

Maharashtra State Board (MSBSHSE)

H.S.C 2015 - 2016 October

12th Board Exam

Biology

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BIOLOGY – OCTOBER 2015

MAHARASHTRA BOARD QUESTION PAPER

SECTION – I [BOTANY]

Q. 1. Select and write the most appropriate answer form the given alternatives for each sub-question: [7]

(i) How many meiotic divisions will be needed to produce 44 female gametophytes in angiosperms?

- (a) 11 (b) 22 (c) 44 (d) 66

(ii) If the codon on m-RNA is AUG, the compatible anticodon on t-RNA is—

- (a) UAG (b) UAC (c) GUA (d) AUC

(iii) ———— enzymes are used as biological scissors in r-DNA technology.

- (a) Restriction endonucleases (b) DNA ligases
(c) DNA Polymerases (d) Reverse transcriptases

(iv) Vegetative propagation takes place with the help of leaves in _____ plant.

(a) Kalanchoe (b) Oxalis (c) Cynodon (d) Dahila

(v) Trichoderma Konigi is a source of _____ enzyme.

(a) invertase (b) Lipase (c) Pectinase (d) cellulase

(vi) What is the correct sequence of the stages in bacteriophage lytic cycle?

(a) Attachment, Penetration, Lysis, Multiplication

(b) attachment, Penetration, Multiplication, Lysis

(c) Lysis, Penetration, Multiplication, Attachment

(d) Attachment, Lysis, Multiplication, Penetration

(vii) edible fruiting bodies are produced by _____

(a) Yeast (b) Rhizopus (c) Nostoc (d) Agaricus

Q. 2. (a) Answer each question in 'one' sentence only: (6) [12]

(i) Give reason : Emasculation is done in a flower which is selected as female parents.

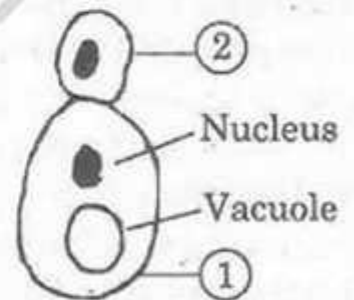
(ii) Label the Parts (1) and (2) in budding of yeast cell.

(iii) Enlist type of DNA library.

(iv) Define Parthenocarpy.

(v) What is meant by ecological succession?

(vi) Give the role of VAM related to soil fertility.



(B) Give diagrammatic representation of pyramid of numbers. (2)

(C) attempt any TWO of the following: (4)

- (i) With the help of a suitable example, explain protandry.
- (ii) How depletion of ozone layer affects living organisms?
- (iii) Give graphic representation of cyclic photophosphorylation.
- (iv) Explain the role of microbes in sewage treatment.

Q 3. Attempt any TWO of the following: (6) [9]

- (i) Describe the steps of PCR technique.
- (ii) Write a note on multiple alleles considering example of human blood groups.
- (iii) What is 'biofortification'? Which steps would you follow to develop a new variety of crop plant by selective breeding?

(B) Sketch and label the T.S. of undehisced anther (3)

Q 4. Describe the process of glycolysis with the help of schematic representation.

OR

Explain semi-conservative replication of eukaryotic DNA. [7]

SECTION – II [ZOOLOGY]

Q 5. Select and write the most appropriate answer from the given alternatives for each sub-question : [7]

(i) Elephantiasis is caused by .

- (a) Wuchereria bancrofti (b) Plasmodium vivax (c) Bedbug (d) Elephant

(ii) Genetically engineered human insulin is obtained by inserting the gene in .

- (a) Pancreatic cells (b) E. coli (c) Agrobacterium tumefaciens

(d) *Drosophila melanogaster*

(iii) Urea splitting bacteria are responsible for types of stones.

- (a) calcium oxalate (b) calcium phosphate (c) calcium carbonate
(d) Struvite

(iv) The connecting link between 'ape' and 'man' is

- (a) *Dryopithecus* (b) *Australopithecus* (c) *Homo erectus*
(d) *Homo neanderthalensis*

(v) Crippling disease is caused due to poisoning of

- (a) Arsenic (b) Lead (c) Mercury (d) Seleniums

(iv) The genetic marker used as key factor in DNA fingerprinting is ,

- (a) VNTRs (b) Exons (c) Introns (d) DNA Probes

(vi)) The trophoblast cells in contact with embryonal knob are called

- (a) Inner mass cells (b) Blastomere (c) Amniogenic cells (d) Cells of Rauber

Q 6. (A) Answer the following in 'one' sentence each : (6) [12]

(i) Mention any 'two' methods used to prevent spoilage of fish.

(ii) Define the term 'genome'.

(iii) What is meant by organic evolution ?

(vi) What is criss-cross inheritance ?

(v) Mention any 'two' functions of uterus.

(iv) What is Red Data Book ?

(B) Sketch and label the structure of chromosome. (2)

(C) Attempt any TWO of the following :

(4)

- (i)) Explain the concept 'survival of the fittest'.
- (ii) Give economic importance of apiculture
- (iii) Give the importance of transgenic animals.
- (iv) Explain the mechanism of sex determination in human being.

Q 7. (A) Attempt any TWO of the following : (6) [9]

- (i) Describe T. S. of the spinal-cord.
- (ii) Explain the structure of antibody.
- (iii) Give the effects of air pollutants on human health.

(B) Sketch and label L. S. of human kidney. (3)

Q 8. With the help of a labelled diagram describe the internal structure of human heart. [7]

OR

Describe the stages during three trimesters of pregnancy. Explain the process of parturition. Add a note on lactation.