

FACULTY SELECTION TEST

BIOLOGY

Time: 90 Min.

Max. Marks: 400

GENERAL INSTRUCTIONS

1. Write your Name in the Space Provided in the Bottom of this Booklet.
2. The question paper consists of '100' objective type questions.
3. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.
4. Each correct answer carries **4 marks** and each wrong answer **(– 1) Mark**.
5. Use **Black or Blue Ball Point Pen** only for filling particulars.
6. Use of Blank Papers, Clip Boards, Calculator, Log Table, Slide Rule and Mobile or any electronic gadgets in any form is not allowed.
7. In case of any dispute, the answer filled in the OMR sheet available with the institute shall be final.
8. After completion submit the Question Paper back along with the Answer Sheet.

Name: _____

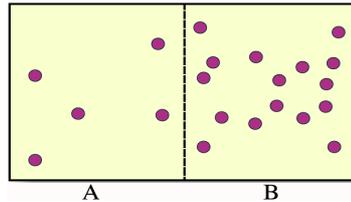
- Q.1 Taxonomy refers to
 (1) Classification (2) Nomenclature (3) Identification (4) All of these
- Q.2 Two or more species occupying the same or overlapping areas are called
 (1) Sibling (2) Sympatric (3) Allopatric (4) Sub-species
- Q.3 Species are considered as
 (1) Real units of classification devised by taxonomists
 (2) Real basic unit of classification
 (3) The lowest unit of classification
 (4) Artificial concept of human mind which cannot be defined in absolute terms.
- Q.4 Members of phycomycetes are found in
 (i) Aquatic habitats
 (ii) On decaying wood
 (iii) Moist and damp places
 (iv) As obligate parasites on plants
 Choose from the following options.
 (1) None of the above (2) (i) and (iv) (3) (ii) and (iii) (4) All of the above
- Q.5 Red algae resemble blue green algae in the presence of
 (1) Similar reserve food (2) Similar mode of reproduction
 (3) Similar cell wall constituents (4) Phycobilins
- Q.6 If the diploid number of a flowering plant is 36. What would be the chromosome number in its endosperm?
 (1) 36 (2) 18 (3) 54 (4) 72
- Q.7 Match the followings and choose correct option
- | Group A | Group B |
|-------------------------|---------------------------|
| A. Aleurone layer | I. without fertilization |
| B. Parthenocarpic fruit | II. Nutrition |
| C. Ovule | III. Double fertilization |
| D. Endosperm | IV. Seed |
- Options :
- (1) A-I, B-II, C-III, D-IV (2) A-II, B-I, C-IV, D-III
 (3) A-IV, B-II, C-I, D-III (4) A-II, B-IV, C-I, D-III
- Q.8 Intercalary meristem is derived from
 (1) Apical meristem (2) Lateral meristem (3) Protoderm (4) Calyptragen



- Q.9 Casparian strips occur in the cells of
(1) Epidermis (2) Exodermis (3) Endodermis (4) Hypodermis
- Q.10 Age of a tree is calculated by its
(1) Height (2) Girth
(3) Number of branches (4) Number of annual rings
- Q.11 Which is true of active and passive transports?
(1) Active transport is less rapid.
(2) Active transport require energy whereas passive transport follows concentration gradient.
(3) Active transport in connected with cations, whereas passive transport is related to anions.
(4) Active transport is random whereas passive transport is selective.
- Q.12 If a solution outside a cell is made more concentrated so that the cell loses water to its environment and shrinks, the external solution is said to be to the contents.
(1) Hypotonic (2) Isotonic (3) Hypertonic (4) In equilibrium
- Q.13 Outer and inner membranes of mitochondria are
(1) Structurally and functionally similar
(2) Structurally and functionally different
(3) Structurally similar but functionally different
(4) Structurally different but functionally similar.
- Q.14 Vacuole in a plant cell
(1) Lacks membrane and contains water and excretory substances.
(2) Is membrane bound and contains storage proteins and lipids.
(3) Is membrane bound and contains water and excretory substances.
(4) Lacks membrane and contains air.
- Q.15 In the meiotic cell division four daughter cells are produced by two successive divisions in which
(1) First division is equational, second is reductional.
(2) First division is reductional and second is equational.
(3) Both divisions are reductional.
(4) Both divisions are equational.
- Q.16 Crossing over in a diploid organism is responsible for
(1) Dominance of genes (2) Linkage between genes
(3) Segregation of alleles (4) Recombination of linked genes

- Q.17 In succulent plants, the stomata open in night and close by day, which among the following would be the best hypothesis to explain the mechanism of opening of stomata in night only?
- (1) CO_2 accumulates, reduces pH, stimulating enzymes, resulting in accumulation of sugars.
 - (2) Decrease in CO_2 concentration, conversion of starch into organic acids, resulting in increase in K^+ transport.
 - (3) Low CO_2 concentration, accumulates organic acids resulting in increased concentration of cell sap.
 - (4) CO_2 is used up, increases pH, results in accumulation of sugar.

- Q.18 Based on the figure given below which of the following statements is not correct?



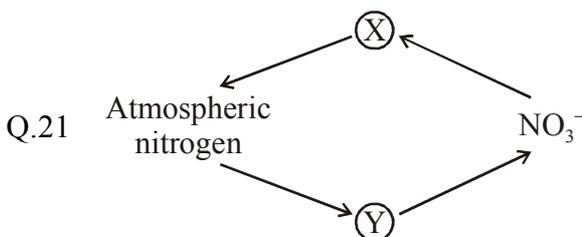
- (1) Movement of solvent molecules will take place from chamber A to B.
- (2) Movement of solute will take place from A and B.
- (3) Presence of a semipermeable is a pre requisite for this process to occur.
- (4) The direction and rate of osmosis depends on both the pressure gradient and concentration gradient.

- Q.19 The nitrifying bacteria are

- (1) Autotrophic
- (2) Chemosynthetic
- (3) Saprophytic
- (4) Parasitic

- Q.20 If the carbon dioxide content of the atmosphere is as high as 300 ppm, plants

- (1) grow for sometime and die
- (2) would not grow properly
- (3) show chlorosis
- (4) would thrive well



In above figure, which of the following statements is correct?

- (1) X is lightning, Y is denitrifying bacteria.
 - (2) X is denitrifying bacteria, Y is N_2 fixing and nitrifying bacteria.
 - (3) X is nitrifying bacteria, Y is decay bacteria.
 - (4) X is *Nitrosomonas*, Y is *Nitrosococcus*.
- Q.22 Poisons such as cyanide, inhibit $\text{Na}^+ - \text{K}^+$ influx during active transport in a cell. This inhibitory effect is reversed by an injection of ATP. This shows that
- (1) ATP is hydrolysed by ATPase to release energy.
 - (2) ATP as a carrier protein in transport across cell membrane.
 - (3) $\text{Na}^+ - \text{K}^+$ exchange pump operates in the cell.
 - (4) energy for $\text{Na}^+ - \text{K}^+$ exchange pump is provided by ATP.

- Q.23 To prevent over ripening of banana, these should be
- (1) kept in refrigerator (2) kept in room temperature
 (3) treated with ascorbic acid (4) None of the above

- Q.24 A bioreactor is
- (1) Fermentation tank (2) Culture containing radioactive isotopes
 (3) Culture for synthesis of new chemicals (4) Hybridoma technology

Q.25 In Griffith experiment, what would be the effect of the following conditions on the mice?

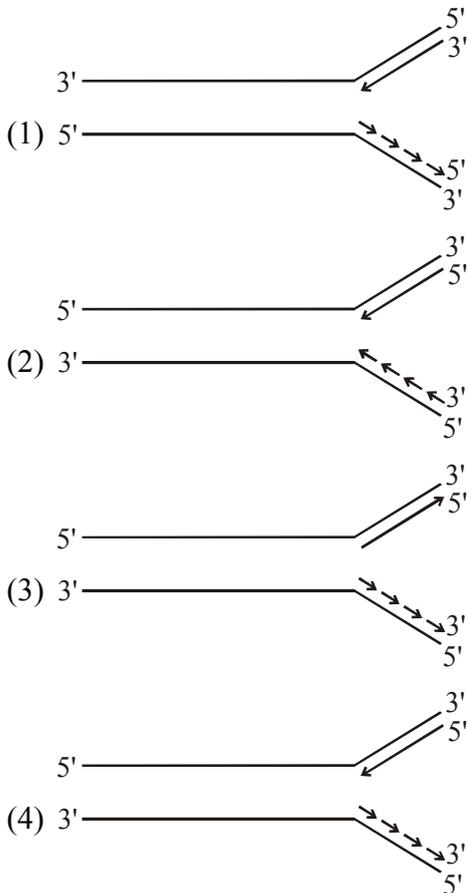
Form of pneumococcus injected	Effect on mice
----------------------------------	-------------------

- | | |
|-------------------------------------|---|
| I. Live, rough non-capsulated | A |
| II. Live smooth capsulated | B |
| III. Heat killed smooth | C |
| IV. Heat killed smooth + live rough | D |

Choose the correct option for their effect on mice.

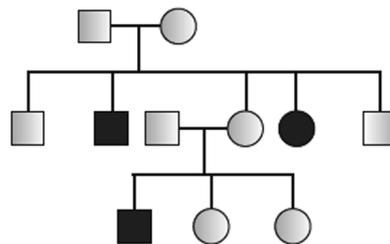
- (1) A-Survived, B-Died, C-Died, D-Survived
 (2) A-Survived, B-Died, C-Survived, D-Died
 (3) A-Died, B-Survived, C-Survived, D-Died
 (4) A-Died, B-Survived, C-Died, D-Died

Q.26 Which of the following figures correctly represents the replication fork formed during DNA replication?



- Q.27 Which of the following statements is incorrect?
- (1) Lichens, and association of fungus and algae is an example of mutualism.
 - (2) Those epiphytes which use other plants for support only and not for water or food supply are examples of commensalism
 - (3) Sea anemone on hermit crab is an example of Proto-cooperation
 - (4) Mutualism, Proto-cooperation, commensalism cannot be included under symbiosis
- Q.28 Which type of growth is found in pollen tube-
- (1) Lateral growth
 - (2) Apical growth
 - (3) Middle growth
 - (4) No growth
- Q.29 How many meiotic divisions are essential formation of 100 seeds in cyperaceae family-
- (1) 100
 - (2) 125
 - (3) 150
 - (4) 200
- Q.30 Polygonum type of embryo sac is-
- (1) 7-celled, 8-nucleate
 - (2) 8-Celled, 7-nucleate
 - (3) 9-nucleate, 8-celled
 - (4) None of the above
- Q.31 What would be the number of chromosomes in the cells of the aleurone layer in a plant species with 8 chromosomes in its synergids?
- (1) 16
 - (2) 24
 - (3) 32
 - (4) 8
- Q.32 A human female with Turner's syndrome-
- (1) Exhibits male characters
 - (2) Is able to produce children with normal husband
 - (3) Has 45 chromosomes with XO
 - (4) Has one additional X chromosome

Q.33 Study the pedigree chart given below-



What does it show-

- (1) Inheritance of a recessive sex-linked disease like hemophilia
- (2) Inheritance of a sex-linked inborn error of metabolism like phenyl ketonuria
- (3) Inheritance of a condition like phenyl ketonuria as an autosomal recessive trait
- (4) The pedigree chart is wrong as this is not possible

Q.34 Find the correct match-

Column-I

Column-II

a. $2n-1-1$

(i) Trisomy

b. $2n + 1$

(ii) Monosomy

c. $2n + 1 + 1$

(iii) Nullisomy

d. $2n - 2$

(iv) Double trisomy

(v) Double monosomy

(1) a-(v), b-(i), c-(iv), d-(iii)

(2) a-(ii), b-(i), c-(iv), d-(iii)

(3) a-(v), b-(i), c-(iv), d-(ii)

(4) a-(ii), b-(i), c-(iv), d-(v)

Q.35 CO emitted by automobiles prevents oxygen-transport to body tissues by

(1) Changing O_2 to CO_2

(2) Destroying haemoglobin

(3) Forming a stable compound with haemoglobin

(4) Obstructing the reaction of O_2 with haemoglobin

Q.36 Increase in the concentration of pollutants in higher trophic levels is known as-

(1) Biomagnification (2) Biodegradation

(3) Eutrophication (4) Recycling

Q.37 Which of the following is biogas-

(1) CO_2

(2) N_2O

(3) CH_4

(4) CFC

Q.38 Red data book deals with-

(1) Endemic plants

(2) Extinct plants

(3) Plants showing photoperiodism

(4) Plants on verge of extinction

Q.39 These belong to the category of Primary consumers ?

(1) Insects and cattle

(2) Eagle and snakes

(3) Water insects

(4) Snakes and Frogs

Q.40 The food chain in which the microorganisms breakdown the energy-rich organic compounds prepared by the producers, is known as

(1) Detritus food chain

(2) Predator food chain

(3) Parasitic food chain

(4) Ecosystem

Q.41 Testa of seed is produced from-

(1) Ovary wall

(2) Hilum

(3) Outer integument of ovule

(4) Funicle

Q.42 The formula of exponential growth is-

(1) dt/dN

(2) $dN/rN = dt$

(3) $rN/dn = dt$

(4) $dn/dt = rN$



- Q.43 One species is harmed whereas the other is unaffected. The interaction is called as-
 (1) Amensalism (2) Commensalism (3) Parasitism (4) Predation
- Q.44 Plants with inferior ovary always bear-
 (1) Pseudocarps (2) Berries (3) Aggregate fruits (4) Seedless fruits
- Q.45 In vitro clonal propagation in plants is characterized by :
 (1) Electrophoresis and HPLC (2) Microscopy
 (3) PCR and RAPD (4) Northern blotting
- Q.46 Which of the following statements is not true?
 (1) All members of the kingdom animalia are multicellular.
 (2) Nature of coelom is used as one of the basis of animal classification.
 (3) There is no need of classification now as over a million species of animals have been described till now.
 (4) The arrangement of cells in the body is one of the classifying feature of the animals.
- Q.47 Closed circulatory system is found in
 (1) Earthworm (2) Arthropoda (3) Unio (4) Leech
- Q.48 Which one of the following is not a characteristic feature of all the chordates?
 (1) Presence of coelom
 (2) Dorsal nerve cord
 (3) A diaphragm separating thorax from abdomen
 (4) Pharyngeal gill slits in the early embryonic stages.
- Q.49 Point out the mammalian characters
 (1) Neural gland, Gills, Four-chamber heart
 (2) Fins, Gills, Viviparity
 (3) Diaphragm, Four-chambered heart, lungs
 (4) Hairy skin, Viviparity, Feathers
- Q.50 Pavement epithelium is an alternate name for
 (1) compound epithelium (2) squamous epithelium
 (3) cuboidal epithelium (4) ciliated epithelium
- Q.51 Nissl's granules are present in which part of a neuron?
 (1) Axon (2) Cyton (3) Synaptic & Nobs (4) Nerve endings
- Q.52 Neuroglia cells
 (1) protect neurons
 (2) support neuron
 (3) make up more than one-half the volume of neural tissue
 (4) all of these

- Q.53 In cockroach, eye consists of visual units called
 (1) Ostia (2) Ommatidia (3) Gonapophyses (4) Spiracles
- Q.54 Which of the following groups consists of polysaccharides only?
 (1) Sucrose, Glucose and Fructose (2) Maltose, Lactose and Fructose
 (3) Glycogen, Cellulose and Starch (4) Glycogen, Sucrose and Maltose
- Q.55 Pyloric sphincter regulates the opening of
 (1) pharynx into oesophagus (2) oesophagus into stomach
 (3) stomach into duodenum (4) ileum into large intestine
- Q.56 The food that enters into intestine from stomach is
 (1) chyle (2) fundus (3) chyme (4) bolus
- Q.57 Which one of the following is a protein deficiency disease?
 (1) Kwashiorkor (2) Eczema (3) Cirrhosis (4) Night blindness
- Q.58
$$\text{Hb} + \text{O}_2 \xrightleftharpoons[\text{(ii)}]{\text{(i)}} \text{HbO}_2$$

 Select the (i) and (ii) from the given options.
 (1) (i) lungs, (ii) tissue (2) (i) tissue, (ii) lungs
 (3) (i) lungs, (ii) blood (4) (i) blood, (ii) lungs
- Q.59 Amount of air left in the lung after normal expiration is
 (1) residual volume (2) inspiratory reserve volume
 (3) expiratory reserve volume (4) functional residual volume
- Q.60 Which of the following cannot be taken as a feature of open type circulation?
 (1) low pressure system
 (2) blood return to heart slowly
 (3) well regulated blood supply to different organs
 (4) no formation of capillaries
- Q.61 Which of the following pairs is wrong?
 (1) Uricotelic – Birds (2) Ammonotelic – Bony fishes
 (3) Ureotelic – Insect (4) Ureotelic – Elephant
- Q.62 The net filtration pressure that causes the fluid to filter out of the glomeruli into the capsule is
 (1) 50 mm Hg (2) 75 mm Hg (3) 10 mm Hg (4) 30 mm Hg

- Q.63 The two cells of the body which show pseudopodial movement are
 (1) RBC and WBC (2) Liver cell and WBC
 (3) WBC and macrophages (4) macrophages & liver cell
- Q.64 Match the following.
- | Column I | Column II |
|-----------------|--------------------|
| A. Incus | I. Hammer shaped |
| B. Malleus | II. Stirrup shaped |
| C. Stapes | III. Anvil shaped |
- (1) A-III, B-II, C-I (2) A-II, B-I, C-III (3) A-III, B-I, C-II (4) A-I, B-III, C-II
- Q.65 The nerve centres which control the body temperature and the urge for eating are contained in
 (1) Thalamus (2) Pons (3) Hypothalamus (4) Cerebellum
- Q.66 Which of the following is an incorrect statement?
 (1) Hormones are required in trace amounts
 (2) Hormones are non specific in nature
 (3) Hormones are secreted by endocrine glandular cells
 (4) Hormones are secreted in response to a particular stimulus
- Q.67 Prolactin activates
 (1) growth of breasts and secretion of mammary glands
 (2) melatonin secretion
 (3) estrogen secretion
 (4) secondary sexual characters in males
- Q.68 Path of sperms from penis to the site of fertilization is :
 (1) Oviduct -uterus -Cervix -vagina
 (2) Vagina -cervix -uterus -oviduct
 (3) Vagina -uterus-oviduct -cervix
 (4) Vagina -oviduct-cervix -uterus
- Q.69 Why can't a woman get pregnant again during pregnancy?
 (1) A woman ovulates during pregnancy, but the oviducts are plugged with protective mucus to prevent sperm from entering.
 (2) High levels of HCG in women's bodies kill sperm.
 (3) A woman can't have intercourse during pregnancy due to the presence of a protective mucus plug that develops in the cervix.
 (4) High levels of estrogen and progesterone, secreted by the corpus luteum or placenta during pregnancy, inhibit the secretion of gonadotropins and prevent ovulation.

- Q.75 Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that-
- (1) Darwin was correct
 - (2) Mutation theory is wrong
 - (3) Tail is an essential organ
 - (4) Lamarckism was wrong in inheritance of acquired characters

- Q.76 Which one(s) is/are correct ?
- (1) Most fossils are found in sedimentary rocks
 - (2) According to Lamarck, a giraffe has a long neck because its ancestors stretched their needs to good fod.
 - (3) The unit of evolution is population
 - (4) All of the above

- Q.77 Match the Column-I with Column-II-

Column-I	Column-II	
I. Wallace	A. Essay of	Population
II. Malthus	B. Biston	
III. Hardy-Winberg law	C. $p^2 + q^2 + 2pq = 1$	
IV. Industrial melanism	D. Co-proposer of Natural selection	
(1) I-C, II-D, III-B, IV-A	(2) I-B, II-A, III-D, IV-C	
(3) I-D, II-A, III-B, IV-C	(4) I-D, II-A, III-C, IV-B	

- Q.78 The most apparent change during the evolutionary history of *Homo sapiens* is traced in
- (1) Loss of body hair
 - (2) Walking upright
 - (3) Shortening of the jaws
 - (4) Remarkable increase in the brain size

- Q.79 In which case is Darwin's theory wrong ?
- (1) Arrival of fittest
 - (2) Survival of fittest
 - (3) Origin of species
 - (4) High efficiency of reproduction

- Q.80 The term immunity refers to
- (1) The combined actions of all white blood cells
 - (2) Events that occur within the lymphatic system
 - (3) General defenses against all micro-organisms
 - (4) Specific defenses against microbes encountered during an earlier exposure.

- Q.81 Elephantiasis is caused by -
- (1) *Ascaris*
 - (2) *Taenia*
 - (3) *Wuchereria*
 - (4) *Entamoeba*



- Q.82 Natural killer cells (NK cells) provide
 (1) Cell-mediated immunity (2) Innate immunity
 (3) Acquired immunity (4) Specific immunity
- Q.83 A certain patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome. Which diagnostic technique will you recommend for its detection?
 (1) WIDAL (2) ELISA (3) MRI (4) Ultrasound
- Q.84 Which of the following diseases is/are poultry disease ?
 A. aspergillosis B. ranikhet disease
 C. gill rot D. black rot.
 (1) Both A and B (2) Both C and D (3) Only C (4) Only D
- Q.85 Match the Column A with the Column B-
- | Column-A | Column-B |
|----------------------|------------------------|
| I. Sericulture | A. Beekeeping |
| II. Pisciculture | B. Rearing of silkworm |
| III. Apiculture | C. Micropropagation |
| IV. Tissue culture | D. Rearing of fishes |
| V. Green Revolution | E. Fish |
| VI. White Revolution | F. Crop plants |
| VII. Blue Revolution | G. Milk |
- (1) I-D, II-C, III-B, IV-A, V-F, VI-G, VII-E
 (2) I-D, II-A, III-B, IV-C, V-G, VI-F, VII-E
 (3) I-A, II-B, III-C, IV-D, V-F, VI-G, VII-E
 (4) I-B, II-D, III-A, IV-C, V-F, VI-G, VII-E
- Q.86 Which of the following antibiotics was discovered first ?
 (1) Streptomycin (2) Neomycin (3) Erythromycin (4) Penicillin
- Q.87 Which of the following bacteria has a role in removing clots from our blood vessels ?
 (1) *Bacillus thuringiensis* (2) *Clostridium butylicum*
 (3) *Streptococcus* (4) *Lactobacillus*
- Q.88 Butter milk is acidulated product which is formed by inoculating skimmed milk with starter culture of
 (1) *Streptococcus cremoris* (2) *Leuconostoc*
 (3) *Propionibacterium shermanii* (4) Both (1) & (3)

Q.89 Match the scientists and their contributions in the field of evolution.

- (i) Charles Darwin (a) Mutation theory
(ii) Lamarck (b) Germ plasm theory
(iii) Hugo De Vries (c) *Philosophic Zoologique*
(iv) Ernst haeckel (d) The origin of species
(v) August Weismann (e) Biogenetic law
(f) Essay on population

(1) i-d, ii-c, iii-a, iv-e, v-b

(2) i-d, ii-c, iii-e, iv-a, v-f

(3) i-f, ii-d, iii-e, iv-c, v-a

(4) i-c, ii-d, iii-a, iv-e, v-b

Q.90 The seminal fluid coagulates on ejaculation due to

- (1) Sodium contents from prostatic secretion
(2) Sodium contents from Cowper's glands
(3) Calcium and fibrinogen contents from prostatic secretion
(4) Secretions of epididymis

Q.91 Which of the following specific DNA sequence is responsible for initiating replication?

- (1) Vector site (2) Restriction enzymes action site
(3) 'Ori' site (4) Palindromic site

Q.92 Autonomously replicating circular extra chromosomal DNA of prokaryotic cell is called

- (1) Satellite DNA (2) Plasmid
(3) Recombinant DNA (4) Nucleoid

Q.93 Key tools to be involved in recombinant DNA technology are

- A. Restriction enzymes B. Polymerase enzyme
C. Ligase enzymes D. Vectors
(1) A only (2) A & C only (3) A, B and C (4) A, B, C and D

Q.94 The first restriction endonuclease to be discovered was

- (1) *Hind II* (2) *Eco R I* (3) *Bam H I* (4) *Pst I*

Q.95 Approximately how many restriction enzymes have been isolated from the different (over 230) strains of bacteria

- (1) 300 (2) 600 (3) 750 (4) 900

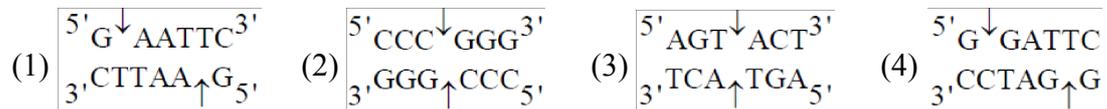
Q.96 The conventional method for naming the restriction enzymes is followed. In case of *Eco R I*, the 'R' indicates

- (1) Genus (2) Species
(3) Name of the scientist (4) Strain



- Q.97 The restriction endonuclease enzyme binds to the DNA & cut
- (1) Any one strand of the double helix
 - (2) Each of the two strands at specific points in their base-sugar bonds
 - (3) Each of the two strands at specific points in their base-phosphate bonds
 - (4) Each of the two strands at specific points in their sugar-phosphate backbones

Q.98 Which of the following palindromic sequence is recognised by *EcoRI* ?



Q.99 After electrophoresis, the separated DNA fragment can be visualised in ethidium bromide gel exposed to UV light. These DNA fragments appear as _____ coloured bands

- (1) Orange
- (2) Blue
- (3) Silver
- (4) Green

Q.100 The procedure through which a piece of DNA is introduced in a host bacterium is called

- (1) Cloning
- (2) Transformation
- (3) PCR
- (4) Clonal selection