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TEST BOOKLET CODE **(A)** TEST BOOKLET NUMBER _____

POSTGRADUATE INSTITUTE OF MEDICAL EDUCATION & RESEARCH, CHANDIGARH

DURATION: 1 1/2 HOURS ROLL NO. _____

Max Marks : 80

ENTRANCE EXAMINATION FOR ICMR-LDCE EXAMINATION – 20XX

INSTRUCTIONS TO THE CANDIDATES

NB: No candidate will leave the Examination Hall before the expiry of the period of at least 45 **minutes** of the start of the paper.

1. Write your Roll Number and specific subject B,C or D clearly in the designated space on the answer sheet and on the question paper.

2. **The enclosed paper contains 2 Sections. Section I (A) has 50 questions and is compulsory for all candidates with each question carrying 1 mark.**
Sections II pertain to Life Sciences (B) Social Behavioral Sciences (C)and Bioinformatics/Bio-statistics (D). The candidate may attempt questions in one of the three sections (II (B) or II (C) or II (D). Each division of Section II (B) or Section II (C) or section II (D) has 30 questions and the candidate is to attempt all questions in the pre-designated area of Section B or C or D.

3. The answer to the questions in the enclosed question paper shall be written on answer sheet. Chosen alternative is to be indicated by encircling the appropriate numeral on the answer sheet e.g.

Q No. alternative 1 2 3 ●

4. **Use of Calculators/Log Tables/ Mobile Phone is not permitted.**

5. Use only **black or blue ball point pen.**

6. The question paper is confidential and on no account be removed from the examination hall. It must be handed over to the invigilator at the end of the examination before leaving the examination hall.

7. Candidates must not deface the question paper or the answer sheet.

8.. Please dispossess yourself of any paper or material from which you may be able to derive help in the examination. If any material is recovered from your possession, you will render yourself liable to action for resorting to unfair means.

9. Smuggling by writing of questions on a piece of paper or any part of your body is liable to disciplinary action and may lead to cancellation of your examination.

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Section I (A)
Aptitude (compulsory for all candidates)

1. Molality is defined as:
1. Number of moles of solute/L of solvent
2. Grams of solute/L of solvent
3. Number of moles of solute/Kg of solvent
4. Number of Grams equivalent of solute/L of solvent

2. An 'inbred' strain of an animal refers to:
1. Genetically undefined animal
2. Animals bred in a laboratory
3. Isogenic animals
4. Immunodeficient animals

3. Aspirin was first obtained from the bark of:
1. Cinchona tree
2. Neem tree
3. Willow tree
4. Eucalyptus tree

4. An isotope of an element has:
1. Same number of neutrons
2. Same number of electrons and neutrons
3. Same number of protons and neutrons
4. Same number of protons

5. The branch of science that deals with cancer is known as:
1. Serology
2. Oncology
3. Pathology
4. Radiology

6. Which of the following waves cannot be transmitted through vacuum:
1. Light waves
2. Heat waves
3. Sound waves
4. Electromagnetic waves

7. Luc Montagnier and Robert Gallo are the codiscoverers of the following virus:
1. Ebola
2. Hepatitis-B
3. Small Pox
4. HIV

8. xxxxxxxxxx to **Question No 50**

Section II (B)
Life Sciences

51. Which of the followings is rich in triglycerides?
1. Chylomicrons
2. LDL
3. VLDL
4. HDL

52. Which enzyme has impaired activity in Vitamin B1 deficiency?
1. Succinate dehydrogenase
2. Pyruvate dehydrogenase
3. Transketolase
4. Citrate synthase

53. Which of the following is useful for identifying amino terminal residue of proteins?
1. Cyanogen bromide
2. Fluorodinitrobenzene
3. Performic acid
4. Dansyl chloride

54. Which is the most abundant RNA in a cell?
1. tRNA
2. mRNA
3. rRNA
4. SnRNA

55. Which of the following statements concerning characteristics of histones is FALSE?
1. They are highly basic proteins found in the nucleus
2. They form non-covalent bonds with eukaryotic DNA called nucleosomes
3. They are very highly conserved proteins
4. They are associated with both prokaryotic and eukaryotic DNA

56. Which of the following is an inhibitor of protein synthesis?
1. Pencillin
2. Chloramphenicol
3. Actinomycin D
4. Bacitracin

57. The Ames test is used to:
1. To detect bacteria
2. To detect viruses
3. To detect enzymes
4. To detect mutagens

58. In which of the following tissues insulin enhances transport of glucose?
1. Brain
2. Lens
3. Red blood cell

4. Adipose tissue

59. Which class of RNA characteristically contains methylated purines and pyrimidines?

1. tRNA
2. mRNA
3. rRNA
4. 16sRNA

60. Km of any enzymatic reaction describes:

1. Reaction velocity expressed as mols per second
2. Dissociation constant of E-S complex
3. Amount of the enzyme required to convert half of the substrate to E-S complex
4. Substrate concentration to achieve half of Vmax

61. A Codon consists of:

1. One molecule of amino acyl-t RNa
2. Two complementary base pairs
3. Three consecutive nucleotide units
4. Three individual nucleotides

62. One mmol of NaCl contains:

1. 35.5 g
2. 35.5 mg
3. 58.5 g
4. 58.5 mg

63. Piezoelectric crystals are used in:

1. NMR imaging
2. Crystallography
3. Ultrasonography
4. Xeroradiography

64. Nuclear Magnetic Resonance Imaging technique is based on the gyromagnetic property of:

1. Neutron
2. Electron
3. Proton
4. Positron

65. Hydrogen-3 is a pure:

1. Alpha emitter
2. Gamma emitter
3. Beta emitter
4. Positron emitter

66. When a positron is emitted from a radioisotopic atom, the atomic number of the daughter product:

1. Increases by one
2. Decreases by one
3. Decreases by two
4. No change

67. The sedimentation velocity of a protein in a centrifuge tube does NOT depend on the:

1. Density of the solution
2. Density of protein
3. Mass of protein
4. Charge of the protein

68. Which law states that: At constant temperature, the volume of a given quantity of any gas is inversely proportional to the pressure upon the gas?

1. Boyle’s law
2. Charle’s law

3. Henry's law
4. Dalton's law

69. Western blot is a technique used for:

1. Protein expression
2. DNA expression
3. RNA expression
4. Fat expression

70. When a molecule absorbs light of a particular wavelength and continues to emit light of higher wavelength for a considerable time after excitation, the phenomenon is called:

1. Phosphorescence
2. Fluorescence
3. Chemiluminescence
4. Cerenkov radiations

to Question no 80

Section II (C)
Social Behavioral Sciences

51. Which of the following is the correct Dental Formula of the primitive Eutherian mammal?
1. 3143/3143
2. 2343/2343
3. 3413/3413
4. 4323/4323

52. Which of the following is NOT a fossil?
1. Stone tools
2. Petrified remains of the bones
3. Lucy
4. Coprolites

53. Which of the following methods is used for dating the fossils older than 75000 years?
1. Carbon dating
2. Potassium argon method
3. Dendrochronology
4. Density

54. The name of the book Charles Darwin wrote is:
1. Origin of species
2. Natural history
3. Origin of man
4. Process and product

55. During the last fifty years the adult height of Japanese has increased. This is known as:
1. Secular trend
2. Medronic trend
3. Physique
4. Growth gradient

56. Which of the following is the crippling disorder that results from excessive consumption of Khesari daal?
1. Endemic goitre
2. Marasmus
3. Malaria
4. Lathyrism

57. Bushman and Hottentots are the racial groups found in:
1. South India
2. South Africa
3. South America
4. Central Europe

58. Khasis are the tribes inhabiting:
1. Nilgiri hills of South India
2. Himachal Pradesh
3. Madhya Pradesh
4. North-East India

59. Ring tailed lemurs are found in:
1. South America
2. Sri Lanka
3. Southeast Asia
4. Madagascar islands

60. Introns are those segments of DNA which are:
1. Directly responsible for producing specific traits

2. Responsible for controlling the activities of structural genes
3. Non functioning spacer segments within a structural gene
4. Structural genes coding for various traits

61. Among primates the bilophodont molars are found among:
1. Old world monkeys
2. New world monkeys
3. Lemurs
4. Marmosets

62. Which of the following genera is the earliest human ancestor:
1. Sivapithecus
2. Dryopithecus
3. Australopithecus
4. Aplidium

63. Bitot's spot is caused due to deficiency of which of the following vitamins:
1. Vitamin B-12
2. Vitamin E
3. Vitamin A
4. Vitamin C

64. Micro-blades are the characteristic tool types of the following phase of human prehistory:
1. Lower palaeolithic
2. Mesolithic
3. Upper palaeolithic
4. Middle palaeolithic

65. The diploid number of chromosomes in man is:
1. 64
2. 23
3. 32
4. 46

66. The study approach that involves application of evolutionary principles to the behavior of animals is known as:
1. Paleontology
2. Sociobiology
3. Zoogeography
4. Paleo-primatology

67. In India a *Homo erectus* fossil skull cap was found in:
1. Shivalik Hills
2. Kaveri basin
3. Narmada basin
4. Ganga basin

68. Haemophilia, a sex linked disease affecting only males, is:
1. Recessive X-linked
2. Dominant X-linked
3. Y-linked
4. Dominant autosomal

69. Array is:
1. Comparing a number of people affected by a disease and who are at risk

2. Another alternative in displaying data pictorially and allowing rapid assimilation of finding by the reader
3. A display where the horizontal and vertical axes of a graph are formed according to the scale values and the frequencies of the distribution respectively
4. A systematic arrangement of the gathered data either in an ascending or descending order

70. Incidence:

1. Is the number of cases that will occur within a population during a specified period of time
2. Indicates what proportion of a given population is affected by a condition at a given point of time
3. The ratio of the number of people affected by a disease compared to a number of people at risk in a given population
4. Is a snapshot picture of the presence of a particular disease over the year

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Section II(D)
Bioinformatics/Bio-statistics

51. The limits of Pearson's Correlation coefficient are:
1. $0 \leq Y \leq 1$
2. $-1 \leq Y \leq 0$
3. $-1 \leq Y \leq +1$
4. $0 < Y < 1$

52. Which of the following tests will be used for testing of mean between two groups?
1. Students unpaired 't' test
2. Students paired 't' test
3. ANOVA
4. Chi square test

53. When $p < 0.05$, which of the following is true?
1. Probability of type I error is less than 0.05
2. Probability of type II error is less than 0.05
3. Probability of type I error is more than 0.05
4. Probability of type II error is more than 0.05

54. Which language is platform independent.
1. C
2. C++
3. ADA
4. JAVA

55. The errors that can be pointed out by Compiler is ?
1. Syntax
2. Semantic
3. Logical
4. Internal

56. One Kilobyte is ?
1. 1000 byte
2. 1024 byte
3. 1064 byte
4. 100 byte

57. First Super Computer of India
1. Sudarshan
2. Param
3. Super 301
4. Cray

58. Select odd one out.
1. Compiler
2. Operating System
3. Interpreter
4. Assembler

59. Which one is product of Oracle ?
1. Toad
2. My Sql
3. SQL *plus
4. My Sql

60. Which one is Symmetric Key Encryption Algorithm?
1. DES
2. CEASER
3. RSA
4. Enigma

61. Which full form is wrong for ACID in DBMS ?
1. A-Atomicity
2. C- Consistency
3. I-Isolation
4. D-Dependency

62. Which one of the following is not a client server application?
1. Internet Chat
2. Web browsing
3. E-Mail
4. Ping

63. Pointer is not available in?
1. C
2. C++
3. Java
4. None

64. Select odd one out?
1. Array
2. Tree
3. Linklist
4. Stack

65. MAC address is a ?
1. Physical Address
2. Logical Address
3. Both
4. None of above

66 Deposition of cDNA into inert structure is

1. DNA finingerprinting
2. DNA polymerase
3. DNA probes
4. DNA microarrays

67Which is the most accurate statement of the relationship between the "Gene Ontology" and "Reactome"?

1. Reactome is a database of reactions, while Gene Ontology is a database of gene sequences.
2. The Gene Ontology is a formal vocabulary for describing gene functions, which was developed using Reactome, a database of cellular reactions and pathways.
3. Reactome is a database of cellular reactions and pathways, which are expressed using terms from the Gene Ontology, a formal vocabulary for gene function.

4. Reactome is oriented to bacteria, whereas the Gene Ontology is oriented to multicellular organisms.

68An example of Homology & similarity tool?

1. PROSPECT
2. EMBOSS
3. RASMOL
4. BLAST

69The tool for identification of motifs?

1. COPIA
2. patternhunter
3. PROSPECT
4. BLAST

70Which of the following is the most suitable Perl expression for testing if a DNA sequence contains a run of 3 or more "AT"'s?

1. /[AT]+/g (one or more AT's, global; will match any run of characters with only the letters A or T whose length is at least 1; i.e. A, T, AT, ATT, TTT, etc all match)
2. /(AT)+/i (one or more AT's, case-insensitive; this is the wrong number of AT's, as it will match AT or ATAT as well as ATATAT, ATATATAT etc.)
3. /AT+++/g (this is incorrect regular expression syntax)
4. /ATATAT/i (three AT's, case-insensitive; this is the correct number of AT's and, additionally, does not assume that the sequence is in upper-case)

71Which of the following are all Perl keywords that can be used to manipulate strings?

1. foreach, each, for
2. reverse, uc, chop
3. while, if, unless
4. reverse, sort, grep

72Human genome contains about

1. 2 billion base pairs
2. 3 billion base pairs
3. 4 billion base pairs
4. 5 billion base pairs

73The identification of drugs through genomic study

1. Genomics
2. Cheminformatics
3. Pharmagenomics
4. Phrmacogenetics

74Analysing or comparing entire genome of species

1. Bioinformatics
2. Genomics
3. Proteomics
4. Pharmacogenomics

75Characterizing molecular component is

1. Genomics
2. Cheminformatics
3. Proteomics
4. Bioinformatics

To question no. 80