

POST GRADUATE COMMON ENTRANCE TEST-2017

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|--------------------------------------|--|-----------------------------------|---------------------------------|
| DATE and TIME | COURSE | | SUBJECT |
| 01-07-2017 2.30 p.m. to 4.30 p.m. | ME/M.Tech/M.Arch/ courses offered by VTU/UVCE/UBDTCE | | BIO-TECHNOLOGY |
| MAXIMUM MARKS | TOTAL DURATION | MAXIMUM TIME FOR ANSWERING | |
| 100 | 150 Minutes | 120 Minutes | |
| MENTION YOUR PG CET NO. | | | QUESTION BOOKLET DETAILS |
| | | | |
| | | | |
| | | VERSION CODE | SERIAL NUMBER |
| | | A - 1 | 121146 |

DOs :

1. Check whether the PG CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. Ensure whether the circles corresponding to course and the specific branch have been shaded on the OMR answer sheet.
3. This Question Booklet is issued to you by the invigilator after the 2nd Bell i.e., after 2.25 p.m.
4. The Serial Number of this question booklet should be entered and the respective circles should also be shaded completely on the OMR answer sheet.
5. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely on the OMR answer sheet.
6. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The 3rd Bell rings at 2.30 p.m., till then;
 - Do not remove the paper seal / polythene bag of this question booklet.
 - Do not look inside this question booklet.
 - Do not start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 75 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the 3rd Bell is rung at 2.30 p.m., remove the paper seal / polythene bag of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 120 minutes:
 - Read each question (item) carefully.
 - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
 - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :



4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the last Bell is rung at 4.30 p.m., stop marking on the OMR answer sheet and affix your left hand thumb impression on the OMR answer sheet as per the instructions.
6. Handover the OMR ANSWER SHEET to the room invigilator as it is.
7. After separating the top sheet (KEA copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of ONE year.
9. Only Non-programmable calculators are allowed.

Marks Distribution

PART-1 : 50 QUESTIONS CARRY ONE MARK EACH (1 TO 50)
PART-2 : 25 QUESTIONS CARRY TWO MARKS EACH (51 TO 75)



BIOTECHNOLOGY

PART – A

Each question carries one mark.

(50 × 1 = 50)

1. The transfer of genetic material from one cell to another by a phage is called
(A) Transformation
(B) Conjugation
(C) Transduction
(D) Hybridization
2. The key enzyme found in PCR that is Taq polymerase is
(A) Methanogen
(B) Acidophil
(C) Thermophile
(D) Halophile
3. Which of the following is an α amino acid ?
(A) Serine
(B) Threonine
(C) Valine
(D) Proline
4. Most common monomer of carbohydrate is
(A) Nucleotides
(B) Glucose
(C) Amino acids
(D) Maltose
5. The catalytic activity of two different enzymes can be compared by the
(A) pH of optimum value
(B) Molecular size of enzyme
(C) Formulation of the product
(D) km value
6. Pribnao box contribute to
(A) Protein synthesis
(B) ATP synthesis
(C) RNA synthesis
(D) none of above
7. "Gene-battery model" of Gene regulation in eukaryotes is proposed by
(A) Jacob and Monad
(B) Britten and Davidson
(C) Beadle and Tatum
(D) Kornberg and Ochoa
8. Mutation is
(A) Change that is inherited
(B) Change in parent not inherited
(C) Plant growth controlling factor
(D) Change that affects the offsprings of F_2 generation

Space For Rough Work

9. Which of the following organelle/molecule is related with genetic engineering ?
(A) Mitochondrion
(B) Golgi Apparatus
(C) Plasmid
(D) Lysosome
10. The transgenic animals are those which have
(A) Foreign DNA in some of the cells.
(B) Foreign DNA in all of the cells.
(C) Foreign RNA in all of their cells.
(D) Foreign DNA and RNA in all of their cells
11. The first hormone artificially produced by culturing bacteria is
(A) Insulin
(B) Adrenalin
(C) Thyroxine
(D) Testosterone
12. Submission to Gen Bank are made using
(A) Bankit and Sequin
(B) Bankit and Bankin
(C) Sequin and Bankin
(D) Entrez
13. The alignment method suitable for finding out conserved patterns of DNA or protein sequences is _____
(A) Multiple sequence alignment
(B) Pairwise alignment
(C) Global alignment
(D) Local alignment
14. Which of the following is the first biological database ?
(A) Genbank
(B) DDBJ
(C) Atlas of protein sequence and structure
(D) OMIM
15. The first successfully cloned animal was
(A) Monkey
(B) Gibbon
(C) Sheep
(D) Rabbit
16. The technique used in animal bio technology for rapid multiplication and production of animals with desirable genotype is
(A) Protoplast fusion and embryo transfer
(B) Hybrid selection and embryo transfer
(C) Invitro fertilization and embryo transfer
(D) Protoplast fusion and hybrid selection

Space For Rough Work

17. The most common solidifying agent used in micro propagation is
(A) Agar
(B) Dextran
(C) Mannan
(D) Agarose
18. Sudden and sharp rise in rate of respiration of matured fruits is called -
(A) clinostat
(B) climactic rise
(C) circumvallation vortex
(D) red drop emerson effect
19. Richest source of vitamin A is -
(A) Knol-khol
(B) Tomato
(C) Mango
(D) Capsicum
20. Emblica officenale is richest source of
(A) Iron
(B) Cobalt rich vitamin
(C) Ascorbic acid
(D) Lysergic acid
21. Increase in level of biodegradation through manipulation of genes is called as -
(A) Biostimulation
(B) Biomagnification
(C) Bioaccumulation
(D) Bioaugmentation
22. itai-itai disease is due to contamination of _____ metal in water body.
(A) Cadmium
(B) Mercury
(C) Selenium
(D) Lead
23. Algal blooms occur due to Eutrophication of lakes & ponds. This can be attributed to enrichment of
(A) Phosphates and carbonates
(B) Phosphates and nitrates
(C) Carbonates & bicarbonates
(D) Sulphates, carbonates and phosphates
24. Selection of hybridoma for production of monoclonal antibody is done by
(A) HGPRT
(B) HAT
(C) PEG
(D) Tween 20 & PEG
25. Allergic contact dermatitis is _____ type of hypersensitivity reaction.
(A) Type I
(B) Type II
(C) Type III
(D) Type IV

Space For Rough Work

26. Xenografts are rejected rapidly due to
(A) rejection by IgM or cell mediated rejection.
(B) host graft responses
(C) lymphocyte attack on graft recipient
(D) T-cell inactivation
27. Antiviral proteins, that regulate immune response as cytokines are called as _____
(A) Interleukin
(B) Interferon
(C) Chemokines
(D) Monokines
28. CDR's (Complementarity determining Regions) are –
(A) Antigen binding fragment of Ig generated by proteolysis.
(B) Crystallisable fragment of Ig generated by proteolysis, mediates phagocytosis and triggers inflammation.
(C) Hypervariable loop in immunoglobulin polypeptide forms antigen binding site.
(D) Materials that elicits antibody production.
29. Immunoglobulin abundantly found in milk, sweat, tear and colostrum is
(A) IgG
(B) IgE
(C) IgA
(D) IgM
30. The first completed genome sequencing project is of
(A) *E. coli*
(B) *Haemophilus influenzae*
(C) ϕ X 174
(D) *Drosophila melanogaster*
31. The best method to protect genetic resources is
(A) Gene library
(B) Cloning of plants
(C) Cryopreservation
(D) Multiplication
32. The term genomics is coined by
(A) Thomas Cech
(B) T.H. Morgan
(C) Thomas Roder
(D) Craig Venter
33. Which amino acid is phosphorylated in bacterial proteins ?
(A) Arginine
(B) Cysteine
(C) Lysine
(D) Histidine
34. Which of the following is NOT a common feature of reterovirus ?
(A) They are enveloped
(B) Their RNA is spliced
(C) They contain LTR's
(D) They integrate into host DNA

Space For Rough Work

35. Parkinson's disease is characterised by cell death in the
- (A) spinal cord
 - (B) substantia nigra
 - (C) Frontal cortex
 - (D) Motor cortex
36. Which phytohormone induces seed dormancy?
- (A) Gibberellin
 - (B) Abscisic Acid
 - (C) Auxin
 - (D) Ethylene
37. The released energy obtained by oxidation of glucose is stored as
- (A) a concentration gradient across a membrane
 - (B) ADD
 - (C) ATP
 - (D) NAD^+
38. A kinase is an enzyme that
- (A) removes phosphate groups of substrates
 - (B) Uses ATP to add a phosphate group to the substrate
 - (C) Uses NADH to change oxidation state of the substrate
 - (D) Removes water from double bond
39. The first protein to have its primary structure determined was
- (A) Urease
 - (B) Insulin
 - (C) Glucagon
 - (D) Histone
40. In which of the disorders, blood has defective hemoglobin?
- (A) hemophilia
 - (B) hematuria
 - (C) hematoma
 - (D) sickle cell anaemia
41. When cells respond to an extracellular signal, they most often convert the information from one form to another. This process is called :
- (A) signal transformation
 - (B) signal transduction
 - (C) signal interference
 - (D) signal amplification
42. Albinism is a congenital human disorder resulting from lack of enzyme
- (A) Catalase
 - (B) Fructokinase
 - (C) Tyrosinase
 - (D) Xanthine oxidase

Space For Rough Work

43. Small charged molecules, often biogenic amines function as
- (A) Hormones
 - (B) Neurotransmitters
 - (C) Hormones and Neurotransmitters
 - (D) Transmitter
44. The terminator codons are
- (A) UAA, UAG, UGA
 - (B) AUG, UAG, UGA
 - (C) UAC, AUG, UAG
 - (D) AUG, ACG, GAG
45. Transcription takes place in
- (A) Matrix
 - (B) Nucleus
 - (C) Cytosol
 - (D) Cytoplasm
46. The unwinding of DNA duplex is performed by an enzyme called
- (A) Gyrase
 - (B) Lactase
 - (C) Maltase
 - (D) Ligase
47. The gene not expressing any protein is known as
- (A) Epistatic gene
 - (B) Hypostatic gene
 - (C) Pseudo gene
 - (D) Split gene
48. An open system in which the growth rate is maintained by the removal and addition of media at such a rate as to maintain a constant cell density is called
- (A) manostat
 - (B) chemostat
 - (C) tubidostat
 - (D) culturostat
49. The pairing of homologous chromosomes
- (A) Tetrad's
 - (B) Crossing over
 - (C) Synapsis
 - (D) Terminalization
50. Enzyme papain is used with success to
- (A) Increase meat production
 - (B) Ripen papaya fruit
 - (C) Leaven bread
 - (D) Tenderize meat

Space For Rough Work

PART – B

Each question carries two marks.

(25 × 2 = 50)

51. The ability of bacteria to change their morphological form frequently is termed as :
- (A) Lysogeny
 - (B) Pleomorphism
 - (C) Alteromorphism
 - (D) Polymorphism
52. Bacterial chromosome is
- (A) Single stranded and linear
 - (B) Single stranded and circular
 - (C) Double stranded and linear
 - (D) Double stranded and circular
53. Positively charged basic amino acids are
- (A) Lysine and glutamine
 - (B) Glutamine and arginine
 - (C) Lysine and asparagine
 - (D) Lysine and arginine
54. All of them are monosaccharides except
- (A) Glucose
 - (B) Fructose
 - (C) Maltose
 - (D) Galactose
55. The Ti-plasmid is often used for making Transgenic plants. This plasmid is found in –
- (A) Azo bacter
 - (B) Riz obium roots of Leguminous plants
 - (C) Agrobacterium
 - (D) Yeast as in μm plasmid
56. One of the following is a transgenic organism :
- (A) Flavr Savr tomato and BT cotton
 - (B) Dolly sheep and BT cotton
 - (C) Holly sheep and BT cotton
 - (D) Holly sheep and Flavr savr tomato
57. Fisher and Krebs got Nobel Prize in 1992 for their discovery of –
- (A) Organ and Cell Transplantation
 - (B) Reversible protein phosphorylation as biological regulatory mechanism
 - (C) Single ion channels
 - (D) All of the above
58. A gene that specifies the amino acid sequence of a polypeptide chain termed as
- (A) Structural gene
 - (B) Regulator gene
 - (C) Operator gene
 - (D) Split gene
59. Which of the following is a sequence alignment tool ?
- (A) BLAST
 - (B) PRINT
 - (C) PROSITE
 - (D) PIR

Space For Rough Work

60. All the following are protein sequence databases except
- (A) PIR
 - (B) PSD
 - (C) SWISS PROT
 - (D) EMBL
61. In callus culture
- (A) Increasing level of Cytokinin to a callus induces shoot formation and increasing level of auxin promote root formation.
 - (B) Increasing level of auxin to a callus induces shoot formation and increasing level of cytokinin promote root formation
 - (C) Auxins and cytokinins are not required
 - (D) Only auxin is required for root and shoot formation.
62. Poise is unit of
- (A) Surface tension
 - (B) Viscosity
 - (C) Intensity of fire
 - (D) Angular momentum
63. _____ bioreactor is used for temperature dependent formation of products.
- (A) Tower bioreactor
 - (B) Bubble column bioreactor
 - (C) Stirred tank bioreactor
 - (D) Two stage airlift bioreactor
64. Genome wise gene expression analysis is performed using
- (A) DNA microarrays
 - (B) Northern blotting
 - (C) Real time PCR
 - (D) RT-PCR
65. To determine variation in wing length of butterfly from five different places. Which would be the best statistical test ?
- (A) F Test
 - (B) Student T-test
 - (C) Regression Analysis
 - (D) Chi-square test
66. C language developed at _____
- (A) AT & T's Bell laboratories of USA in 1972
 - (B) AT & T's Bell laboratories of USA in 1970
 - (C) Sun Microsystems in 1973
 - (D) Cambridge University in 1972
67. Travelling salesman problem is an example of
- (A) Dynamic Algorithm
 - (B) Greedy Algorithm
 - (C) Recursive Approach
 - (D) Divide and Conquer

Space For Rough Work

68. If a father is blood group 'AB' and mother is blood group 'O', what blood group their children will be never have ?
 (A) AB
 (B) O
 (C) A & B
 (D) AB & O
69. Amino acid derivative functioning as chemical messenger in communication between cells
 (A) Dopamine
 (B) Histamine
 (C) Thymine
 (D) GABA
70. The Enzyme telomerase has
 (A) Polymerase activity
 (B) Ligase activity
 (C) Reverse transcriptase activity
 (D) Hydrolases activity
71. Why klenow DNA polymerase cannot be used in nick translation ?
 (A) Because it has 5' → 3', exonuclease activity
 (B) Because it has 3' → 5', exonuclease activity
 (C) Because it does not have 5' → 3', exonuclease activity
 (D) Because it does not have 5' → 3', endonuclease activity
72. Which enzyme causes releases of pyrophosphate from ATP ?
 (A) Glycogen Phosphorylases
 (B) RNA polymerase
 (C) ATPase
 (D) Aspartate transcarbamylase
73. Chloroform is more miscible with water than carbon tetrachloride because chloroform has a
 (A) lower dipole moment than carbon tetrachloride
 (B) lower dielectric constant than carbon tetrachloride
 (C) higher dipole moment than carbon tetrachloride
 (D) higher order of symmetry than carbon tetrachloride
74. Which compound cannot cross the inner membrane of mitochondria ?
 (A) ATP
 (B) Pyruvate
 (C) Acetyl CoA
 (D) Pyrophosphate
75. Which of the following common drugs is not a specific enzyme inhibitor ?
 (A) Sulfonil amide
 (B) Iodine
 (C) Methotrexate
 (D) Azeduvudine

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