



QUESTION BOOKLET – 2016

Subject : Paper II : Biology

Question Booklet Version
33
(Write this number on your Answer Sheet)

Roll No.					

Answer Sheet No.							

Question Booklet Sr. No.
(Write this number on your Answer Sheet)

Duration : 1 Hour 30 Minutes

Total Marks : 100

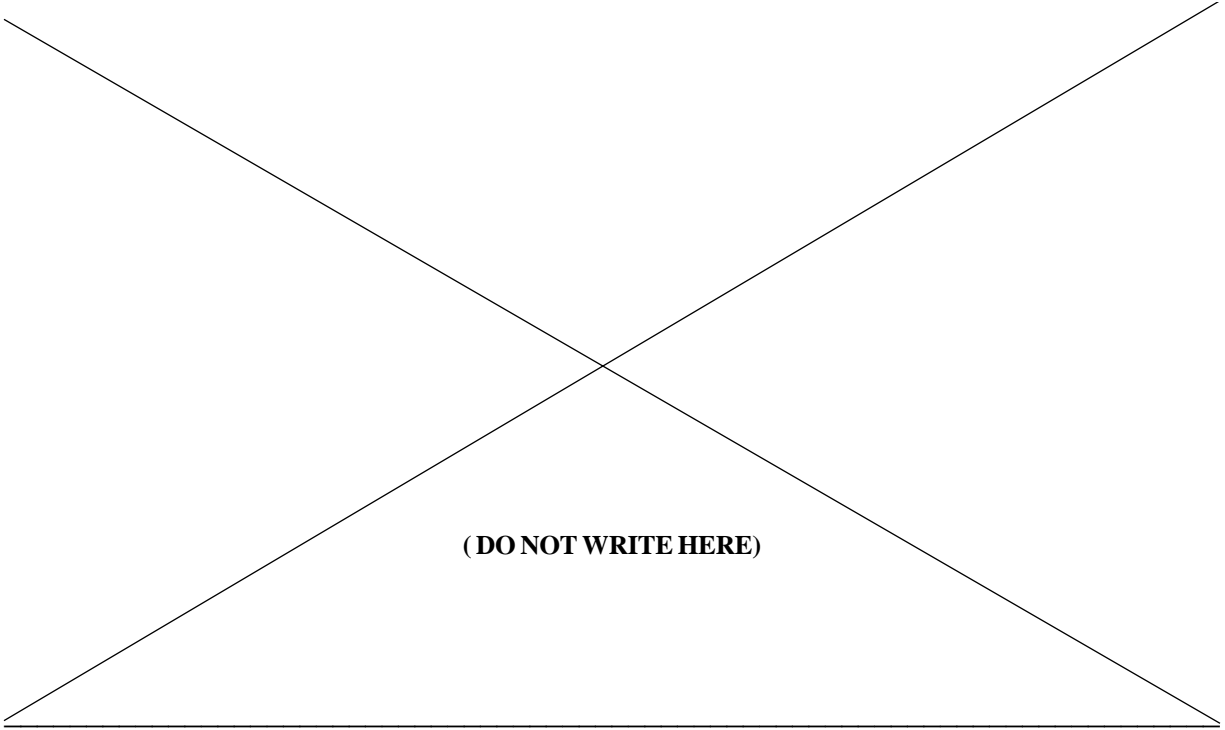
This is to certify that, the entries of Roll Number and Answer Sheet Number have been correctly written and verified.

Candidate's Signature

Invigilator's Signature

Instructions to Candidates

1. This question booklet contains 100 Objective Type Questions (Single Best Response Type) in the subjects of Biology.
2. The question paper and OMR (Optical Mark Reader) Answer Sheets are issued to examinees separately at the beginning of the examination session.
3. Choice and sequence for attempting questions will be as per the convenience of the candidate.
4. Candidate should carefully read the instructions printed on the Question Booklet and Answer Sheet and make the correct entries on the Answer Sheet. As Answer Sheets are designed to suit the OPTICAL MARK READER (OMR) SYSTEM, special care should be taken to mark appropriate entries/answers correctly. Special care should be taken to fill QUESTION BOOKLET VERSION, SERIAL No. and Roll No. accurately. The correctness of entries has to be cross-checked by the invigilators. **The candidate must sign on the Answer Sheet and Question Booklet.**
5. Read each question carefully.
6. Determine the correct answer from out of the four available options given for each question.
7. Fill the appropriate circle completely like this ●, for answering the particular question, with Black ink ball point pen only, in the OMR Answer Sheet.
8. Each answer with correct response shall be awarded **one (1) mark**. There is **no Negative Marking**. If the examinee has marked two or more answers or has done scratching and overwriting in the Answer Sheet in response to any question, or has marked the circles inappropriately e.g. half circle, dot, tick mark, cross etc, mark/s shall NOT be awarded for such answer/s, as these may not be read by the scanner. Answer sheet of each candidate will be evaluated by computerized scanning method only (Optical Mark Reader) and there will not be any manual checking during evaluation or verification.
9. Use of whitener or any other material to erase/hide the circle once filled is not permitted. Avoid overwriting and/or striking of answers once marked.
10. Rough work should be done only on the blank space provided in the Question Booklet. **Rough work should not be done on the Answer Sheet.**
11. Immediately after the prescribed examination time is over, the Question Booklet and Answer sheet are to be returned to the Invigilator. Confirm that both the Candidate and Invigilator have signed on question booklet and answer sheet.
12. No candidate is allowed to leave the examination hall till the examination session is over.



(DO NOT WRITE HERE)

SPACE FOR ROUGH WORK



BIOLOGY

1. The CORRECT sequence of events during double fertilization in Angiosperms is
 - A) Triple fusion, syngamy, porogamy
 - B) Syngamy, triple fusion, porogamy
 - C) Porogamy, syngamy, triple fusion
 - D) Syngamy, porogamy, triple fusion

2. When genomic DNA is fragmented and cloned, the screening of the desired gene is done by using
 - A) Plasmid DNA
 - B) DNA probes
 - C) Southern blotting
 - D) PCR technique

3. The guano deposits are obtained from the excreta of _____
 - A) Reptiles
 - B) Human
 - C) Marine birds
 - D) Micro-organisms

4. In an angiosperm a female plant having $2n = 24$ is crossed with a male plant having $2n = 12$. What will be the chromosome number of the endosperm ?
 - A) 12
 - B) 18
 - C) 24
 - D) 30

5. Two alternative forms of a gene or alleles are located on _____
 - A) Identical loci of the same chromosome
 - B) Non-identical loci of the same chromosome
 - C) Identical loci of homologous chromosomes
 - D) Non-identical loci of homologous chromosomes

6. Which of the following event does NOT lead into secondary succession ?
 - A) All organisms that existed are lost
 - B) Where no living organisms ever existed
 - C) Abandoned crop field
 - D) Land affected by flood

7. A nucleosome along with linker DNA consists of _____
 - A) eight molecules of histones and 146 base pairs
 - B) eight molecules of histones and 200 base pairs
 - C) nine molecules of histones and 146 base pairs
 - D) nine molecules of histones and 200 base pairs



17. Which one of the following organism's plasmid was used successfully for the first time as a vector by Stanley Cohen and Herbert Boyer ?
- A) *Salmonella typhimurium* B) *Streptococcus pneumoniae*
C) *Staphylococcus aureus* D) *Rhizobium leguminosarum*
18. During a dihybrid cross with contrasting characters in the F₂ generation parental genotypes will appear in _____ ratio.
- A) $\frac{1}{16}$ B) $\frac{2}{16}$
C) $\frac{3}{16}$ D) $\frac{9}{16}$
19. The wall of pollen tube is made up of
- A) Cellulose and Pectin B) Only sporopollenin
C) Lignin and Pectin D) Pectin and Sporopollenin
20. The micro consumers are commonly called _____
- A) Autotrophs B) Herbivores
C) Decomposers D) Carnivores
21. What will be the genotype of parents of a child with 'O' blood group ?
- A) I^A I^A × I^A I^A B) I^B I^B × I^B I^B
C) I^A I^A × I^B I^B D) I^A i × I^B i
22. In Angiosperms, megaspores formed after meiosis of megaspore mother cell are arranged in _____
- A) Isobilateral tetrad B) Linear tetrad
C) Tetrahedral tetrad D) T-shaped tetrad
23. During replication of DNA, the two strands of the double helix are separated from each other under the influence of enzyme _____
- A) rep-protein B) SSBP
C) initiator protein D) DNA polymerase
24. Identify the INCORRECT statement from the following with reference to lac operon.
- A) It is a unit of gene expression and regulation for lactose sugar metabolism in *E. Coli*.
B) Lactose sugar enters the cell due to the activity of enzyme permease.
C) Operators are present between promoters and structural genes.
D) The structural gene 'z' codes for β-galactosidase, 'y' for transacetylase and 'a' for permease.



31. The common feature in CAM and C_4 plants is _____
A) Stomata open only during night
B) Acid concentration increases during night
C) Both C_3 and C_4 pathway occur
D) Having Kranz anatomy
32. Which one of the following electron acceptor is present in respiratory chain ?
A) Cytochrome f
B) Cytochrome a_3
C) Plastocyanin
D) Ferredoxin
33. The codon sequence on coding strand of transcription unit is ATG GTG AGC TAC GCG. What will be the codon sequence on mRNA formed on template strand ?
A) ATG GTG AGC TAC GCG
B) GCG TAC AGC GTG ATG
C) TAC CAC TGC ATG CGC
D) AUG GUG AGC UAC GCG
34. A cross between two pea plants tall with axial flowers and dwarf with terminal flowers produced offsprings tall with axial flowers and tall with terminal flowers in the ratio 1 : 1. What will be the genotype of parents ?
A) $TTAa \times ttaa$
B) $TtAa \times ttaa$
C) $TtAA \times ttaa$
D) $TTAA \times ttaa$
35. Which one of the following is used by green sulphur bacteria for reduction of CO_2 to CH_2O ?
A) H_2S
B) H_2O
C) CH_4
D) NH_4
36. Which of the following is a character of Castor plant to avoid autogamy ?
A) Unisexuality
B) Protogyny
C) Protandry
D) Heterostyly
37. During hybridization offsprings with hybrid vigour superior to both parents are self pollinated for few successive generations to _____
A) retain their parental characters
B) remove their parental characters
C) get homozygosity
D) segregate characters
38. Which of the following is the WRONG match between the plant and its character for adaptation of cross pollination ?
A) Zostera → Bright coloured flowers with nectar
B) Bougainvillea → Petaloid bracts
C) Passion flower → Corona
D) Adansonia → Copious nectar



39. What is the outbreeding device, where the stamens and carpels mature at different times called ?
- A) Monoecy
B) Self sterility
C) Dichogamy
D) Heterostyly
40. In anaerobic respiration acetaldehyde is reduced to form alcohol by utilising NADH_2 obtained from _____
- A) Glycolysis
B) Terminal oxidation
C) Krebs's cycle
D) Acetylation
41. In plasmid pBR 322, 'BR' stands for
- A) Baculovirus and Retrovirus
B) Boyer and Reed
C) Bolivar and Rodrigues
D) *Bacillus* and *Rhizobium*
42. How many glucose molecules are required for the formation of 52 pyruvic acid molecules at the end of glycolysis ?
- A) 52
B) 46
C) 32
D) 26
43. The pitch angle of deflection between two successive base pairs in DNA double helix is
- A) 20°
B) 34°
C) 36°
D) 360°
44. Which one of the following processes involved in alcohol production is NOT involved in wine production ?
- A) Malting
B) Mashing
C) Fermentation
D) Distillation
45. Which one of the following is formed as a result of cyclic photophosphorylation ?
- A) NADPH_2
B) O_2
C) ATP
D) H_2O
46. Which of the following wall layer of anther shows fibrous thickenings of callose ?
- A) Epidermis
B) Tapetum
C) Middle layer
D) Endothecium
47. Photosynthesis is considered as an oxidation reaction because _____
- A) CO_2 is oxidised
B) H_2O is oxidised
C) O_2 is released
D) CH_2O is oxidised



48. Which one of the following is the CORRECT order of conversion of waste materials during biogas formation ?
- A) Monomers → polymers → methane → organic acids
 - B) Organic acids → methane → polymers → monomers
 - C) Methane → organic acids → polymers → monomers
 - D) Polymers → monomers → organic acids → methane
49. Match the plant and the part in relation to Vegetative Propagation.
- | | |
|-----------------------------|--------------------------------|
| 1) <u>Dahlia</u> | a) Eyes |
| 2) <u>Solanum tuberosum</u> | b) Runner |
| 3) <u>Begonia</u> | c) Fasciculated tuberous roots |
| 4) <u>Cynodon</u> | d) Epiphyllous buds |
- A) (1) – c, (2) – a, (3) – b, (4) – d B) (1) – d, (2) – a, (3) – b, (4) – c
C) (1) – c, (2) – a, (3) – d, (4) – b D) (1) – b, (2) – c, (3) – a, (4) – d
50. Agrobacterium tumefaciens is most widely used for gene transfer because _____
- A) it causes crown gall tumours
 - B) of its ability to insert Ti plasmid into nuclear genome
 - C) it can grow anywhere
 - D) it has ability to kill pathogenic bacteria
51. Linkage groups can be separated during _____ in meiosis.
- A) Crossing over
 - B) Synapsis
 - C) Tetrad formation
 - D) Terminalization
52. One of the most polluted river in Maharashtra is
- A) Brahmaputra
 - B) Ganga
 - C) Jamuna
 - D) Panchaganga
53. Hypercalcemic hormone is
- A) Aldosterone
 - B) Calcitriol
 - C) PTH
 - D) TCT
54. An oral contraceptive pill checks
- A) Fertilization
 - B) Implantation
 - C) Infection
 - D) Ovulation
55. AB blood group was discovered by
- A) Decastello and Sturli
 - B) Karl Landsteiner
 - C) William Harvey
 - D) Wallace Alfred



65. Incubation period of *Treponema Pallidum* is about
A) 2 to 14 days
B) 7 to 21 days
C) 1 to 2 weeks
D) 3 to 4 weeks
66. Asexual reproduction through formation of gemmule occurs in
A) Ascidian
B) Hydra
C) Planaria
D) Spongilla
67. The marsupial mammal amongst the following animals is
A) Gibbon
B) Kangaroo
C) Lemur
D) Spiny ant-eater
68. When white eyed and miniature winged *Drosophila melanogaster* is crossed with its wild type, it produces following percent of recombinants.
A) 1.3%
B) 37.2%
C) 62.8%
D) 98.7%
69. Asiatic wild ass is an example of
A) Endangered species
B) Extinct species
C) Rare species
D) Vulnerable species
70. The quantitative and statistical study of human population is
A) Calligraphy
B) Demography
C) Topography
D) Seismography
71. Lac is used in the
A) Production of guano
B) Production of Isinglass
C) Silvering mirrors
D) Production of soaps
72. Bacterial poultry diseases mainly include
A) Avian influenza, Bronchitis, Ranikhet
B) Enteritis, TB, CRD
C) Favus, Thrush, Aspergillosis
D) Bird Flu, Coccidiosis, Pullorum
73. A change in a wart or mole on the skin is observed in
A) Adenoma
B) Carcinoma
C) Lymphoma
D) Melanoma
74. The spermatozoa not ejaculated are reabsorbed in the
A) Ejaculatory duct
B) Urethra
C) Vas efferens
D) Vas deferens



84. Which of the following is NOT a breed of buffalo ?

- A) Gir
- B) Nili
- C) Nagpuri
- D) Surti

85.	Column A	Column B	Column C
	i) Coenozoic	2 – 65 mya	Origin of vertebrates
	ii) Palaeozoic	500 – 165 mya	Rise of egg laying mammals
	iii) Mesozoic	135 – 225 mya	Reptiles dominant
	iv) Proterozoic	350 – 500 mya	Trilobites dominant

The correct match of Columns A, B and C is

- A) i
- B) ii
- C) iii
- D) iv

86. The interaction observed in this diagram is



- A) Commensalism
- B) Competition
- C) Mutualism
- D) Predation

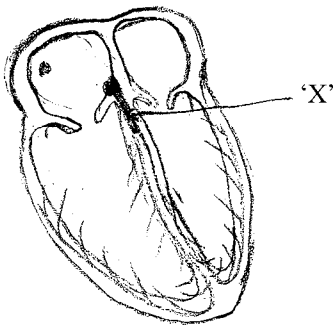
87. Select the correct match :

I	II	III
i) Monocyte	a) Large round nucleus	l) Antihistamine property
ii) Lymphocyte	b) Twisted nucleus	m) Release heparin
iii) Basophil	c) Bilobed nucleus	n) Phagocytic
iv) Eosinophil	d) Kidney shaped nucleus	o) Produce antibodies

A) i – d – n, ii – a – o, iii – b – m, iv – c – l
 B) i – b – m, ii – a – l, iii – c – n, iv – d – o
 C) i – c – n, ii – b – o, iii – d – m, iv – a – l
 D) i – a – o, ii – d – m, iii – c – l, iv – b – n



88. The parietal and temporal lobes are separated by
 A) Central sulcus
 B) Longitudinal fissure
 C) Lateral sulcus
 D) Parieto-occipital sulcus
89. The corpus callosum interconnects
 A) Cerebral hemispheres
 B) Cerebellar hemispheres
 C) Corpora quadrigemina
 D) Crura Cerebri
90. The parotid salivary glands are innervated by branches of _____ nerve.
 A) Vagus
 B) Spinal accessory
 C) Facial
 D) Glossopharyngeal
91. In the given diagram, the role of 'X' is to



- A) Generate cardiac impulse
 B) Cause atrial systole
 C) Cause ventricular diastole
 D) Carry cardiac impulse to ventricles
92. A pair of hormones produced by kidneys is
 A) Erythropoietin and relaxin
 B) Erythropoietin and calcitriol
 C) Calcitonin and relaxin
 D) Calcitonin and calcitriol
93. Alec Jeffreys used _____ as genetic marker.
 A) HUMULIN
 B) Radioactive probe
 C) RFLP
 D) VNTR



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