POST GRADUATE COMMON ENTRANCE TEST-2018

DATE and TIME	COURSE	SUBJECT
14-07-2018 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 PGCET NO.					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A	116213

DOs :

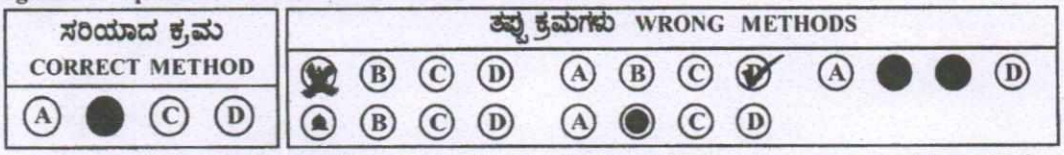
1. Candidate must verify that the PGCET number & Name printed on the OMR Answer Sheet is tallying with the PGCET number and Name printed on the Admission Ticket. Discrepancy if any, report to invigilator.
2. This question booklet is issued to you by the invigilator after the **2nd bell i.e., after 2.25 p.m.**
3. The Version Code of this Question Booklet should be entered on the OMR Answer Sheet and the respective circle should also be shaded completely.
4. The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
5. 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 present on the right hand side 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 on the right hand side 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.**



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)

BT-A

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BIOTECHNOLOGY

PART – A

Each question carries one mark. **(50 × 1 = 50)**

1. Germ theory of disease was proved by
   (A) Louis Pasteur
   (B) Robert Koch
   (C) Antony Van Leewenhoek
   (D) Alexander Fleming

2. Techoic acid present in which of the following cell ?
   (A) Bacillus
   (B) *E. coli*
   (C) Shigella
   (D) Salmonella

3. Which of the following is an example of spirochete ?
   (A) Clostridium
   (B) Acinetobacter
   (C) Treponema
   (D) Vibrio

4. The function of Gram's Iodine in Gram staining :
   (A) Primary stain
   (B) Counter stain
   (C) Mordant
   (D) Decolourising agent

5. Which of the following antibiotic is a protein synthesis inhibitor ?
   (A) Tetracycline
   (B) Chloramphenicol
   (C) Ampicillin
   (D) Azithromycin

6. The transfer of genetic material from one bacteria to other bacteria with the help of pili is termed as
   (A) Transformation
   (B) Transduction
   (C) Transfection
   (D) Conjugation

7. An example of dsDNA virus :
   (A) Parvo virus
   (B) Adeno virus
   (C) Toga virus
   (D) All of these

8. Which of the following is an aliphatic amino acid ?
   (A) Threonine
   (B) Valine
   (C) Tyrosine
   (D) Tryptophan

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9. Sterane nucleus is present in

(A) Triglyceride

(B) Phospholipid

(C) Cholesterol

(D) Sulfolipid

10. Sodium dodecyl sulfate used in SDS-PAGE is

(A) Anionic detergent

(B) Cationic detergent

(C) Anion exchanger

(D) Cation exchanger

11. Agarose gel electrophoresis is used for the detection of

(A) Nucleic acid

(B) Proteins

(C) Carbohydrate

(D) Lipids

12. The enzyme which cleave various bonds by means other than hydrolysis and oxidation :

(A) Transferase

(B) Ligases

(C) Lyases

(D) Isomerases

13. The non-protein chemical compound is required for an enzyme :

(A) Prosthetic group

(B) Apo-enzyme

(C) Co-enzyme

(D) Co-factor

14. The enzyme in TCA cycle which attached to the inner membrane of mitochondria :

(A) Succinate dehydrogenase

(B) NADPH dehydrogenase

(C) Isocitrate dehydrogenase

(D) Malate dehydrogenase

15. Which of the following cell organelle can be visualized by a bright field microscope ?

(A) Ribosome

(B) Mitochondria

(C) Endoplasmic reticulum

(D) Golgi body

16. The DNA sequence capable of binding to transcription regulation factor :

(A) Promoter

(B) Transcription factor

(C) Enhancer

(D) Silencer

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17. DNA polymerase-I is discovered by
(A) Thomas Kornberg
(B) Arthur Kornberg
(C) Joshua Leaderberg
(D) Alexander Rich

18. The stop codon 'amber' :
(A) UAG
(B) UGA
(C) UAA
(D) UGG

19. 3' – 5' exonuclease activity exhibited by
(A) DNA polymerase
(B) Topoisomerase
(C) DNA replicase
(D) RNA polymerase

20. Genetic map is otherwise known as
(A) Radiation hybrid map
(B) Cytogenic map
(C) Linkage map
(D) Chromosome map

21. Transposons are discovered by
(A) Barbara McClintock
(B) Jacques Monad
(C) Erwin Schrodinger
(D) Frederick Sanger

22. The pioneer of human genome project :
(A) Craig J Venter
(B) Hamilton Smith
(C) Eduard Buchner
(D) Linus Pauling

23. Hemophilia is a genetic disorder associated with
(A) X-linked recessive
(B) Y-linked recessive
(C) X-linked dominant
(D) Autosomal recessive

24. The antibiotic Streptomycin is obtained from
(A) *Staphylococcus aurens*
(B) *Streptococcus pyogens*
(C) *Streptomyces grisens*
(D) *Saccharomyces cerevisiae*

25. The bacteria *Zymomonas mobilis* is responsible for the production of
(A) Amino acid
(B) Antibiotics
(C) Ethanol
(D) Citric acid

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26. Crowded plate technique is an example of

(A) Primary screening

(B) Secondary screening

(C) Strain improvement

(D) Mutant screening

27. Which vitamin is known as cyano cobalamin ?

(A) Vitamin B_6

(B) Vitamin B_{12}

(C) Vitamin B_3

(D) Vitamin B_2

28. Solid substrate fermentation is used for the production of

(A) Vitamins

(B) Ethanol

(C) Enzymes

(D) Antibiotics

29. Which of the following is used for enzyme immobilization ?

(A) Polyvinyl chloride

(B) Calcium alginate

(C) Sodium citrate

(D) Potassium bromide

30. Bio-diesel can be produced from

(A) Jatropha

(B) Pongamia

(C) Micro algae

(D) All of these

31. Second law of thermodynamics was first formulated by

(A) Lord Kelvin

(B) Max Planck

(C) Isaac Newton

(D) Rudolf Clausius

32. The formula $F_d = 6\pi\eta Rv$ is related with

(A) Law of thermodynamics

(B) Heat transfer

(C) Mass transfer coefficient

(D) Stoke's law

33. The synthesis of RNA and enzyme in bacterial growth occurs at

(A) Lag phase

(B) Log phase

(C) Stationary phase

(D) Decline phase

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34. Maltose _____ source in fermentation media.

(A) Carbon

(B) Nitrogen

(C) Mineral

(D) Precursor

35. The aeration system in bioreactor :

(A) Impeller

(B) Sparger

(C) Baffles

(D) Stirrer

36. The immunity that is mediated by macro molecules found in extra-cellular fluids is known as

(A) Cell mediated immunity

(B) Innate immunity

(C) Passive immunity

(D) Humoral immunity

37. The highest percentage of IgG found in human :

(A) IgG_1

(B) IgG_2

(C) IgG_3

(D) IgG_4

38. MHC class I expresses in

(A) T cells

(B) B cells

(C) Macro phages

(D) Dendritic cell

39. Example of an agglutination reaction :

(A) Blood grouping

(B) WIDAL tube test

(C) ELISA test

(D) All of these

40. The serodiagnosis test for syphilis :

(A) ELISA

(B) WIDAL

(C) VDRL

(D) Complement fixation

41. The restriction site for EcoRI :

(A) 5'-GAATTC-3'

(B) 5'-GATATC-3'

(C) 5'-GATTAC-3'

(D) 5'-GTATAC-3'

42. The restriction enzyme Alu I is obtained from

(A) Acineobacter

(B) Acetobacter

(C) Arthrobacter

(D) Aeromonas

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43. The gene gun is used for

(A) Gene labelling

(B) Gene transfer

(C) Gene cloning

(D) Gene isolation

44. Diabetes mellitus type I is _____ type of hyper-sensitivity reaction.

(A) 1

(B) 2

(C) 3

(D) 4

45. Which of the following is a proteomic server ?

(A) SWISS prot

(B) NCBI

(C) EXP Asy

(D) PIR

46. The first database developed in the history of Bioinformatics :

(A) PDB

(B) PIR

(C) Uni Prot

(D) Gen Bank

47. Example of a specilised database :

(A) DDBJ

(B) SWISS Prot

(C) Pub Med

(D) All of these

48. Name the character based tree building method used in phylogenetic analysis.

(A) UPGMA

(B) NJ

(C) MP

(D) ME

49. The best scoring matrix used for sequence alignment :

(A) BLOSUM 45

(B) PAM 120

(C) BLOSUM 62

(D) PAM 250

50. Give an example of a structure database.

(A) MMDB

(B) KEGG

(C) VMD

(D) EMBL

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PART – B

Each question carries two mark. **(25 × 2 = 50)**

51. Cold sterilization of food product is related with the sterilization using

(A) Preservatives

(B) Refrigeration

(C) Radiation

(D) Low temperature

52. Which of the following is a micro-nutrient in plant ?

(A) Ca

(B) Mg

(C) Mn

(D) S

53. The percentage of CO_2 in the atmosphere

(A) 0.04%

(B) 0.004%

(C) 0.40%

(D) 0.44%

54. The natural place where the organism or communities live is known as

(A) Niche

(B) Habit

(C) Habitat

(D) Biome

55. In an aquatic system, the area where the production is greater than respiration is known as

(A) Limnetic zone

(B) Profound zone

(C) Tidal zone

(D) Benetic zone

56. Which is an intrinsic factor responsible for the microbial spoilage of food product ?

(A) Temperature

(B) Gases

(C) Relative humidity

(D) Food composition

57. Which test is used to determine the Coliform count in water ?

(A) Membrane filter

(B) Most probable number

(C) Standard plate count

(D) Dye reduction

58. Which of the following food preservation technique which uses low temperature ?

(A) Asepsis

(B) Canning

(C) Cellular storage

(D) Drying

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59. Which of the following organism is used for the industrial production of cheese ?

(A) Saccharomyces

(B) Alternaria

(C) Penicillium

(D) Fusarium

60. Hops is used for the industrial production of

(A) Sauer kraut

(B) Cheese

(C) Vodka

(D) Wine

61. Which of the following is not a foodborne disease ?

(A) Bacillary dysentery

(B) Enteric fever

(C) Tuberculosis

(D) Listeriosis

62. Chemostat is an example of

(A) Batch culture

(B) Continuous culture

(C) Fed Batch culture

(D) Synchronous culture

63. Monoclonal antibodies was discovered by

(A) James Chamberland

(B) Leonard Heisenberg

(C) George Kohler

(D) Linus Pauling

64. The size of puC 18 plasmid is

(A) 2686 bp

(B) 2866 bp

(C) 2682 bp

(D) 2688 bp

65. Ajinomoto is otherwise known as

(A) Methyl anthranilate

(B) Allyl hexonate

(C) Cinnamic aldehyde

(D) Monosodium – L – Glutamate

66. The main biofilm producing bacteria used in trickling filter is

(A) *E. coli*

(B) Zooglea

(C) Vibrio

(D) Nitrosomonas

67. The melting temperature (T_m) of the oligonucleotide sequence "GCATGCATGCCATGCAT" is

(A) 48 °C

(B) 52 °C

(C) 50 °C

(D) 56 °C

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68. The single letter code for Glutamic acid is

(A) N

(B) E

(C) D

(D) Q

69. The helix diameter of B DNA

(A) 24.7 Å

(B) 23.7 Å

(C) 25.2 Å

(D) 22.7 Å

70. The cytoplasmic invaginations are commonly present in bacteria

(A) Nuclear elements

(B) Magnetosome

(C) Mesosomes

(D) Peroxisomes

71. Which mineral ion play important role in functioning of photosystem – II ?

(A) Manganese

(B) Magnesium

(C) Molybdenum

(D) Iron

72. Among the following which micro-organism is involved in nitrogen fixation with woody trees ?

(A) Azotobacter

(B) Rhizobium

(C) Frankia

(D) Azospirillum

73. During cell cycle sister chromatids are pulled apart during

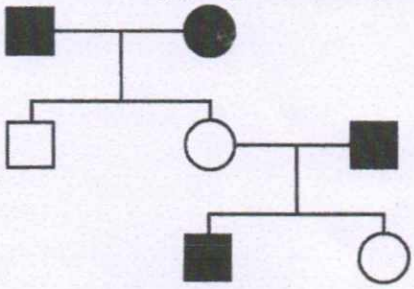
(A) Metaphase

(B) Anaphase

(C) Prophase

(D) Interphase

74. The following pedigree chart represent :



(A) X-linked recessive

(B) X-linked dominant

(C) Sex linked recessive

(D) Autosomal dominant

75. Which of the following is a molecular modeling software which use homology modeling approach ?

(A) YASARA

(B) GRASP

(C) MDL Chime

(D) SPDBV

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