



Gujarat Biotechnology Research Centre

Scientist-D & Joint Director

This question booklet contains 32 pages

Application No: _____

Time: 2 Hours

Total Marks: 200

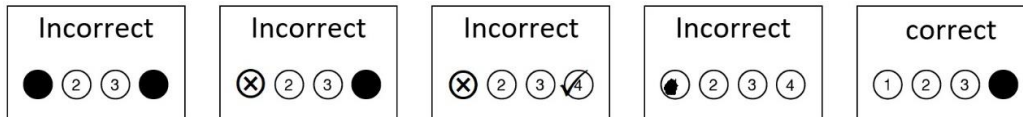
Total Questions: 200

Invigilator Signature :

Candidate Signature :

Instructions for Candidate

1. This question booklet contains 200 questions.
2. Each correct answer carries 1 mark.
3. Every attempted question with incorrect answer shall carry a negative mark of 0.25.
4. Use only Black Ball Point Pen to darken the appropriate circle in OMR.
5. Please darken the complete circle.
6. Darken ONLY ONE CIRCLE for each Question as shown below:



7. Answer once marked cannot be changed.
8. Please do not make any stray marks on the Question Booklet.
9. Rough works must be done on the blank page of Question Booklet.
10. Mark your answer in the appropriate space in the Answer Sheet against the Number corresponding to the question.
11. The Candidate has to submit Question booklet and OMR response sheet to the invigilator on conclusion of examination.

1. 'तेज' शब्दने छोटो लभवाथी शो अर्थ थाय छे?
(A) प्रकाश
(B) अंधकार
(C) ते सिवाय बधुं
(D) ते सिवाय बीजुं नहीं
2. 'संघ' शब्दमां कयो अनुनासिक व्यंजन छे?
(A) ङ
(B) ञ
(C) न
(D) म
3. स्वर विना बे व्यंजनो परस्पर जोडाय त्यारे बनता अक्षरने शुं कहे छे?
(A) सन्ध्यअक्षर
(B) निरनुनासिक
(C) जोडाक्षर
(D) अल्पप्राण
4. समास ओणओ.
स्थितप्रज्ञनी अवस्था में लगभग प्राप्त करी हती.
(A) ब्रह्म
(B) तत्पुरुष
(C) बहुव्रीहि
(D) द्विगु
5. शब्दसमूह माटे ओक शब्द आपो (प्र 5 अने प्र 6 माटे)
चार घडीनो समय _____
(A) योपण
(B) योमासुं
(C) योघडियुं
(D) योसमियुं
6. हिन्दु तत्त्वज्ञाननां छ शास्त्रो _____
(A) षट्तत्त्वार्थसूत्रो
(B) षट्तत्त्वार्थदर्शन
(C) षट्दर्शनो
(D) षटांगतत्वो

7 સમાનાર્થી શબ્દ આપો.

સીમ

- (A) પાદર
- (B) સીસમ
- (C) જોલું
- (D) અદૃશ્ય

વિરુદ્ધાર્થી શબ્દ આપો (પ્ર 8 અને પ્ર 9 માટે)

8 તળિયું

- (A) જમીન
- (B) ટોચ
- (C) ભુપૃષ્ઠ
- (D) ખીણ

9 વામન

- (A) વિરાટ
- (B) હનુમાન
- (C) હિંગુજી
- (D) અવતાર

નીચે આપેલા (પ્ર 10 અને પ્ર 11 માટે) તળપદા શબ્દનો શિષ્ટ શબ્દ, આપેલા વિકલ્પોમાંથી શોધો.

10 નઠાડું

- (A) ખરાબ
- (B) ઠર્યા વિનાનું
- (C) બિભત્સ
- (D) કઠણ

11 શેહ

- (A) છાપ
- (B) શરમ
- (C) સંકોચ
- (D) છાંયો

12 નીચેના શબ્દની સન્ધિ છોડો.

અનાયાસ

- (A) અન્ + આયાસ
- (B) અનુ + આયાસ
- (C) અન્ય + આશ
- (D) અનુય + આશ

નીચેના શબ્દની સન્ધિ જોડો.

- 13 મદ્ (મતા) + અર્થે
(A) મદર્થે
(B) મદ્થે
(C) મદ્રર્થે
(D) મંદર્થે
- 14 દુર્ + લભ
(A) દુરલભ
(B) દુર્લભ
(C) દુષલભ
(D) દુસ્લભ
- 15 નીચેનાં વાક્યોમાં રેખાંકિત સંજ્ઞાનો પ્રકાર, આપેલા વિકલ્પોમાંથી શોધો,
બુધવારે મહેમાન આવશે.
(A) જાતિવાચક
(B) વ્યક્તિવાચક
(C) ભાવવાચક
(D) સમૂહવાચક
- 16 નીચે આપેલાં (પ્ર 16 અને પ્ર 17 માટે) રેખાંકિત પદ કઈ વિભક્તિમાં છે, તે વિકલ્પોમાંથી શોધો.
બાજ-ટુકડી એના પર ચારે બાજથી હલ્લો કરે છે.
(A) અપાદાન
(B) કર્મ
(C) અધિકરણ
(D) કરણ
- 17 બધું કામ એ મોજથી કરતો.
(A) કર્તા
(B) કર્મ
(C) કરણ
(D) અપાદાન

18 નીચેનાં વાક્યમાં રેખાંકિત કરેલાં વિશેષણો કયા પ્રકારનાં છે, તે શોધો.

સ્વામી ! તે અગાધ જળ ક્યાં ગયું?

- (A) પરિમાણવાચક
- (B) ગુણવાચક
- (C) રંગવાચક
- (D) સાર્વનામિક

19 કર્મણિવાક્ય શોધીને લખો :

પ્રપૌત્રી કોશા પૂછતી હતી.

- (A) પ્રપૌત્રી કોશાથી (કંઈક) પુછાતું હતું.
- (B) પ્રપૌત્રી કોશા કંઈક પૂછી રહી છે.
- (C) પ્રપૌત્રી કોશા કંઈક પૂછવાની હતી.
- (D) પ્રપૌત્રી કોશાએ કંઈક પૂછ્યું.

20 પ્રેરકવાક્ય શોધીને લખો :

સ્ત્રીઓએ ભણવું જોઈએ.

- (A) સ્ત્રીઓને ભણાવે છે.
- (B) સ્ત્રીઓથી ભણાય છે.
- (C) સ્ત્રીઓને ભણાવવી જોઈએ.
- (D) સ્ત્રીઓને ભણાવાય છે.

21 આપેલાં વાક્યમાંથી ભાવેવાક્ય શોધો.

હું સાવ તરસ્યો રહી જાઉં છું.

- (A) હું સાવ તરસ્યો રહી ગયો.
- (B) મારાથી સાવ તરસ્યા રહી જવાય છે.
- (C) હું સાવ તરસ્યો રહી જઈશ.
- (D) હું તરસ્યો રહી જાઉં ખરો?

નીચે આપેલા (પ્ર 22 અને પ્ર 23 માટે) રેખાંકિત શબ્દ કયા કૃદંતનો છે તે શોધો.

22 ગિલો ગજવું હાલવવા માંડ્યો.

- (A) હેત્વર્થકૃદંત
- (B) ભૂતકૃદંત
- (C) વિધ્યર્થકૃદંત
- (D) ભવિષ્યકૃદંત

- 23 આ વૃક્ષો વિશાળ શતરંજલક પર મુકાયેલાં ખ્યાદાં જેવાં છે.
(A) ભવિષ્યકૃદંત
(B) ભૂતકૃદંત
(C) સામાન્ય કૃદંત
(D) વિધ્યર્થકૃદંત

(પ્ર 24 અને પ્ર 25 માટે) આપેલ પંક્તિનો છંદ, આપેલા વિકલ્પોમાંથી શોધો.

- 24 મુખ સમ કો મંગલ નહીં, મૃત્યુ સમી નહીં હાણ,
જગ સમ કો જંગલ નહીં, સત્ય સમી નહીં વાણ.
(A) દોહરો
(B) પૃથ્વી
(C) અનુષ્ટુપ
(D) ચોપાઈ

- 25 લાંબા સાથે ટૂંકો જાય, મરે નહીં તો માંદો થાય.
(A) હરિગીત
(B) સવૈયા
(C) મનહર
(D) ચોપાઈ

Insert Suitable articles wherever necessary :

- 26 Kalidas is _____ Shakespeare of _____ India
(A) a, a
(B) a, an
(C) the, the
(D) the, x

Write the letter A,B,C, or D of the correct answer in brackets:

- 27 An honest man always _____ the truth.
(A) speak
(B) speaks
(C) spoke
(D) speaking

- 28 Columbus _____ America.
(A) discovers
(B) discovered
(C) has discovered
(D) had discovered

Fill in the blanks with appropriate determiners:

- 29 Will you please lend me _____ money?
(A) some
(B) any
(C) few
(D) none

- Fill in the blank with few a/ few/ the few/ none :**
- 30 He will come back in _____ days.
(A) few
(B) a few
(C) the few
(D) none
- Fill in the blank with little/ a little/ the little/ none :**
- 31 Please wait _____ I am just coming.
(A) little
(B) a little
(C) the little
(D) none
- Fill in the blanks in the following sentences with elder/eldest/older/oldest :**
- 32 My brother is to _____ to me.
(A) elder
(B) eldest
(C) older
(D) oldest
- Read the following sentences to identify any error in any part: (Q. 33 & Q. 34)**
- 33 Every member of the family(A)/ is addicted to drinking(B)/ and so Asha is./(c) No error(D)
(A) Every member of the family
(B) is addicted to drinking
(C) and so Asha is.
(D) No error
- 34 He was very tired(A)/ of work so he said(B)/ that he would not accompany us.(C)/ No error(D)
(A) He was very tired
(B) of work so he said
(C) that he would not accompany us.
(D) No error
- Choose the best alternative to complete the sentences of (Q. 35 & Q. 36):**
- 35 I think :
(A) today it is Wednesday
(B) thst is today Wednesday
(C) today is Wednesday
(D) today be Wednesday
- 36 He told us :
(A) that he enjoy the movie
(B) he enjoyed the movie
(C) he be enjoying the movie
(D) that enjoyed the movie

37 **Fill in the blank by choosing the correct connectors given in brackets: (Q. 37 & Q. 38)**

We must leave now _____ it is getting dark.

- (A) as long as
- (B) as soon as
- (C) when
- (D) since

38 _____ much I tried, I could not help him.

- (A) Though
- (B) However
- (C) As
- (D) pending option

39 **In the following questions, choose the word opposite in meaning: (Q. 39 & Q. 40)**

Density

- (A) Rarity
- (B) Intelligence
- (C) Clarity
- (D) Brightness

40 Attract

- (A) Differ
- (B) Deny
- (C) Repel
- (D) Exit

41 Choose the word/phrase nearest in meaning to the underlined part: **(Q. 41 & Q. 42)**

Indians exhibited a remarkable solidarity at the time of war.

- (A) coalition
- (B) cooperation
- (C) unification
- (D) unity

42 We should not look down on people who are not educated.

- (A) dislike
- (B) despise
- (C) disown
- (D) denounce

43 fill in the blanks in the sentences : **(Q. 43 & Q. 44)**

He had managed to..... several times, but was finally.....by the police.

- (A) deceive, cheated
- (B) defend, acquitted
- (C) escape, arrested
- (D) cheated, robbed

- 44 The..... words of the mother comforted the.....child.
(A) harsh, naughty
(B) sweet, happy
(C) soft, energetic
(D) melodious, playful
- 45 Each passage consists of six sentences. The first and the sixth sentences are given in the beginning. The middle four sentences in each have been removed and jumbled up. These are labelled P, Q, R, and S. You are required to find out the proper order for the four sentences:

S₁: The heart of the pump of life.

S₆: All this was made possible by the invention of the heart lung machine.

P : They have even succeeded in heart transplants.

Q: Now-a-days surgeons are able to stop a patient's heart and carry out complicated operations.

R: A few years ago it was impossible to operate on a patient whose heart was not working properly.

S: If the heart stops we die in about five minutes.

The proper sequence should be:

(A) S R Q P

(B) S P R Q

(C) S Q P R

(D) S R P Q

In these question look at the bold part of each sentence. Below the sentence are given three possible substitutions for the bold part. If any one of substitutions (a), (b) or (c) is better than the bold part, choose that substitution as your response. If none of the substitutions improves the sentence, choose (d) as your response. Thus, a 'No improvement response will be signified by the letter (d). (Q. 46 & Q. 50)

- 46 Do you **remember to meet her at** my house last year?
(A) remember of meeting her
(B) remember about meeting her
(C) remember having met her
(D) No improvement
- 47 You are **too big** to go out alone.
(A) big enough
(B) so big
(C) very big
(D) No improvement
- 48 It is **no good to cry over** spilt milk.
(A) It is no good crying
(B) It is of no good to cry
(C) It is if no good crying
(D) No improvement
- 49 The workers **are waiting** for their pay packet since morning.
(A) would be waiting
(B) were waiting
(C) have been waiting
(D) No improvement

- 50 Though his actions **were severe criticism** he didn't lose his temper.
(A) were severely criticised
(B) had severely criticised
(C) were at severely criticising
(D) had severe criticised
- 51 Ostia and Oscula is present in which animal?
(A) Leucosolenia
(B) Euglena
(C) Paramecium
(D) Plasmodium
- 52 What is meaning of Indels term?
(A) Insertion
(B) Deletion
(C) Insertion or Deletion
(D) Internal Deletion
- 53 Which of the following disease is not an autoimmune disease?
(A) Rheumatoid arthritis
(B) Systemic lupus erythematosus
(C) Sickle cell anemia
(D) Myasthenia gravis
- 54 BOD stands for _____
(A) Biotic oxidation demand
(B) Biological oxidation demand
(C) Biological oxygen demand
(D) Biochemical oxygen demand
- 55 Which among the following is a least deposited file in PDB?
(A) XRD patterns
(B) Chemical shifts
(C) Structure factor
(D) NMR restraint
- 56 The hormone which signals the closure of stomata is _____
(A) Auxins
(B) Cytokinine
(C) Gibberelline
(D) Abscisic acid
- 57 Which of the following is untrue regarding BLAST and FASTA?
(A) FASTA is faster than BLAST
(B) FASTA is the most accurate
(C) BLAST has limited choices of databases
(D) FASTA is more sensitive for DNA-DNA comparisons

- 58 MEME stands for _____
- (A) Multiple Expectation Maximization for Motif Elicitation
 - (B) Multiple Expectation Maximization for Motif Extraction
 - (C) Mega Expectation Maximization for Motif Elicitation
 - (D) Micro Expectation Maximization for Motif Extraction
- 59 Which of the following is untrue regarding T-Coffee?
- (A) It stands for Tree-based Consistency Objective Function for alignment Evaluation
 - (B) It performs progressive sequence alignments as in Clustal.
 - (C) The global pair wise alignment is not performed using the Clustal program.
 - (D) The local pair wise alignment is generated by the Lalign program, from which the top ten scored alignments are selected
- 60 In comparative approach to RNA structure prediction, Dynalign is a _____ program.
- (A) Windows based
 - (B) Fedora
 - (C) UNIX
 - (D) iOS based
- 61 Which of the following is correct about MFOLD?
- (A) It uses the dynamic programming only
 - (B) It uses the thermodynamic calculations only
 - (C) It uses the both dynamic programming and thermodynamic calculations as well
 - (D) It doesn't take into account the thermostability of the secondary structures
- 62 By which method serum can be best sterilized?
- (A) Filtration
 - (B) Steam under pressure
 - (C) Radiation
 - (D) Microwave heating
- 63 Which technique is generally used to isolate auxotrophic mutants of bacteria?
- (A) Gradient plate method
 - (B) Spread plate method
 - (C) Replica plate method
 - (D) Streak plate method
- 64 What is the duration of validity of patents in INDIA?
- (A) 10 years
 - (B) 20 years
 - (C) 21 years
 - (D) 15 years
- 65 Which process is necessary before disposal of treated waste water into a natural water body?
- (A) Aeration
 - (B) Evaporation
 - (C) Post filtration
 - (D) Sedimentation

- 66 All spray drier uses some type of _____.
- (A) Atomizer
 - (B) Drum
 - (C) Faucet
 - (D) Humidifier
- 67 Who proposed chemiosmotic theory?
- (A) Peter Mitchell
 - (B) Louis Pasteur
 - (C) Hans Krebs
 - (D) Fiske and Subbarow
- 68 How much is the typical protein content in yeast cells?
- (A) 69%
 - (B) 12-15%
 - (C) 20-40%
 - (D) 40-50%
- 69 Which is the key information required to develop a vaccine?
- (A) Molecular pathogenicity of the disease
 - (B) Molecular pathogenicity of the disease-causing organism
 - (C) Unique immunologic response from the host
 - (D) Molecular pathogenicity of the disease and the disease-causing organism
- 70 Which of the following form the core of modern biotechnology?
- (A) red biotechnology and green biotechnology
 - (B) classical and traditional biotechnology
 - (C) genetics and mathematics
 - (D) genetic engineering and maintenance of a sterile environment
- 71 Unit of distance between two genes is _____.
- (A) nanomorgan
 - (B) micromorgan
 - (C) millimorgan
 - (D) centimorgan
- 72 IgM is
- (A) Pentamer with 10 antigen binding sites
 - (B) Tetramer with 8 antigen binding sites
 - (C) Monomer with 2 antigen binding sites
 - (D) Dimer with 4 antigen binding sites
- 73 Yeast can be used as a model organism for cystic fibrosis disease
- (A) If there is a homologous of the disease causing gene in yeast genome
 - (B) If the genome size of both (human & yeast) are same
 - (C) If the homologous gene in yeast have atleast 20% identity
 - (D) If the homologous gene is present on the same chromosome in both (yeast & Human)

- 74 The hydrophobic region in cell membrane is formed by _____
- (A) Fatty Acid
 - (B) Fatty acyl chains
 - (C) Lipid
 - (D) Glycolipid
- 75 Which fatty acids can't be used as a biofuel directly?
- (A) Ionic nature of carbonyl groups
 - (B) Hydrophobic nature
 - (C) If degree of saturation is high
 - (D) Variation of length
- 76 Which committee in India has the responsibility of looking after the drug and inquiry about its manufacture procedure?
- (A) Drug Enquiring committee
 - (B) Drug Enquiry committee
 - (C) Enquiring the Drug Manufacturing committee
 - (D) Drug Enquiry of the produced Drug committee
- 77 What is a DNA library?
- (A) A DNA fragment inserted into a vector
 - (B) A general collection of all genes sequenced
 - (C) All DNA fragments identified with a probe
 - (D) A collection of DNA fragments that make up the entire genome of a particular organism
- 78 If 10,000 tubes are sterilized then what would be the probability of finding 1 bad tube out of ten tested for sterility
- (A) 0.632305
 - (B) 63%
 - (C) 0.00995
 - (D) 0.95
- 79 Which of the following is a Chemical method for DNA transfer?
- (A) Microinjection
 - (B) Electroporation
 - (C) Biolistic
 - (D) DMSO method
- 80 Which grade of stainless steel is widely used to construct industrial scale fermenter?
- (A) AISI 316
 - (B) AISI 613
 - (C) IASI 316
 - (D) IASI 317
- 81 Which sugar is present in the structure of ATP?
- (A) Pentose
 - (B) Deoxiribose
 - (C) Erythrose
 - (D) Hexose

- 82 Which one act as a cryoprotective agent?
(A) Glucose
(B) Glycerol
(C) Glutamic acid
(D) Gluten
- 83 Which type of centrifuge is also called as centrifugal filter?
(A) Disc bowl centrifuge
(B) Basket centrifuge
(C) Tubular centrifuge
(D) Ultracentrifuge
- 84 Which DNA is transferred by *Agrobacterium tumefaciens* into plant nucleus?
(A) double stranded linear T-DNA
(B) single stranded linear T-DNA
(C) double stranded circular T-DNA
(D) single stranded circular T-DNA
- 85 Radio isotope of which atom can not be used to tag RNA?
(A) C
(B) H
(C) P
(D) S
- 86 What is the full name of cccDNA?
(A) covalently closed circular DNA
(B) closed circular complementary DNA
(C) circular closed copy DNA
(D) covalently closed complementary DNA
- 87 In thermodynamics $H = E + PV$. What is H?
(A) Entropy
(B) Enthalpy
(C) Work
(D) Force
- 88 Generally which host cell is used to produce recombinant hepatitis B vaccine?
(A) *S. cerevisiae*
(B) *E. coli*
(C) *B. subtilis*
(D) *E. aerogens*
- 89 Which protein converts light energy into an electrical gradient?
(A) Collagen
(B) Rhodopsin
(C) Keratin
(D) Melanin

- 90 Which technique allows direct transfer of DNA between cells?
(A) Electroporation
(B) Transformation
(C) Gene-gun
(D) Micro-injection
- 91 What criteria is/are included as performance parameter for the food industry?
(A) Hygiene
(B) Labour Used
(C) Hygiene & Labour Used
(D) None of the above
- 92 Nuclear envelope forms during which mitotic phase?
(A) Prophase
(B) Metaphase
(C) Anaphase
(D) Telophase
- 93 Which is not a type of cell signalling?
(A) Synaptic
(B) Paracrine
(C) Haemocrine
(D) Autocrine
- 94 Conserved gene order is also known as _____
(A) Ortholog
(B) Paralog
(C) Synteny
(D) Microarray
- 95 Immunosuppressant that prevents transplanted organs from being rejected in recipients?
(A) Thrombin
(B) Cyclosporine
(C) Aspirin
(D) All of the above
- 96 Koji process is a
(A) Shake flask culture proces
(B) Continous fermentation process
(C) Sub-merged fermentation process
(D) Solid-state fermentation process
- 97 Which of the following is a non-polar chromatographic medium?
(A) Sepharose CL-6B
(B) DEAE
(C) CM sephadex
(D) Alumina

- 98 Who developed the Northern Blotting technique?
(A) EM Southern
(B) Alec Jeffery's
(C) J. Alwine
(D) Kemp & G. Stank
- 99 Baffles in a fermenter
(A) increases viscosity
(B) prevents vortex formation
(C) aids in settling of product
(D) decreases viscosity
- 100 What is Yeast?
(A) Single celled & eukaryotic organism
(B) Multi celled & eukaryotic organism
(C) Single celled & non-nucleatic organism
(D) Single celled & prokaryotic organism
- 101 A mouse that have a DNA from another source put into their DNA
(A) Knock-out mouse
(B) Transgenic Mouse
(C) BALB Mouse
(D) Albino Mouse
- 102 The distance between bases on DNA is
(A) 0.35 nm
(B) 0.34 nm
(C) 0.33 nm
(D) 0.32 nm
- 103 The DNA initiator polymerase
(A) DNA polymerase α
(B) DNA polymerase β
(C) DNA polymerase γ
(D) DNA polymerase δ
- 104 Hybrid DNA molecules are known as
(A) Half-molecules
(B) Chimeras
(C) Double-molecules
(D) Mix-molecules
- 105 The restriction enzyme types that require ATP are
(A) I and II
(B) I and III
(C) II and III
(D) I, II and III

- 106 When was first fish growth hormone gene sequence for gene transfer expression and inheritance done ?
(A) 1980
(B) 1990
(C) 1995
(D) 2000
- 107 Gene theory was proposed by
(A) W Johansen
(B) E R Garrod
(C) L Pauling
(D) T H Morgan
- 108 Lock and Key model of enzyme was proposed by
(A) Koshland
(B) Fischer
(C) Batson
(D) Kohrenberg
- 109 Which one is limiting nutrient in diatom culture?
(A) Phosphorous
(B) Nitrogen
(C) Silica
(D) Potassium
- 110 Inducing hormone in aquaculture is used for
(A) Gametogenesis
(B) Spawning
(C) Fertilization
(D) Maturation
- 111 Which one is a hybrid fish?
(A) GIFT tilapia
(B) Jayanti rohu
(C) Glofish
(D) Flowerhorn
- 112 Bond between sugar and base in nucleotide is
(A) Phosphodiester bond
(B) Ionic bond
(C) Hydrogen bond
(D) Glycosidic bond
- 113 RNA polymerase III is associated with synthesis of
(A) rRNA
(B) tRNA
(C) mRNA
(D) miRNA

- 114 Solution used in bulb of glass electrode used for pH estimation is
- (A) HCl
 - (B) KCl
 - (C) H₂SO₄
 - (D) NaOH
- 115 Tissue origin of HeLa cell line is
- (A) Liver
 - (B) Lung
 - (C) Colon
 - (D) Cervix
- 116 Which hormone is produced by neurons?
- (A) FSH
 - (B) LH
 - (C) Serotonin
 - (D) TSH
- 117 Which is the most accurate technique for the diagnosis of cancer?
- (A) CT Scan
 - (B) MRI
 - (C) PET Scan
 - (D) Biopsy
- 118 The umbilical cord is known to be rich in _____ stem cells.
- (A) mesenchymal
 - (B) epithelial
 - (C) Nerve
 - (D) Marrow
- 119 Enzymes are biological catalysts that enhance the rate of a reaction by:
- (A) decreasing the amount of free energy released.
 - (B) decreasing the activation energy.
 - (C) increasing the activation energy.
 - (D) increasing the amount of free energy released.
- 120 _____ produces hormones known as releasing hormones and inhibiting hormones.
- (A) Hypothalamus
 - (B) Pituitary gland
 - (C) Pineal Gland
 - (D) Brainstem
- 121 The first human disease proved to have a viral cause was _____
- (A) Smallpox
 - (B) Rabies
 - (C) Hepatitis
 - (D) Yellow fever

- 122 Neurotransmitters with only metabotropic receptors are:
- (A) Dopamine
 - (B) Epinephrine
 - (C) GABA
 - (D) Glutamate
- 123 The protein involved in nerve conduction are:
- (A) H⁺ channel
 - (B) Leaky K⁺ Channels
 - (C) Voltage gated Ca²⁺ Channels
 - (D) Voltage gated Na⁺ Channels
- 124 The vitamin niacin is part of the following molecule:
- (A) ferredoxin
 - (B) NAD⁺
 - (C) pyridoxal phosphate
 - (D) pyrophosphate
- 125 Which one of the following is not produced in any of the steps of glycolysis?
- (A) NAD⁺
 - (B) NADH
 - (C) pyruvic acid
 - (D) ATP
- 126 The commonality between HIV and HCV infection
- (A) Disease symptoms
 - (B) Latent state of infection
 - (C) Target of infection
 - (D) Mode of infection
- 127 In hybridoma technology, fused cells are incubated in _____ medium.
- (A) Hypoxanthine Aminopetrin Guanine
 - (B) Hypoxanthine Inosine Thymidine
 - (C) Hypoxanthine Aminopetrin Thymidine
 - (D) Hypoxanthine Adenopetrin Thymidine
- 128 Which gene is considered as guardian of genome?
- (A) Rb
 - (B) p53
 - (C) Myc
 - (D) Mdm2
- 129 Which laboratory technique is used to establish a link between biological evidence and a suspect in a criminal investigation?
- (A) Arches
 - (B) Loops
 - (C) DNA Fingerprinting
 - (D) Whorls

- 130 Which of the following is causative agent for stomach cancer?
(A) E. coli
(B) Helicobacter pylori
(C) Staphylococcus aureus
(D) Streptococcus mutans
- 131 Which of following the mechanism associated with gene silencing?
(A) Transcription
(B) Methylation
(C) Translation
(D) Deacetylation
- 132 Which graft has higher chance of rejection?
(A) Allograft
(B) Autograft
(C) Xenograft
(D) Isograft
- 133 _____ is used to match patients and donors for bone marrow or cord blood transplants.
(A) MHC Matching
(B) MHC Typing
(C) Tissue Typing
(D) HLA Typing
- 134 _____ convert viral RNA genomes into double stranded DNA.
(A) RNA-dependent RNA polymerases
(B) Telomerase
(C) RNA-dependent DNA polymerases
(D) DNA-dependent DNA polymerases
- 135 Red green colour blindness is X-linked in human. If a male is red green colour blind and both parents have normal colour vision, which of the male's grandparents is most likely to be red green colour blind ?
(A) paternal grandmother
(B) maternal grandmother
(C) paternal grandfather
(D) maternal grandfather
- 136 Purification of an antigen using specific antibody is an example of _____
(A) Ion –exchange chromatography
(B) Gel filtration
(C) Affinity chromatography
(D) Salting out
- 137 The linkers at the end of two double stranded DNA sequences are called _____
(A) Promoter
(B) Inhibitor
(C) Adapter
(D) Repressor

- 138 Extra nuclear genetic material is observed in _____
(A) Ribosome
(B) ER
(C) Chloroplast
(D) Golgibody
- 139 The transgenic plant without carotenoids grown under normal sunlight demonstrate _____
(A) Increase rate of photosynthesis
(B) Reduced photorespiration
(C) Virus free plants
(D) Increased chlorophyll oxidation and necrosis
- 140 Which one of the following protein is found in the cell wall?
(A) Expansin
(B) Tubulin
(C) Collagens
(D) Cp47
- 141 A successful replication of chromosome does not require presence of _____
(A) Ribosomes
(B) Template DNA
(C) ATP
(D) Nuclear enzymes
- 142 Microtubules are absent in _____
(A) Mitochondria
(B) Flagella
(C) Spindle fibres
(D) Centrioles
- 143 The barcode gene *rbcl* is present in _____
(A) Mitochondria
(B) Chloroplast
(C) Cytoplasm
(D) Nucleus
- 144 Hill reaction is studied to estimate
(A) Photosynthetic efficiency
(B) Carbon utilization potential of the cell
(C) Antigen antibody binding rate
(D) Amount of trace elements in the cell
- 145 Which technique has helped in investigation of Calvin cycle?
(A) X-ray crystallography
(B) X-ray technique
(C) Radioactive isotope technique
(D) Intermittent light

- 146 What is not true for ribozyme and abzyme?
(A) Both are enzymes
(B) Both are proteins
(C) RNA and protein respectively
(D) Hydrolyze phosphodiester bond and peptide bond respectively
- 147 In MS media, MS stands for
(A) Murashige and Skoog
(B) Minerals and Salts
(C) Meniatis and Shamrook
(D) Meristem and Shoot
- 148 Which one of the following is not used for plant cloning?
(A) Ti-Plasmid
(B) Ri-plasmid
(C) Binary Vector
(D) Retroviral vector
- 149 Which one of the following technique does not require PCR amplifications?
(A) RAPD
(B) AFLP
(C) RFLP
(D) SSR
- 150 For the separation of which of the following substances, Gas-solid chromatography is being used?
(A) Thermally stable organic components
(B) Volatile organic components
(C) Thermally stable inorganic components
(D) Low molecular weight gaseous species
- 151 Thymidine dimers are usually the consequence of which of the following?
(A) Advanced paternal age
(B) Chemical exposure
(C) Radiation exposure
(D) Ultraviolet light exposure
- 152 What is meant by Docking?
(A) It is a term used to identify best matches between 3D structures of two molecules (receptor and ligand) that bind to each other by simulating interacting surfaces and free energy minimization at the domain level
(B) It is used for the structure prediction of protein sequences.
(C) It is a term used to identify most dissimilar matches between 3D structures of two molecules (receptor and ligand) that bind to each other by simulating interacting surfaces and free energy minimization at the domain level
(D) It is the most widely used algorithm for sequence analysis.

- 153 Which of the following cloning vectors is designed to accommodate the largest size DNA insert?
- (A) Plasmid
 - (B) Phage
 - (C) Cosmid
 - (D) YAC
- 154 Homologous repeats are involved in which of the following types of mutation?
- (A) Frameshifts
 - (B) Nonsense mutations
 - (C) Large deletions
 - (D) Splicing mutations
- 155 During ripening, the fruit softens due to
- (A) Conversion of starch into sugar
 - (B) Conversion of starch into proteins
 - (C) Solubilisation of pectic substances
 - (D) Jelly formation at acidic pH
- 156 Which of the following phytohormone is used for somatic embryo development
- (A) IAA
 - (B) Cytochrome
 - (C) ABA
 - (D) GA
- 157 Highest auxin concentration occurs
- (A) In growing tips
 - (B) In leaves
 - (C) At base of plant organs
 - (D) In xylem and phloem
- 158 A book of novel protocols in plant tissue culture falls in which one of the IPR of India
- (A) Copyrights
 - (B) Trademarks
 - (C) Patent
 - (D) Trade secrete
- 159 What is a rate-zonal centrifugation?
- (A) Based on separation of particles by mass
 - (B) Based on separation of particles by density
 - (C) Based on separation of particles on solubility
 - (D) Based on separation of particles on size
- 160 Which is the most effective cytokinin generally used in shoot tip or meristem culture.
- (A) Zeatin
 - (B) 2,4-D,
 - (C) BAP
 - (D) NAA

- 161 The transfer DNA (T-DNA) portion of Ti plasmid contains genes for?
(A) Virulence and hormones
(B) Opines and Virulence
(C) Virulence and CDK
(D) Hormones and Opines
- 162 The 14-3-3 proteins are involved in the post-translational regulation of which one of the following enzymes of nitrogen metabolism?
(A) Nitrite reductase
(B) Nitrate reductase
(C) Nitrogenase
(D) Glutamine synthetase
- 163 The following is process of transfer of desirable genes from one plant species to another
(A) rDNA.
(B) Transgenic.
(C) Plant genetic transformation.
(D) Plant transformation.
- 164 Which type of restriction enzyme is independent of its methylase?
(A) Type III.
(B) Type II.
(C) Type I.
(D) Type IV.
- 165 What is Dimethyl sulfoxide used for?
(A) A gelling agent
(B) Chelating agent
(C) Cryoprotectant
(D) An Alkylating agent
- 166 Monoclonal antibodies obtained from
(A) Many parents and for many antigens
(B) One parent and for one antigen
(C) Different parent and for one antigen
(D) One parent and for many antigen
- 167 Molecular weight of an unknown protein can be found by _____
(A) Electrophoresis
(B) Ion-exchange chromatography
(C) Affinity chromatography
(D) Autoradiography
- 168 Lysosomes are called 'Suicidal Bags' because they have _____
(A) Hydrolytic enzymes
(B) Oxidative enzymes
(C) Parasitic activity
(D) Catabolic enzymes

- 169 What do you mean by secondary structure of protein?
- (A) A chain of peptides or amino acids
 - (B) The folded, coiled, or twisted shape of a polypeptide that results from hydrogen bonding between parts of a molecule.
 - (C) The interconnection and arrangement of polypeptide chains within a protein
 - (D) The three-dimensional structure of a polypeptide chain that results from the way that the alpha helices and beta pleated sheets are folded and arranged
- 170 The molar concentration of 1 L ultrapure distilled water is
- (A) 0
 - (B) 1
 - (C) 100
 - (D) >50
- 171 Which of the cell organelle is concerned with Golgi body production?
- (A) Endoplasmic reticulum
 - (B) Dictyosomes
 - (C) Peroxisomes
 - (D) Glyoxisomes
- 172 In plants, number of chromosomes can be increased by applying
- (A) Heat treatment
 - (B) Hormone treatment
 - (C) Colchicine treatment
 - (D) Hybrid vigour
- 173 The disarming in T-DNA of Ti plasmid is a process of
- (A) Removal of auxin-Cytokinin gene
 - (B) Removal of vir region
 - (C) Addition of desired gene
 - (D) Deletion of desired gene for blank test
- 174 Transgenic organisms are
- (A) produced by gene transfer technology
 - (B) naturally occurring
 - (C) extinct organisms
 - (D) produced by traditional plant breeding technique
- 175 Insulin for the treatment of diabetes in humans, before the production of recombinant insulin was obtained from
- (A) healthy humans
 - (B) dogs and cats
 - (C) cows and pigs
 - (D) dead human body
- 176 First commercially available transgenic fish is
- (A) Jayanti rohu
 - (B) Aquadvantage Salmon
 - (C) Zebrafish
 - (D) Glofish

- 177 Which one is more efficient for precipitation of DNA during DNA isolation process
- (A) 100% Ethanol
 - (B) 70% Ethanol
 - (C) Isopropanol
 - (D) Phenol
- 178 Homopolymeric tail for cloning is produced by
- (A) Terminal deoxynucleotidyl transferase
 - (B) Klenow fragment
 - (C) DNA ligase
 - (D) Reverse transcriptase
- 179 Vector with largest insert size
- (A) BAC
 - (B) PAC
 - (C) YAC
 - (D) Cosmid vector
- 180 Prokaryotic mRNA is
- (A) Monocistronic
 - (B) Polycistronic
 - (C) Non cistronic
 - (D) Contains poly A tail
- 181 RNA polymerase III is associated with synthesis of
- (A) rRNA
 - (B) tRNA
 - (C) mRNA
 - (D) miRNA
- 182 Solution used in bulb of glass electrode used for pH estimation is
- (A) HCl
 - (B) KCl
 - (C) H₂SO₄
 - (D) NaOH
- 183 Tissue origin of HeLa cell line is
- (A) Liver
 - (B) Lung
 - (C) Colon
 - (D) Cervix
- 184 Suitable method of DNA extraction from plant material is
- (A) Phenol chloroform method
 - (B) CTAB method
 - (C) Salting out
 - (D) All the above

- 185 During the process of whole organism cloning, the nucleus from an adult somatic cell is transferred to:
- (A) adult ovum
 - (B) enucleated ovum
 - (C) Pronuclear stage zygote
 - (D) enucleated zygote
- 186 Which of the following technologies are associated with the making of biochips?
- (A) Nanolithography
 - (B) Nanotechnology
 - (C) Microlithography
 - (D) DNA microchip technology
- 187 Which sugar is present in high amount in cane molasses?
- (A) Reducing sugar
 - (B) Invert sugar
 - (C) Brown sugar
 - (D) Pentose sugar
- 188 How many polypeptide chains are there in preproinsulin?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
- 189 In waste water treatment process, rotating biological contactor degrades waste_____.
- (A) Aerobically
 - (B) Anaerobically
 - (C) Facultatively
 - (D) Micro aerobically
- 190 Which one is the true characterer of a virus?
- (A) It has DNA and RNA as genetic material
 - (B) It is a partial parasite
 - (C) It is an acelluar entity
 - (D) It is a non living entity
- 191 How many molecules of ATP are required to fix one molecule of nitrogen?
- (A) 2
 - (B) 4
 - (C) 8
 - (D) 16
- 192 The number of chromosomes in mouse
- (A) 40
 - (B) 26
 - (C) 44
 - (D) 46

- 193 The first Human Chromosome to be completely sequenced in 1999
(A) 22
(B) 12
(C) 19
(D) 16
- 194 Which enzyme is used in the process of bating?
(A) invertase
(B) pectinase
(C) amylase
(D) protease
- 195 Which article provides the outline of intellectual property rights?
(A) Article 15
(B) Article 27
(C) Article 13
(D) Article 20
- 196 Which of the following is not a benefit of trademark?
(A) Consumers are able to identify products quickly
(B) Monopoly power
(C) Brand extension
(D) Distinguishes duplicates
- 197 Model database is used for study of
(A) Simulation
(B) Amino acids
(C) Secondary structure
(D) Mutation
- 198 In cell cycle, which checkpoint is also known as restriction point
(A) G1 checkpoint
(B) G2 checkpoint
(C) M checkpoint
(D) None of these
- 199 RNA type with no role in protein synthesis
(A) tRNA
(B) mRNA
(C) SiRNA
(D) rRNA
- 200 Difference between conjugative and non conjugative plasmids is
(A) Presence of antibiotic resistance
(B) Number of cloning and digestion sites
(C) Presence of transfer genes
(D) Capsid protein

Scientist-D & Joint Director

Prelims

Biotechnology

Provisional Answer Key

Q.No	Option	Q.No	Option	Q.No	Option	Q.No	Option
1	D	51	A	101	B	151	D
2	A	52	C	102	B	152	C
3	C	53	C	103	A	153	D
4	C	54	D	104	B	154	C
5	C	55	B	105	B	155	C
6	C	56	D	106	B	156	C
7	A	57	A	107	D	157	A
8	B	58	A	108	B	158	A
9	A	59	C	109	C	159	D
10	A	60	C	110	B	160	C
11	B	61	B	111	D	161	D
12	A	62	A	112	D	162	B
13	A	63	D	113	B	163	C
14	A	64	B	114	A	164	B
15	B	65	A	115	D	165	C
16	D	66	A	116	C	166	C
17	C	67	A	117	D	167	A
18	A	68	D	118	A	168	A
19	A	69	D	119	B	169	B
20	C	70	D	120	A	170	D
21	B	71	D	121	D	171	A
22	A	72	A	122	A	172	C
23	B	73	A	123	D	173	A
24	A	74	D	124	B	174	A
25	D	75	A	125	A	175	C
26	D	76	B	126	B	176	D
27	B	77	D	127	C	177	C
28	B	78	C	128	B	178	A
29	A	79	D	129	C	179	C
30	B	80	A	130	B	180	B
31	B	81	A	131	B	181	B
32	A	82	B	132	C	182	A
33	C	83	B	133	D	183	D
34	D	84	B	134	C	184	B
35	C	85	D	135	D	185	B
36	B	86	A	136	C	186	C
37	D	87	B	137	C	187	B
38	B	88	A	138	C	188	A
39	A	89	B	139	D	189	A
40	C	90	A	140	A	190	C
41	D	91	C	141	A	191	D
42	B	92	D	142	A	192	A
43	C	93	C	143	B	193	A
44	D	94	C	144	A	194	D
45	A	95	B	145	C	195	B
46	C	96	D	146	B	196	C
47	D	97	D	147	A	197	A
48	A	98	C	148	D	198	A
49	C	99	B	149	C	199	C
50	A	100	A	150	D	200	C