong, R correct	/ntth
	/ntth
(66) A - Hybridoma cells are shifted to a medium deficient in nutrient which can not be syn	
sized by myeloma cells	
R - This medium allows selection of hybridoma cells	
(a) (b) (c) (d) (e)	
(67) A - The term hybridoma is applied to fused cells	
R - They are formed by the fusion of lymphocyte cell and myeloma cell	
(a) (b) (c) (d) (e)	
(68) A - Extraction and purficiation of enzymes is laborious and expensive	
R - protein engineering can be used to produce enzymes at large scale	
(a) (b) (c) (d) (e)	
(69) A - Restriction enzymes of different organisms that recognize the identical sequences	S
a the called isoschizomers	
R - They are present only in eukarytoes	
(a) (b) (c) (d) (e)	
(70) A- Plasmids are tools of genetic engineering	
R- Virulence plasmids provide pathogenecity to bacteria	
(a) (b) (c) (d) (e)	
(71) For transformation, micro particles coated with DNA are bombarded with gene gun n	made up of.
(a) Platinum or Zinc (b) Silicon or Platinum	
(c) Gold or tungsten (d) Silver or Platinum	
(72) PCR and Restriction fragment lenth Polymorphism are the methods for. (A	AIPMT-2012)
(a) genetic transformation (b) DNA Sequencing	
(c) DNA finger printing (d) Study of enzymes	
(73) The linking of antibiotic resistance gene with the plasmid Vector became possible with (C	th CBSE-2008)
(a) DNA ligase (b) Exonuclease (c) Endo nuclease (e) DNA Polymerase	
(74) Gel electrophoresis is used for (C	CBSE-2008)
(a) Isolation of DNA molecule	
(b) Cutting of DNA in to fragments	
(c) Separation of DNA fragments according to their size	
(d) Construction of recombinant DNA by joining with cloning Vector	

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(75)	Which on	e of the follwing Palindromic	base sequence in DNA can be ea	asily cut at about
	the middle	e by some Particular restriction	n enzyme?	(CBSE-2010)
	(a) 5 ¹	GATATG	31	
	31	CTACTA	. 51	
	(b) 5 ¹	GAATTC	.31	
	31	CTTAAG	_51	
	(c) 5^1	CACGTA	31	
	31	CTCAGA	5 ¹	
	(d) 5 ¹	CGTTCG	31	
	31	ATGGTA	51	
(76)	Gentic en	gineering has been sucessfully	used for producing	(CBSE-2010)
	(a) trange	nic models for studying new t	reatments for Certain cardiac dis	seases.
	(b) transg	enic Cow - Rosie which produ	uces high fat milk for making ghe	ee.
	(c) anima	ls linke bulies for farm work a	s they have super power.	
	(d) transg	enic mice for testing safety of	polio Vaccine before use in huma	ans.
(77)	Match the	e following and choose the cor	rect combination from the option	n given
				(Karnatak PMT-2005)
		Column I	Column II	
	(a)	Escherichia coli	1 - nif gene	
	(b)	Rhizobium meliloti	2 - digestion of hydrocarbo	ns of crude oil
	(c)	Bacilius thuringiensis	3 - human insulin production	n
	(d)	Pseudomonas putida	4 - Biocontrol of fungal dise	ease
		5	- biodegradable insecticide	
	(a) A =	= 3, B = 1, C = 5, D = 4	(b) $A = 1, B = 2, C = 3, D$	= 4,
	(c) A =	= 2, B = 1, C = 3, D = 4	(d) $A = 4$, $B = 3$, $C = 1$, D	= 2
	(e) A =	= 3, B = 1, C = 5, D = 2		
(78)	Find the in	ncorrrect statement		
	(a) Ge	ne therapy is a genetic enginee	ering technique used to treat disea	ase at molecular
	leve	el by replacing defective genes	with normal genes.	
	(b) Cal	citonin is a medically useful re-	combinant product in the treatme	ent of intetility
	(c) Bt	toxin is a Biodegradable insect	icide obtained from bacillis thurin	ngiensis
	(d) Trie	choderma sp. is a biocontrol a	gent for fungal diseases of plants	;
	(e) Tot	ipotency is the potential ability	y of a cell to develop into a comp	olete plant
			(К	Karnatak PMT-2005)
(79)	Productio	on of a human protein in bacter	ria genetic engineering is possible	e because
	(a) bac	terial cell can carry out the RN	NA splicing reactions	
	(b) the	human chromosome can repli	cate in bacterial cell	
	(c) the	mechanism of gene regulation	is identical in human and bacteri	ia
	(d) The	e genetic code is universal	495	(CBSE-2005)
INDIAI	N SCHOOL M		SCHOOL MUSCAT	INDIAN SCHOOL MUSCAT

				Questior	ıbank Biolog	у		
(80–)	The b	basis of DNA	finger printing is					
	(a)	The double	helix	(b)	Errors in b	ase seque	nce	
	(c)	Poly morph	nism in sequence		(d) DNA	A replication	on	
	(e)	DNA Coilir	ıg			-		(Kerala - 2008)
(81)	Age	netically engi	neered microorga	nism us	ed successfu	lly in bion	nediation c	of oil spillg
	is spe	cies of						(CBSE-2007)
		(a) Trich	oderma	(b) X	amthomona	s (c) Bacil	llus (d)	Pseudomonas
(82)	What	t is the function	on of Restriction e	ndonuc	clease?			(AIPMT -2006)
	(a)	Restricts th	e synthesis of DNA	A inside	e the nucleus	ł		
	(b)	Synthesizes	S DNA					
	(c)	Cuts DNA	molecule randoml	У				
	(d)	cuts DNA r	nolecule at specifi	c sites				
(83)	The r	nuclease enzy	yme which begins	its attac	ck from Free	end of a p	polynucleo	otide is
								(Pb-PMT-2001)
	(a) E	xonuclease	(b) Kinase	:	(c) Polyme	erase (d) E	Indonuclea	ase
(84)	Ident	ify the Plasm	id					(ET 2004)
	(a) A	lu I	(b) Hind II	Ι	(c) ECOR	$I (d) P^{BR3}$	322	
(85)	Mole	cular scissor	rs, which cut DNA	at spec	cific site			(Kerala-2004)
	(a) lig	gase	(b) cellulas	se	(c) pectina	se (d	l) Polymer	rase
	(e) re	striction end	onuclease					
(86)	In tra	insgenics the	experession of tra	insce in	the target ti	ssue is kno	own by	(CBSE-2004)
	(a) E	nhancer	(b) 7	Fransge	ne	(c) Pron	noter	(d) Reporter
(87)	Varia	ble number o	of tender repeats (VTNR)	in the DNA	molecule	are highly	vuseful
	in							
	(a)	monoclona	l antibody product	ion	(b) DNA fi	nger printi	ing	
	(c)	Recombina	nt DNA technolog	y (d) st	em cell cultu	ıre		(K.C.E.T - 2006)
(88)	Whic	h one of the	following bacteria	has fou	ind extensive	e use in ge	netic engii	neering
	work	in plants ?						
	(a)	Agrobacter	ium tamefaciens		(b) Clostric	lium septio	cum	
	(c)	Xanthomor	nas citri		(d) Bacilius	s Coaguler	ns	
								(CBSE - 2003)
(89)	What	t does Bt sta	nd For the Popula	r crop]	Bt Cotton ?			
	(a) B	est	(b) Best type		(c) Biotech	nology (d	l) Bacilius	tomentosta
(90)	The t	otal number	of nitrogenous bas	ses in h	uman genon	ne is estim	ated to be	about
	(a) 35	5 million	(b) 3.1 million	(c) 3.	5 million	(d) 3.5 t	housand	(AIIMS 2004)
(91)	Nam	e of the drug	used in cancer tre	atment	produced by	y using bio	otechnolog	gy is
	(a) H	GH	(b) TSH	(c) In	sulin	(d) Inter	fern	

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			(Kerala PMT 2004)
(92)	Which of the following pair is	correctly matched ?	
	(a) - central dogma - codon		
	(b) - Okazaki fragments - spli	cing	
	(c) RNA Polymerase - RNA	Primer	
	(d) Restriction enzymes - gene	etic engineering	(JIPMER - 2004)
(93)	First Biochemical to be Produ	cod commer cially by microbial clo	ning and genetic
	engineering is		(BHU-2005)
	(a) interferom (b) p	penicillin	
	(c) human insulin (d) H	Fertility factors	
(94)	First hormone prepared by ge	netic engineering is	(Manipal-2005)
	(a) Insulin (b) G	Dxytocin	
	(c) adrenaline (d) S	Somatotropin	
(95)	A technology which has found	d immense use in solving cases of dis	sputed parentage is
			(Karnataka ET-2005)
	(a) DNA finger printing	(b) Polymerase chain	reaction
	(c) Recombinant DNA techno	ology (d) Monoclonal antib	ody production
(96)	Matching sequence of DNA b	between two evidences, one of the cr	riminal with the
	suspect is known as		(AMU-2005)
	(a) DNA finger printing	(b) DNA amplification	
	(c) Gene maping	(d) DNA resolution	
(97)	Given below is a sample of a particular sector of a particular secto	portion of DNA strand giving the ba	ase sequence on the
	opposite strands, what is so s	pecial shown in it ?	
	5 ¹ GAAT	TC 3 ¹	
	3 ¹ CTTA	AG 5 ¹	
	(a) Replication Completed		
	(b) Deletion mutation		
	(c) start codon at 5^1 end		
	(d) Palindromic sequence	of base pairs	
(98)	Agarose extracted From wee	ds finds use in	(A.I.PMT 2011)
	(a) spectrophoto metry	(b) Tissue culture	
	(c) Gel electrophoresis	(d) PCR	
(99)	Widely used tool in genetic er	ngineering of crop plants is	(AIEEE 2004)
	(a) protoplast fusion	(b) Transposon	
	(c) Micro injection	(d) Agrobacterium me	ediation
(100)	c DNA Probes are copied fro	m messenger RNA molecule with th	he help of
	(a) Restriction enzyme	(b) Reverse transcriptase	
	(c) DNA Polymerase	(d) Adenosine deaminase	
		407	(AIIMS 2005)
		49/	

		Q	uestionbank Biology					
(101)	.01) Which one of the following pair is wrongly matched?							
	(a) methanogens - Go	bargas	(b) Yeast - Ethanol					
	(c) Streptomycetes - A	Antibiotic	(d) Coliborms - vinega	r				
			C C		(CBSEPMT-2007)			
(102)	The Prerequisites for b	viotechnologica	l production of antibiot	ic is	. , , ,			
	(a) to search an antibic	otic producing r	nicroorganism					
	(b) to isolate the antibi	otic gene	-					
	(c) to join antibiotic ge	ene with E coli	olasmid					
	(d) All of the above				(MP PMT 2008)			
(103)	Which one of the follo	wing is now be	ing commercially produ	uced by biotec	hnological			
	Procedures							
	(a) Nicotine (b)	Morphine	(c) quinine	(d) Insulin				
(104)	Which one of the follo	wing is a wrong	g matching of a microbe	and its indust	rial			
	product while the rema	aining three are	correct					
	(a) clostridium butylic	um - lactic acid						
	(b) Aspergillis niger cit	rric acid						
	(c) yeast - statins							
	(d) Acetobacter aceti	- acetic acid			(CBSE PMT 2011)			
(105)	Some of the steps invo	olved in the pro	duction of humulin are	given below cl	hoose the			
	correct sequence							
	(i) synthesis of gene (E	NA) for huma	n insulin antibicially					
	(ii) culturing recombin	ant E.Coli in bi	oreactors					
	(iii) Purification of hum	ulin						
	(iv) Insertion of human	n insulin gene in	to plasmid					
	(v) Introduction of rec	ombinant Plasr	nid into E.Coli					
	(vi) Extraction of reco	mbinant gene p	roduct From E.Coli					
	(a) (ii), (i), (iv), (iii) (v)	, (vi)	(b) (i), (iii), (v), (vi), (ii), (iv)				
	(c) (i), (iv), (v), (ii), (vi), (iii)	(d) (iii), (v), (ii), (i), (vi), (iv)				
					(KCET -2010)			

ANSWER KEY

1	d	36	с	71	с	
2	а	37	b	72	d	
3	с	38	b	73	с	
4	d	39	с	74	с	
5	b	40	b	75	b	
6	b	41	b	76	d	
7	d	42	а	77	с	
8	b	43	b	78	а	
9	b	44	а	79	с	
10	d	45	b	80	d	
11	а	46	а	81	с	
12	d	47	b	82	d	
13	с	48	а	83	а	
14	а	49	а	84	с	
15	d	50	а	85	e	
16	b	51	d	86	а	
17	b	52	с	87	b	
18	с	53	а	88	а	
19	а	54	а	89	e	
20	с	55	d	90	d	
21	b	56	b	91	с	
22	а	57	с	92	с	
23	b	58	b	93	а	
24	а	59	с	94	а	
25	а	60	а	95	а	
26	с	61	d	96	d	
27	b	62	b	97	с	
28	с	63	d	98	b	
29	а	64	с	99	b	
30	b	65	а	100	d	
31	b	66	а	101	d	
32	а	67	с	102	d	
33	d	68	d	103	d	
34	с	69	а	104	а	
35	с	70	b	105	b	



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INDIAN SCHOOL MUSCAT