						C	Code No.	R -	2105
Er	Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2023								
				CSS					
			BIOTE	CHNO	LOGY				
			<u>Gener</u>	al Instru	<u>ctions</u>				
1. The	Question Paper	<sup>.</sup> is havin	g 100 O	bjective	Questior	ns, each	carrying	one ma	rk.
2. The	answers are to	be (✔) 't	ick mark	ed' <b>only</b>	in the " <b>F</b>	Respons	se Sheet	" provide	ed.
3. <u>Neg</u>	ative marking :	0.25 ma	<b>arks</b> will	be dedu	cted for	each wro	ong answ	ver.	
Time : 2	Time : 2 Hours Max. Marks : 100								
To be fill	ed in by the Car	ndidate							
Register	in Figures								
Number	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

- 1. Restriction enzymes were discovered by
  - a) Smith and Nathans
  - b) Alexander Fleming
  - c) Berg
  - d) None

DONOTWRITEHERE

#### Bacteria protect themselves from viruses by fragmenting viral DNA with 2.

- a) Ligase
- Exonuclease c)

- Endonuclease b)
- d) Gyrase
- 3. Klenow fragment is derived from
  - **DNA** Ligase a)
  - c) DNA Pol-II

- DNA Pol-I b) **Reverse Transcriptase**
- 4. Southern blotting is

  - Attachment of probes to DNA fragments a)
  - Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet b)

d)

- c) Comparison of DNA fragments to two sources
- Transfer of DNA fragments to electrophoretic gel from cellulose membrane d)

- **ELISA** is 5.
  - a) Using radiolabelled second antibody
  - b) Usage of RBCs
  - Using complement-mediated cell lysis c)
  - d) Addition of substrate that is converted into a colored end product
- 6. The Golden Rice variety is rich in
  - Vitamin C B-carotene and ferritin b) a)
  - c) Biotin d) Lysine
- 7. The DNA fragments have sticky ends due to
  - Endonuclease a) b) Unpaired bases
  - c) Calcium ions d) Free methylation
- 8. Plasmids are used as cloning vectors for which of the following reasons?
  - Can be multiplied in culture a)
  - b) Self-replication in bacterial cells
  - c) Can be multiplied in laboratories with the help of enzymes
  - d) Replicate freely outside bacterial cells
- 9. The human genome project was launched in the year
  - 1980 1973 a) b) 1990 d) 1989 c)
- 10. The vaccines prepared through recombinant DNA technology are
  - a) Third generation vaccines b)
  - c) Second-generation vaccines d) None
- 11. Which is a genetically modified crop?
  - **Bt-cotton** a) **Bt-brinjal** b)
  - Golden rice All c) d)

**First-generation vaccines** 

- 12. PCR technique was invented by
  - a) Karry Mullis Boyer b)
  - c) Sanger d) Cohn
- 13. The first transgenic plant to be produced is
  - Brinjal Tobacco a) b)
  - c) Rice d) Cotton
- 14. RNA interference helps in
  - **Cell** proliferation a) Micropropagation b)
  - c) Cell defense d) Cell differentiation
- 15. Which of the following is the quality of improved transgenic basmati rice?
  - Gives high yield but no characteristic aroma a)
  - b) Gives high yield and is rich in vitamin A
  - Does not require chemical fertilizers and growth hormones c)
  - d) Resistant to insects and diseases
- 16. The first clinical application of gene therapy over a 4-year-old girl was for
  - Adenosine deaminase deficiency a)
  - b) Adenosine deficiency
  - Growth deficiency c)
  - d) Adenine deficiency
- 17. Excision and insertion of a gene is called
  - a) Biotechnology b) Genetic engineering
  - c) Cytogenetics d) Gene therapy
- 18. The expression of a transgene in the target tissue is identified by a
  - a) Transgene b) Promoter
  - c) Enhancer d) Reporter

19.	————————————————————————————————————				
	a)	Retrovirus	b)	Baculovirus	
	c)	Salmonella typhimurium	d)	Rhizopus nigricans	
20.	Whi	ch bacterium is used in the produc	tion o	of insulin by genetic engineering?	
	a)	Saccharomyces	b)	Rhizobium	
	c)	Escherichia	d)	Mycobacterium	
21.	Whi	ch of the following is stress related	l amii	no acid?	
	a)	Valine	b)	Tryptophan	
	c)	Glutamic acid	d)	Proline	
22.	"Fla	vr Savr" a GMO related to			
	a)	Potato	b)	Tomato	
	c)	Grape	d)	Spinach	
23.	"Pru	ussic acid poisoning" or "Sorghum	poiso	ning" is due to	
	a)	HCN	b)	HCI	
	c)	KCI	d)	$H_2SO_4$	
24.	ln p	lants, stable transformation of gene	e is a	chieved through?	
	a)	Agrobacterium	b)	Gun method	
	c)	Electroporation	d)	PEG	
25.	The	precursor of hormone ethylene is			
	a)	Ascorbic acid	b)	Methionine	
	c)	Tryptophan	d)	Ubiquitin	

26. What is the temperature of liquid Nitrog	en?
--	-----

- a) -196°C b) -90°C
- c) -20°C d) 0°C

27. Which of the following represents the first plant to undergo transgenic activity?

a)	Tomato	b)	Cotton
c)	Brassica	d)	Tobacco

## 28. Edible portion of mango is

a)	Epicarp	b)	Mesocarp
c)	Pericarp	d)	Fleshy thalamus

29. Which of the following plants is useful for phytoremediation?

a)	Date palm	b)	Grapes
c)	Carrot	d)	Apple

## 30. Bioluminescence is generated by

- a) Luciferinb) Acetylenec) Biotind) Pectin
- 31. Which of the following is a source of Bio-diesel?
  - a) Brassicab) Sun hempc) Nostocd) Jatropha

## 32. DNA fingerprinting involves

- a) HPTLC b) SDS-PAGE
- c) DOT BLOT d) RFLP

33.	. Who brought "White revolution" in India?				
	a)	Swaminathan	b)	Kurien	
	c)	Datta	d)	Borlaug	
34	Cov	u milk is rich in			
54.	COM				
	a)	Casein	b)	Starch	
	c)	Albumin	d)	All of the above	
35.	Whi	le preparing cDNA library one mus	t isola	ate	
	a)	tRNA	b)	gRNA	
	c)	rRNA	d)	mRNA	
36.	Who	o is considered as the father of tiss	ue cu	Ilture?	
	a)	Bonner	h)	Haberlandt	
	a)	Leihech	d)	Couthorat	
	C)	Laibach	a)	Gautheret	
37.	Dim	ethyl sulfoxide is used as			
	a)	Celling agent	b)	Alkylating agent	
	c)	Chelating agent	d)	Cryoprotectant	
38.	Wid	ely used chemical for protoplast fu	sion i	S	
	a)	mannitol	b)	sorbitol	
	c)	mannol	d)	poly ethylene glycol	
39.	Part	of plant used for culturing			
	a)	scion	b)	explant	
	c)	stock	d)	callus	

7

40.	. A medium composed of defined chemicals only is				
	a)	natural media	b)	synthetic media	
	c)	artificial media	d)	none of the above	
41.	To	obtain haploid plant, culture			
	a)	entire anther	b)	nucleus	
	c)	embryo	d)	apical bud	
42.	Son	naclonal variations are			
	a)	caused by mutagens	b)	produced during tissue culture	
	c)	caused by gamma rays	d)	induced during sexual embryogeny	
43.	The	following plant cells show totipote	ncy		
	a)	xylem vessels	b)	sieve tubes	
	c)	meristem	d)	cork cells	
44.	The	e vector used in crop improvement			
	a)	plasmid	b)	cosmid	
	c)	phasmid	d)	agrobacterium	
45.	Cal	lus is			
	a)	tissue that forms embryo			
	b)	insoluble carbohydrate			
	c)	tissue that grows to form embryoi	d		
	d)	unorganised actively dividing cells	s in c	culture	
46.	Whi	ich is the leading cause of blindnes	s in (	children?	
	a)	glaucoma	b)	cataract	
	c)	colour blindness	d)	Vitamin A deficiency	
47.		is caused by a deficienc	cy of	niacin	
	a)	scurvy	b)	rickets	
	c)	pellagra	d)	pernicious anaemia	

48.	<ol><li>Muscle weakness and fragility of red blood cells are caused by</li></ol>			
	a)	deficiency of vit. E	b)	deficiency of vit. D
	c)	deficiency of vit. C	d)	deficiency of vit. A
49.		———— is a digestive hormone		
	a)	lipase	b)	pepsin
	c)	amylase	d)	gastrin
50.		———— is required for calcium a	absor	ption from small intestine
	a)	vit. A	b)	vit. D
	c)	vit. E	d)	vit. K
51.	The	stimulus for insulin secretion is		
	a)	low blood sugar level	b)	low glycogen level
	c)	high blood sugar level	d)	high glycogen level
52.	Exc	ess growth hormone would cause	all th	e following except
	a)	suppression of cancer	b)	gigantism in children
	c)	acromegaly in adults	d)	diabetes
53.	Insu	lin enhances glucose transport in	all th	e following except
	a)	skeletal muscles	b)	adipose tissue
	c)	brain	d)	myocardium
54.	The	Secretions differ in	mal	es and females
	a)	adrenal	b)	parathyroid
	c)	gonadal	d)	pancreas
55.	Pos	terior pituitary stores and releases		
	a)	growth hormone and prolactin		
	b)	prolactin and oxytocin		
	c)	oxytocin and ADH		
	d)	ADH and growth hormone		

56.	ADł	H is also called		
	a)	adrenocorticotropic hormone	b)	growth hormone
	c)	glucocorticoid hormone	d)	vasopressin
57.	Thy	roxine is also called		
	a)	tetraiodothyronine	b)	triiodothyronine
	c)	thyroids	d)	thymus
58.	Рер	otide bond is a		
	a)	covalent bond	b)	ionic bond
	c)	metallic bond	d)	hydrogen bond
59.	One	e of the following is not involved in	tertia	ry protein structure. It is
	a)	disulphide bond	b)	hydrogen bond
	c)	salt bridge	d)	hydrophobic interactions
60.		is not a peptide hormon	е	
	a)	insulin	b)	growth hormone
	c)	prolactin	d)	oestrogen
61.	One	e of the following is wrong about fib	orous	proteins. It is
	a)	keratin is an example		
	b)	collagen is an example		
	c)	haemoglobin is an example		
	d)	none of the above		
62.	Ligł	nt band of muscle has		
	a)	actin	b)	myosin
	c)	actin and myosin	d)	tubulin

63.	 allosterically	/ activate	alvcoaen	phosphor	vlase
00.	uncotorioung		giyoogoii	pricoprior	yiaoo

- a) ATP b) AMP
- c) glucose-6-phosphate d) glucose-1-phosphate

64. The first intermediate of cholesterol synthesis is

- a) mevalonate b) isoprene
- c) squalene d) ethylene

- a) thiolase
- b) HMG-CoA synthase
- c) HMG-CoA reductase
- d) pyruvate kinase

66. ———— is the major regulation point of the cholesterol synthetic pathway.

- a) thiolase
- b) HMG-CoA synthase
- c) HMG-CoA reductase
- d) pyruvate kinase

67. The essential intermediate in the pathway from acetate to cholesterol is

- a) acetic acid b) ethylene
- c) isoprene units d) methane
- 68. Alcohol fermentation by S. *cerevisiae* is due to
  - a) zymase b) galactose
  - c) trisaccharide d) disaccharide

69.	Yea	st cannot ferment starch or comple	ex ca	rbohydrates because it lacks
	a)	a drug	b)	zymase
	c)	a diastase	d)	lipase
70.	One	e of the rich sources of riboflavin is		
	a)	egg	b)	roots
	c)	fruits	d)	nuts
71.	Yea	st grows richly on		
	a)	organic matter with sugar	b)	nectar
	c)	fungi	d)	virus infected
72.	Citr	ic acid produced by		
	a)	mucor	b)	aspergillus
	c)	Rhizopus	d)	erythrocytes
73.		produces gluconic acid		
	a)	aspergillus niger	b)	antigen
	c)	Both (a) and (b)	d)	none above
74.	Two	o different strategies could be of us	e for	screening of a ——— library
	a)	metagenomic	b)	sequence
	c)	function	d)	probes
75.	The of c	chemical structure of a new comp hemistry and	ouno	d could be proposed by a combination
	a)	biotechnology	b)	bioinformatics
	c)	bioprospecting	d)	genome structure
76.	The che	chemical structure of a new co mistry and	mpou	und is deduced by a combination of
	a)	mass spectrometry	b)	genomics
	c)	molecular spectrometry	d)	phenotype analysis
		1	2	R – 2105

77.	Etha	anol sensitive cyanobacteria is not	goo	d for	production				
	a)	biofuel	b)	citric acid					
	c)	glycerine	d)	methanol					
78.		is considered a powe	erful	complement of	both cultivation	and			
	met	agenomics							
	a)	FCA	b)	HGA					
	c)	SCG	d)	all above					
79.	Met	abolomic analyses typically starts	with	the purification of	f				
	a)	RNA	b)	DNA					
	c)	tRNA	d)	rRNA					
80.	Lac	tic acid is used in							
	a)	preservation	b)	tanning					
	c)	production of certain plastics	d)	all the above					
81.	Vit.	B2 is produced by							
	a)	propionic acid bacterium							
	b)	lactic acid bacterium							
	c)	Saccharomyces							
	d)	Rhizopus							
82.	Heat-killing of microorganisms is done in the process called								
	a)	immunization							
	b)	sterilization							
	c)	pasteurisation							
	d)	none of the above							

83.	Anaerobic respiration of yeast produces								
	a)	alcohol	b)	carbon dioxide					
	c)	alcohol, carbon dioxide etc	d)	none of the above					
84.	Sau	Sausages are fermented							
	a)	vegetables	b)	meat					
	c)	milk	d)	sauce					
85.	Passage of effluents into the oxidation tank is for								
	a)	primary treatment							
	b)	secondary treatment							
	c)	both (a) and (b)							
	d)	tertiary treatment							
86.	The first antibiotic was discovered by								
	a)	R Koch	b)	L. Pasteur					
	c)	A Fleming	d)	W Fleming					
87.	An enzyme produced commercially from saccharose								
	a)	lactase	b)	maltase					
	c)	amylase	d)	invertase					
88.	Streptomycin was first isolated from								
	a)	streptomyces sp.							
	b)	streptomyces rimosus							
	c)	streptomyces erythreus							
	d)	streptomyces griseus							

streptomyces griseus

89. ———— is not considered as greenhouse gas

- a) methane b) oxygen
- c)  $CO_2$  d) all of the above
- 90. Hydrogen gas is produced by bacteria
  - a) anaerobic Clostridia
  - b) lactobadillus
  - c) Streptomyces
  - d) none above
- 91. In the method of DNA stable-isotope probing DNA is separated in
  - a) sodium chloride
  - b) potassium chloride
  - c) caesium chloride
  - d) none above
- 92. Comprehensive study of genes of a species is called
  - a) genomics b) microbiota
  - c) metagenomics d) All the above
- 93. Publication of the genome of the bacterium influenzae KD in 1995
  - a) bacterial b) Haemophilus
  - c) H1N1 d) Viridae
- 94. Currently ———— generation high throughput automatic methods are being developed
  - a) second b) third
  - c) first d) fourth

95. Functional genes have the potential to be used as ———— in assays

- a) developed
- b) biotechnology
- c) biomarkers
- d) molecular markers

96. The hormone associated with stomatal movement is

- a) auxin b) gibberellin
- c) cytokinin d) ABA

97. ——— tissues consist of living cells

- a) xylem parenchyma b) tracheid
- c) vessel d) xylem fibre
- 98. \_\_\_\_\_ breathes through skin
  - a) human
  - b) snake
  - c) earthworm
  - d) hippopotamus
- 99. The outer whorl of flower is called
  - a) petal
  - b) androecium
  - c) gynaecium
  - d) calyx

c)

100. ——— is green algae

chlamydomonas

a) laminaria

- b) sargassum
- d) fucus

## ANSWER SHEET

1	Α	В	С	D	Е
2	Α	В	С	D	Е
3	Α	В	С	D	Е
4	Α	В	С	D	Ε
5	Α	В	С	D	Ε
6	А	В	С	D	Е
7	А	В	С	D	Е
8	Α	В	С	D	Е
9	Α	В	С	D	Е
10	Α	В	С	D	Е
11	А	В	С	D	Е
12	А	В	С	D	Е
13	А	В	С	D	Е
14	Α	В	С	D	Е
15	А	В	С	D	Е
16	Α	В	С	D	Е
17	Α	В	С	D	Е
18	А	В	С	D	Е
19	А	В	С	D	Е
20	Α	В	С	D	Е
21	Α	В	С	D	Е
22	Α	В	С	D	Е
23	Α	В	С	D	Е
24	Α	В	С	D	Е
25	Α	В	С	D	Е

26	Α	В	С	D	Е
27	Α	В	С	D	Е
28	А	В	С	D	Е
29	А	В	С	D	Е
30	А	В	С	D	Е
31	А	В	С	D	Е
32	Α	В	С	D	Е
33	Α	В	С	D	Ε
34	Α	В	С	D	Е
35	Α	В	С	D	Ε
36	Α	В	С	D	Е
37	Α	В	С	D	Ε
38	Α	В	С	D	Е
39	Α	В	С	D	Е
40	Α	В	С	D	Е
41	А	В	С	D	Ε
42	А	В	С	D	Е
43	Α	В	С	D	Е
44	А	В	С	D	Е
45	Α	В	С	D	Е
46	Α	В	С	D	Е
47	Α	В	С	D	Е
48	Α	В	С	D	Е
49	А	В	С	D	Е
50	Α	В	С	D	Е

51	Α	В	С	D	Е
52	Α	В	С	D	Е
53	Α	В	С	D	Е
54	Α	В	С	D	Е
55	Α	В	С	D	Ε
56	А	В	С	D	Ε
57	Α	В	С	D	Е
58	Α	В	С	D	Ε
59	Α	В	С	D	Е
60	Α	В	С	D	Е
61	Α	В	С	D	Е
62	Α	В	С	D	Е
63	А	В	С	D	Е
64	А	В	С	D	Е
65	А	В	С	D	Е
66	Α	В	С	D	Е
67	А	В	С	D	Е
68	А	В	С	D	Е
69	А	В	С	D	Е
70	Α	В	С	D	Е
71	А	В	С	D	Е
72	А	В	С	D	Е
73	Α	В	С	D	Е
74	Α	В	С	D	Е
75	Α	В	С	D	Е



# **ROUGH WORK**

# **ROUGH WORK**

# **ROUGH WORK**