Examination: **Ph.D Zoology**

SECTION 1 - SECTION 1

Question No.1

In which type of DNA, the number of base pair per turn is 11, the rotation angle between two base pairs is 32.7^{O}, vertical rise per base pair is 25 A^{O} and helical coiling is right handed

- A
- B
- C
- Z

Question No.2

Some antibodies may catalyze a specific reaction just like enzymes do, these antibodies are known as

- Ribozymes
- Abzymes
- Lipozymes
- Allozymes

Question No.3

Generalized transduction occurs due to

- None of these
- Recombination
- Both Recombination & Headful packaging
- Headful packaging

Question No.4

Human bone marrow cells are-

- Pluripotent stem cells
- Embryonic stem cells
- Multipotent stem cells
- Totipotent stem cells

Question No.5

Multinucleated condition is found in_____

- Neurons

- Cardiac muscle fibres
- Smooth muscle fibres
- Skeletal muscle fibres

Question No.6

_____cause malaria and sleeping sickness

- Bacteria
- Viruses
- Protozoans
- None of these

Question No.7

Which gland is used for induced breeding?

- Thyroid
- Parathyroid
- Adrenal
- Pituitary

Question No.8

Which of the following is an antioxidant?

- Thymine
- Adenine
- Glucose
- Vitamin–C

Question No.9

Hump of the Camel is an example of_____

- Stored water
- Areolar tissue
- Cartilage
- Adipose tissue

Question No.10

The ends of two bones are connected by _____

- Cartilages
- Tendons

- Ligaments
- Muscles

Question No.11

Which polymerase made widespread use of PCR possible:

- DNA polymerase I
- *Thermus aquaticus* (Taq) polymerase
- DNA polymerase III
- None of these

Question No.12

The number of chromosomes in rabbit is

- 42
- 44
- 46
- 40

Question No.13

Which one of the following is tightly bound to the cell membrane?

- ATP
- Adenylate cyclase
- Ribonuclease
- c-AMP

Question No.14

Higher capacity vector is

- Cosmid
- BAC
- YAC
- Plasmid

Question No.15

The first vertebrates were

- Amphibians
- Acanthodians
- Ostracoderms

- Placoderms

Question No.16

Which of the following is an initiator genetic code ?

- AUG
- UGA
- UAG
- UAA

Question No.17

Which of the following enzymes is not synthesized from the genes of the lac operon ?

- β – galactosidase
- Glycerophosphate synthetase
- transacetylase
- β – galactoside permease

Question No.18

A single test where both mutagenic and clastogenic effects can be screened

- SLRL test
- SMART
- D L test
- ARL test

Question No.19

Maximum formation of mRNA occurs in

- Nucleolus
- Ribosome
- Nucleoplasm
- Cytoplasm

Question No.20

When a heterozygote offspring is crossed with homozygous recessive, the cross is called

- Test cross
- Reciprocal cross
- Criss-cross

- Back cross

Question No.21

Molecular or genetic theory of ageing is based on

- Genetic damage
- Shortening of chromosomes
- Gene loss
- Increase of ROS

Question No.22

The ability of a population to increase by reproduction is

- Entropy
- Natality
- Energy flow
- Limiting factor

Question No.23

Bt Cotton contains

- *nif* gene
- *vir* gene
- *cry* gene
- *ampR* gene

Question No.24

The tusks of an elephant are modified?

- Canines
- Molars
- Incisors
- Pre molars

Question No.25

The P53 protein promotes

- Apoptosis
- DNA multiplication
- Cell multiplication
- Tumour formation

Question No.26

Most of the neurons are_____

- Unipolar
- Bipolar
- Pseudounipolar
- Multipolar

Question No.27

Which of the following is not a characteristic feature of cancer cell ?

- Angiogenesis
- Immortality
- Apoptosis
- Metastasis

Question No.28

Krüppel gene is activated by :

- Bicoid + high level of gaint
- Bicoid + high level of hunchback
- Bicoid + low level of hunchback
- Bicoid + low level of gaint

Question No.29

Migration of Salmon from sea water to freshwater and is called_____.

- Catadromous
- Anadromous
- Diadromous
- Both Catadromous & Anadromous

Question No.30

Which of the following is true?

- Only DNA but not RNA is able to mutate
- Neither DNA nor RNA is able to mutate
- Both DNA and RNA are able to mutate
- None of these

Question No.31

Vector less gene transfer includes

- Particle gene
- Microinjection
- Electroporation
- All of these

Question No.32

Both chloroplasts and mitochondria

- carry extranuclear genes
- display a Mendelian pattern of inheritance
- are found within the nucleus
- have linear DNA

Question No.33

The chordate together with the phyla echinodermata and hemichordata comprise a major group known as

- Lophotrochozoa
- Protostomes
- Ecdysozoa
- Deuterostomia

Question No.34

Who demonstrated that genes are located on chromosomes?

- Franklin
- Chargaff
- Meselson and Stahl
- Morgan

Question No.35

A toxin that blocked the voltage –gated sodium channels of neurons would

- prevent action potentials by keeping the cell from depolarizing
- slow down the depolarization phase of the action potential
- prevent depolarization after an action potential was triggered
- slow down the repolarization phase of the action potential

Question No.36

Which of the following combination is incorrect ?

- Edward syndrome – 18 trisomy
- Klinefelter Syndrome – XXY
- Turner syndrome – XYY
- Down syndrome – 21 trisomy

Question No.37

How many promoters control the transcription of *E.coli* lac operon

- One
- Four
- Three
- Two

Question No.38

Which is the agent used to fuse the somatic cells in hybridoma technology

- Trypsin
- Haemocyanin
- Precipitin
- Polyethylene glycol

Question No.39

Which one of the following is involved in the mesoderm formation?

- Tolloid
- Sog
- Twist
- Hunchback

Question No.40

Which zone is least likely to have photosynthetic organisms ?

- Litoral zone
- Intertidal zone
- Demersal zone
- Neritic zoone

Question No.41

The anticodon is in:

- DNA
- tRNA
- mRNA
- rRNA

Question No.42

Expression of *apterous* activates the secretion of proteins encoded by:

- *Fringe*
- *Torso*
- *Nanos*
- *Pele*

Question No.43

The X-ray diffraction studies conducted by _____ were key to the discovery of the structure of DNA.

- McClintock
- Chargaff
- Meselson and Stahl
- Franklin

Question No.44

Which of the following amino acid is coded by maximum number of codons

- Alanine
- Tryptophan
- Leucine
- Valine

Question No.45

Species that occur in different geographical regions separated by special barrier are

- Sibling
- Sympatric
- Alepatric
- Allopatric

Question No.46

Which one of the following protein is a major component of cytoskeleton?

- Fibrin
- Tubulin
- Porin
- Osmotin

Question No.47

The gene responsible for initiating male development in a fetus is

- *MIF* gene
- *XY* gene
- *SRY* gene
- *STD* gene

Question No.48

The ratio of RBC:WBC in human is

- 6:1
- 600:1
- 6000:1
- 60:1

Question No.49

Each cell in an individual with Down syndrome contains ____ chromosomes.

- 22
- 24
- 47
- 45

Question No.50

si RNA interferes at

- Transcription level
- Translation level
- DNA replication level
- Post-transcriptional level

Question No.51

Erythroblastosis fetalis is

- caused due to Rh factor incompatibility
- an infectious disease
- an adult disease
- caused due to wrong blood group transfusion

Question No.52

The life cycle of Zebrafish is completed in

- 1 month
- 2 months
- 6 months
- 3 months

Question No.53

An example of multiple alleles is

- Starch synthesis in pea seeds
- ABO blood grouping
- Inheritance of flower colour in snapdragon
- All of these

Question No.54

cdc mutants are useful in study of

- Replication
- Recombination
- Apoptosis
- Cell cycle

Question No.55

Muscles immune to fatigue are_____

- Striped
- Cardiac
- Eye muscle
- Unstriated

Question No.56

The development of Knockout mice led to the award of Nobel Prize in 2007 to_____

- Lodish, Darnell and Baltimore

- Capecchi, Evans and Smithies
- Andrew Fire and Craig Mello
- Watson and Crick

Question No.57

Classification of porifera on the basis of endoskeleton

- Oligochaeta Calcarea Demospongia
- Demospongia Hexetinellida Hirudina
- Calcarea Demospongia Hexetinellida
- Hirudina Polychaeta Archiannelida

Question No.58

People who are born and live at sea level will have a smaller lung capacity than people who spend their lives at a high altitude. This is because

- The atmosphere is more dense at higher altitude
- The atmosphere is less dense at lower altitude
- The atmosphere is more dense at lower altitude
- The atmosphere is less dense at higher altitude

Question No.59

Guardian of the genome is _____

- Rb gene
- Hox gene
- DNA polymerase
- p^{53} gene

Question No.60

Auxetic growth occurs as a result of increase in the size of their cells and the number of cells remains the same. Such growth is found in

- Mammals
- Nematodes
- Amphibians
- Insects

Question No.61

Fat cells release fatty acids in response to

- high insulin levels
- low glucagon levels
- high glucagon levels
- low insulin levels

Question No.62

Majority of insects go through

- Incomplete metamorphosis
- Nymph stage of metamorphosis
- Mixed metamorphosis
- Complete metamorphosis

Question No.63

BAC is a measurement of

- how fast a person reacts after drinking alcohol
- how long a person has been drinking alcohol
- the concentration of alcohol in the blood
- the number of alcohol death in the state

Question No.64

In quiescent stage (G_0) of the cell cycle, Cells remain

- metabolically inactive but no longer proliferate
- metabolically active but no longer proliferate
- metabolically inactive and proliferate
- metabolically active and proliferate

Question No.65

Which of the following is present in both prokaryotic and eukaryotic cells?

- Mitochondria
- Nucleolus
- Ribosome
- All of these

Question No.66

Which of the following is best example of sympatric speciation

- Peppered moth

- Polyploidy in plants
- Darwins' finches
- Convergent Evolution

Question No.67

During DNA replication Okazaki fragments are formed in –

- Leading strand
- Both the strands
- RNA transcript
- Lagging strand

Question No.68

Minamata disease is caused due to the pollution of

- Lead
- Zinc
- Cadmium
- Mercury

Question No.69

Hypophysation is done in major carps

- To increase breeding in fisheries
- To increase their growth
- To increase their palatability
- To increase size

Question No.70

Disorder of adrenal cortex cause

- Simple goitre, cretinism
- Hashimoto's disease, gull's disease
- Addison's disease and Cushing syndrome
- Cretinism, addison's disease

Question No.71

Inducible error prone DNA damage repair mechanism is called?

- Photo reactivation
- SOS repair

- Excision repair
- Post-replication repair

Question No.72

The backbone in a polynucleotide chain is formed due to

- Sugar and nitrogenous bases
- Sugar and phosphates
- Sugar, nitrogenous bases and phosphates
- Nitrogenous bases and phosphates

Question No.73

Which of the following is not true of DNA?

- Nitrogen bases are 0.34 nm apart on a DNA strand
- The double helix is 2.0 nm wide
- The double helix is 3.4 nm wide
- A pairs with T and G pairs with C

Question No.74

Diffused type of placenta is found in

- Dogs and cats
- Horses and pigs
- Primates and rodents
- Ruminants

Question No.75

The limbless amphibian is?

- Glass snake
- Ichthyophis
- *Hyla*
- Salamander

Question No.76

The name for a chromosome map unit is

- Millimendel
- Centimorgan
- Decibarr

- Centistern

Question No.77

If a diploid cell is treated with colchicines, then it becomes

- Tetraploid
- Monoploid
- Triploid
- Diploid

Question No.78

Where are branchial clefts found in humans?

- Branchial clefts located in the anterior region of pharynx, present only during the embryonic stage and disappear later
- Branchial clefts located in the anterior region of spinal cord, present only during the embryonic stage and disappear later
- Branchial clefts located in the anterior region of cerebrum, present only during the embryonic stage and disappear later
- Branchial clefts located in the anterior region of nostrils, present only during the embryonic stage and disappear later

Question No.79

Chargaff found that for DNA

- the ratio of A to T is close to 1:1 and the ratio of G to C is close to 1:1
- the ratio of A to C is close to 1:1 and the ratio of G to T is close to 1:1
- the ratio of A to G is close to 1:1 and the ratio of T to C is close to 1:1
- A + T = G + C

Question No.80

Philadelphia chromosome represents

- Translocation between chromosome 8 and 14
- Translocation between chromosome 8 and 21
- Translocation between chromosome 9 and 21
- Translocation between chromosome 9 and 22

Question No.81

The most commonly used molecular tool for phylogenetic analysis involves sequencing of

- Ribosomal RNA

- Mitochondrial DNA
- Mitochondrial RNA
- Nuclear DNA

Question No.82

Genes which confer antibiotic resistance on bacteria are located on

- RNA
- Polysome
- Plasmid
- Chromosomal DNA

Question No.83

Eunuchoidism

- Excess of oestrogens secreted by tumours of ovaries and adrenal glands.
- Excessive development of male mammary glands
- Early maturation of ovaries and testes with production of ova
- Failure of testosterone secretion causes eunuchoidism

Question No.84

Which of the following would not generally affect allele frequencies in a population

- Immigration
- Non random mating
- Mutation
- Directional selection

Question No.85

The largest and fastest growing prawn species is

- *Penaeus vannamei*
- *Macrobrachium rosenbergii*
- *Macrobrachium malcolmsonii*
- *Penaeus monodon*

Question No.86

Cephalochordata is also known as

- Adelo Chordata

- Craniata
- Acrania
- Tunicata

Question No.87

A lac operon would be inducible in the:

- Absence of lactose and presence of glucose
- Presence of both lactose and glucose
- Presence of lactose and absence of glucose
- Absence of both lactose and glucose

Question No.88

In mammalian females, two X chromosomes are present. Expression of genes on both chromosomes may lead to gene dosage imbalance. This problem is solved by a process called dosage compensation. Dosage compensation is achieved by

- Hypoactivation of both X chromosome
- Methylation of one X chromosome
- Hyperactivation of one X chromosome
- Elimination of one X chromosome

Question No.89

Sickle-cell anaemia is

- sex linked recessive trait
- autosome linked recessive trait
- sex linked dominant trait
- autosome linked dominant trait

Question No.90

Inner part of the brain is _____ in colour

- Red
- Grey
- brown
- White

Question No.91

Water vascular system of Echinodermata consists of

- Pedicillaria calyx S-shaped stone canals
- Teidmann's bodies Medreporite
- Teidmann's bodies S-shaped stone canals
- Pedicillaria calyx Medreporite

Question No.92

Compensatory regeneration is observed in

- Bone marrow
- Lungs
- Brain
- Liver

Question No.93

Which of following is likely to be expressed?

- Euchromatin without methylation
- DNA with many methyl groups
- Euchromatin either methylated or not equally expressed
- Heterochromatin with methylation

Question No.94

Chromosome segregation occurs during

- S-phase
- G2-phase
- M-phase
- G1-phase

Question No.95

Birds excrete nitrogenous waste in the form of

- Ammonia
- Urea
- Uric acid
- Fatty acids

Question No.96

Homo erectus is the zoological name of

- Cro-Magnon man

- Nut cracker man
- Peking man
- Neanderthal man

Question No.97

Cancer causing chemicals are known as_____

- Mutagens
- Carcinogens
- Proto oncogenes
- Oncogenes

Question No.98

Major site for synthesis of lipid is

- Rough endoplasmic reticulum
- Plasma membrane
- Golgi body
- Smooth endoplasmic reticulum

Question No.99

Bacteriophages are

- Partly bacteria, partly viruses
- Viruses
- Insects
- Bacteria

Question No.100

Which of the following is best suited to get the surface view of the object?

- SEM
- TEM
- Compound microscope
- Fluorescent microscope