



QUESTION BOOKLET – 2016

Subject : Paper II : Biology

Question Booklet Version
22
(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

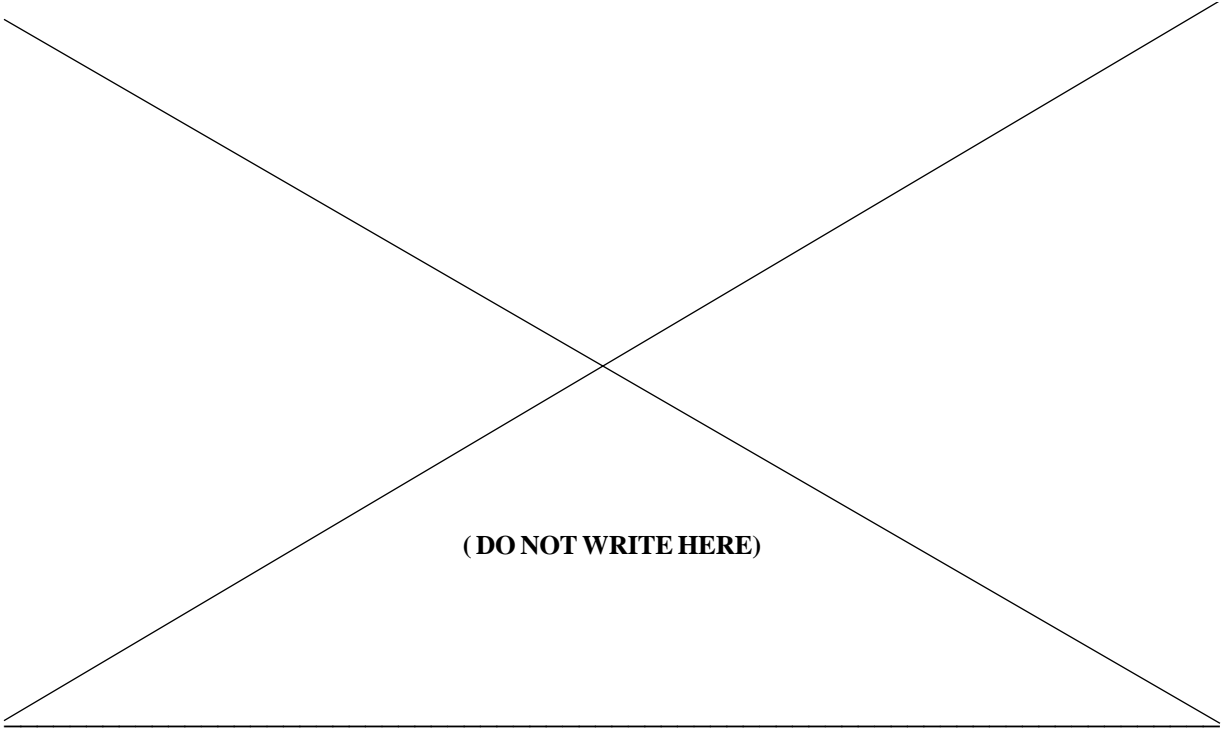
This is to certify that, the entries of Roll Number and Answer Sheet Number have been correctly written and verified.

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. 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
2. 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
3. During aerobic respiration the final electron acceptor is
 - A) Cyto b
 - B) NADH_2
 - C) Water
 - D) Oxygen
4. In quantitative inheritance, when a character is controlled by two pairs of genes, the ratio obtained in F_2 generation is _____
 - A) 1 : 2 : 1
 - B) 1 : 4 : 6 : 4 : 1
 - C) 9 : 3 : 3 : 1
 - D) 1 : 6 : 15 : 20 : 15 : 6 : 1
5. Which one of the following pigment functions as a reaction center in photosynthesis ?
 - A) Chlorophyll-a
 - B) Xanthophyll
 - C) Carotenoid
 - D) Anthocyanin
6. Which of the following is a character of Castor plant to avoid autogamy ?
 - A) Unisexuality
 - B) Protogyny
 - C) Protandry
 - D) Heterostyly
7. 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
8. 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



9. What is the outbreeding device, where the stamens and carpels mature at different times called ?
- A) Monoecy
B) Self sterility
C) Dichogamy
D) Heterostyly
10. In anaerobic respiration acetaldehyde is reduced to form alcohol by utilising NADH_2 obtained from _____
- A) Glycolysis
B) Terminal oxidation
C) Kreb's cycle
D) Acetylation
11. Remarkable increase in rice production from 35 million tones to 89.5 million tones during 1960 – 2000 was mainly due to _____
- A) Improved semidwarf varieties
B) Introduction of Golden rice
C) Increased use of chemical fertilizers
D) Cultivation of wild varieties
12. Which of the following is the first cell of female gametophytic generation in Angiosperms ?
- A) Megaspore mother cell
B) Microspore mother cell
C) Functional megaspore
D) Egg cell
13. During dihybrid cross, in the F_2 generation, the ratio of individuals showing one dominant and the other recessive character will be _____ of parents with contrasting characters.
- A) $\frac{4}{16}$
B) $\frac{6}{16}$
C) $\frac{8}{16}$
D) $\frac{9}{16}$
14. In an ecological succession the pioneers are generally _____
- A) Autotrophs
B) Carnivores
C) Herbivores
D) Detrivores
15. Given below are some antibiotics and their microbial source. Match the correct pairs.
- | | |
|------------------|-----------------------------------|
| 1) Chloromycetin | a) <i>Streptomyces griseus</i> |
| 2) Erythromycin | b) <i>Penicillium chrysogenum</i> |
| 3) Penicillin | c) <i>Streptomyces erythreus</i> |
| 4) Streptomycin | d) <i>Streptomyces venezuelae</i> |
- A) 1 – a, 2 – b, 3 – c, 4 – d
B) 1 – d, 2 – c, 3 – b, 4 – a
C) 1 – b, 2 – d, 3 – a, 4 – c
D) 1 – c, 2 – a, 3 – d, 4 – b



16. 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
17. Which one of the following electron acceptor is present in respiratory chain ?
A) Cytochrome f
B) Cytochrome a_3
C) Plastocyanin
D) Ferredoxin
18. 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
19. 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
20. 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
21. In Kreb's cycle Guanosine Triphosphate is formed during the conversion of
A) Isocitrate to oxalosuccinate
B) Oxalosuccinate to α -ketoglutarate
C) Succinyl CoA to succinate
D) Fumarate to malate
22. Mycorrhiza is _____
A) Alga
B) Fungus
C) Bacteria
D) Virus
23. During PCR technique, the pairing of primers to ssDNA segment is called _____
A) Denaturation
B) Annealing
C) Polymerisation
D) Isolation
24. _____ is the most convenient and cheap method of artificial vegetative propagation.
A) Grafting
B) Budding
C) Cutting
D) Micropropagation



25. Glycosidic bond exists in DNA molecule between _____
A) Sugar and phosphate
B) Any two nitrogen bases
C) Sugar and nitrogen base
D) Purines and pyrimidines
26. What will be the genotype of parents of a child with 'O' blood group ?
A) $I^A I^A \times I^A I^A$
B) $I^B I^B \times I^B I^B$
C) $I^A I^A \times I^B I^B$
D) $I^A i \times I^B i$
27. 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
28. 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
29. 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.
30. High levels of Aspartic acid, low nitrogen and sugar content in maize plants prevent the attack by _____
A) Aphids
B) Jassids
C) Boll worms
D) Stem borers
31. Which of the following wall layer of anther shows fibrous thickenings of callose ?
A) Epidermis
B) Tapetum
C) Middle layer
D) Endothecium
32. 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



33. 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
34. 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
35. 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
36. Which of the following in embryo sac of angiosperms shows filiform apparatus ?
- A) Antipodals
 - B) Polar nuclei
 - C) Egg
 - D) Synergids
37. 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*
38. 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) $\frac{9}{16}$
39. The wall of pollen tube is made up of
- A) Cellulose and Pectin
 - B) Only sporopollenin
 - C) Lignin and Pectin
 - D) Pectin and Sporopollenin



57. Bacterial poultry diseases mainly include
- A) Avian influenza, Bronchitis, Ranikhet
 - B) Enteritis, TB, CRD
 - C) Favus, Thrush, Aspergillosis
 - D) Bird Flu, Coccidiosis, Pullorum
58. A change in a wart or mole on the skin is observed in
- A) Adenoma
 - B) Carcinoma
 - C) Lymphoma
 - D) Melanoma
59. The spermatozoa not ejaculated are reabsorbed in the
- A) Ejaculatory duct
 - B) Urethra
 - C) Vas efferens
 - D) Vas deferens
60. All of the following are ape-men stages in origin of man EXCEPT
- A) *Ramapithecus*
 - B) *Kenyapithecus*
 - C) *Dryopithecus*
 - D) *Australopithecus*
61. Acromegaly is caused by hypersecretion of _____ in the adult.
- A) ACTH
 - B) GH
 - C) MSH
 - D) TSH
62. Restriction endonuclease, in DNA finger printing, carries out following process.
- A) Fragmentation of DNA
 - B) Getting copies of DNA
 - C) Loading DNA on agaroseplate
 - D) Synthesis of DNA
63. Which one of the following is NOT the symptom of malaria ?
- A) Arthralgia
 - B) Fever
 - C) Dysentery
 - D) Shivering
64. In ECG, P – wave represents
- A) Ventricular repolarization
 - B) Ventricular depolarization
 - C) Atrial depolarisation
 - D) Atrial repolarization
65. The isthmus which connects right and left lobes of thyroid gland is located from _____ tracheal cartilages.
- A) 1st to 3rd
 - B) 2nd to 4th
 - C) 5th to 7th
 - D) 6th to 8th



66. The interaction observed in this diagram is



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

67. 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

68. The parietal and temporal lobes are separated by

- A) Central sulcus
- B) Longitudinal fissure
- C) Lateral sulcus
- D) Parieto-occipital sulcus

69. The corpus callosum interconnects

- A) Cerebral hemispheres
- B) Cerebellar hemispheres
- C) Corpora quadrigemina
- D) Crura Cerebri

70. The parotid salivary glands are innervated by branches of _____ nerve.

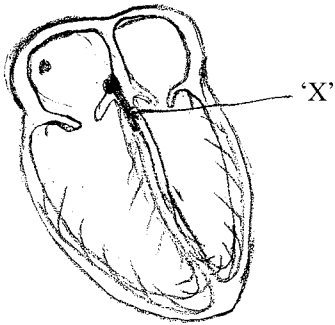
- A) Vagus
- B) Spinal accessory
- C) Facial
- D) Glossopharyngeal

71. Asexual reproduction through formation of gemmule occurs in

- A) Ascidian
- B) Hydra
- C) Planaria
- D) Spongilla



86. 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
87. A pair of hormones produced by kidneys is
 A) Erythropoietin and relaxin
 B) Erythropoietin and calcitriol
 C) Calcitonin and relaxin
 D) Calcitonin and calcitriol
88. Alec Jeffreys used _____ as genetic marker.
 A) HUMULIN
 B) Radioactive probe
 C) RFLP
 D) VNTR
89. Which constituent of seminal fluid helps in coagulation of semen after ejaculation ?
 A) Fibrin
 B) Fibrinogen
 C) Fructose
 D) Prostaglandins
90. Which one of the following statement is CORRECT ?
 A) Lysergic acid diethylamide is a depressant
 B) Heroin is diacetylmorphine
 C) Hashish has hallucinogenic property
 D) Cocaine is opioid drug
91. A pair of analogous organs is
 A) Wing of bird – flipper of whale
 B) Forelimbs of horse and man
 C) Wing of bird – forelimb of horse
 D) Wing of insect and wing of bird
92. In diploid set of chromosomes, deletion or addition of a member leads to
 A) Aneuploidy
 B) Euploidy
 C) Polyploidy
 D) Triploidy



93. Select the correct match :

I

- i) Competition
- ii) Commensalism
- iii) Mutualism
- iv) Parasitism
- A) i – d, ii – c, iii – b, iv – a
- C) i – c, ii – b, iii – d, iv – a

II

- a) Tapeworm and man
- b) Lichen
- c) Cattle egret and cattle
- d) Lions and Leopards
- B) i – d, ii – b, iii – c, iv – a
- D) i – a, ii – b, iii – d, iv – c

94. Which one of the following statement is CORRECT ?

- A) Fertilization in human takes place in womb
- B) Zygote contains haploid number of chromosomes
- C) Fertilization membrane avoids polyspermy
- D) Primary oocyte inhibits the process of oogenesis

95. Osmoreceptors are present in the

- A) Hypothalamus
- B) Hypophysis
- C) Epiphysis
- D) Epithalamus

96. Cystic fibrosis can be treated by _____ in gene therapy.

- A) TGF-B
- B) TPA
- C) DNase
- D) BGH

97. ADH carries out following functions EXCEPT

- A) Increases blood pressure
- B) Increases glomerular filtrate rate
- C) Increases permeability for water in DCT
- D) Increases Na⁺ excretion

98. Which of the following are NOT produced as transgenic animals ?

- A) Sheep and Pig
- B) Rat and Rabbit
- C) Dog and Banded Krait
- D) Cow and Fish

99. Temporal lobe of cerebrum is concerned with the detection of following sensations EXCEPT

- A) Hearing
- B) Pressure
- C) Smell
- D) Taste

100. The sterilization procedure in human female is

- A) Coitus interruptus
- B) Rhythm method
- C) Tubectomy
- D) Vasectomy



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