

II PUC MID-TERM EXAMINATION, OCT./NOV. - 2024

SUBJECT : BIOLOGY (36)

TIME : 3 Hours

Max. Marks : 70

General Instructions:

1. The question paper consists of Five parts A, B, C, D and E.
2. PART-A consists of I and II and PART-D consists of V and VI
3. All the parts are compulsory.
4. The answers for PART-A, written in the first two pages of the answer booklet are only considered for evaluation

PART-A

I Select the correct alternative from the choices given below: 15x1=15

- 1) In a monocot embryo, shoot apex and leaf primordia are enclosed in a hollow foliar structure called
a) Pericarp b) Coleoptile c) Endosperm d) Coleorhiza
- 2) A student squeezed an orange seed while doing an experimental procedure and was astonished to see many embryos in it. Those embryos were :
a) Products of Syngamy b) Haploids
c) Of different size and shapes d) Developed from secondary nucleus
- 3) The secondary oocyte after ovulation is covered by a non-cellular layer of :
a) Cumulus oophorus b) Corona radiata c) Zona Pellucida d) Cortical layer
- 4) Which of the following is not the function of placenta ?
a) Secretes estrogen
b) Facilitates removal of carbon dioxide and waste material from embryo
c) Secreted oxytocin during parturition
d) Facilities supply of oxygen and nutrients to embryo
- 5) During embryonic development, which of the following organ is formed first ?
a) Skin b) Brain c) Neural tube d) Heart
- 6) An example of hormone releasing IUD among the following is :
a) CU7 b) Lippes Loop c) LNG-20 d) Multiload 375
- 7) Statement 1 : Statutory ban on amniocentesis is for sex determination to legally check increasing menace of female foeticide
Statement 2 : Amniocentesis is a procedure used to test for the presence of certain genetic disorders
a) Both statement 1 and 2 are True
b) Both statement 1 and 2 are False
c) Statement 1 is True and Statement 2 is False
d) Statement 1 is False and Statement 2 is True
- 8) If one parent has blood group A and the other parent has blood group B, then which blood group will the offspring have
a) AB b) O c) B or O d) A, B, AB or O
- 9) What is the process of the production of non-parental phenotypes called ?
a) Linkage b) Recombination c) Mutation d) Replication
- 10) What would be the distance between base pairs of a DNA, whose pitch is 38 Å and roughly has 10 base pairs in each turn ?
a) 0.38 nm b) 0.38 Å c) 3.8 nm d) 38.0 nm
- 11) The role of RNA polymerase II is transcription of
a) rRNAs b) mRNAs c) tRNAs d) hn RNA

(P.T.O)

- 12) Miller in his experiment, synthesized simple amino acid from :
a) Methane, ammonia, oxygen, nitrogen b) Hydrogen, methane, ammonia, water
c) Ammonia, methane, carbon dioxide, oxygen d) Hydrogen, water, oxygen, helium
- 13) In some animals, the same structures develop along different direction due to adaptation to different needs, this is called as :
a) Divergent evolution b) Convergent evolution c) Parallel evolution d) Saltation
- 14) Amoebic Dysentery is caused by :
a) *E.histolytica* b) *E.coli* c) *S.pneumonia* d) *Tricophyton*
- 15) Which of the following is not lymphoid tissue :
a) Spleen b) Tonsils c) Pancreas d) Thymus

II Fill in the blanks by choosing the appropriate word/words from those given below: 5x1=5
(Thymine, Uracil, Blastocyst, Tubectomy, Embryo Sac, Sickle cell anaemia)

- 16) The female gametophyte of an angiosperm is _____.
- 17) _____ is implanted in the uterus.
- 18) Sterilization procedure in human female is _____.
- 19) _____ is an example of point mutation.
- 20) Additional stability to DNA when compared to RNA is due to presence of _____.

PART-B

III Answer any FIVE of the following questions in 3-5 sentences each, wherever applicable: 5x2=10

- 21) Write two events that occur in the ovary and uterus during the follicular phase of menstrual cycle.
- 22) Mention any four sexually transmitted diseases.
- 23) How do the following assisted reproductive technologies assist the couple to have children
a) ZIFT b) GIFT
- 24) What is MTP ? Mention the safe period for MTP.
- 25) Write any four symptoms of Down's syndrome.
- 26) What is adaptive radiation ? Give an example.
- 27) What are the applications of DNA fingerprinting ?

PART-C

IV Answer any FIVE of the following questions in about 40-80 words each, wherever applicable: 5x3=15

- 28) Briefly explain the structure of Male gametophyte.
- 29) Cleistogamous flowers are invariably autogamous. Justify the statement.
- 30) Describe any three outbreeding devices that prevent autogamy.
- 31) Write the schematic representation of spermatogenesis.
- 32) Explain the neuro-endocrine mechanism of parturition.
- 33) What is immunity ? Mention four barriers of innate immunity.
- 34) Name the six stages of Human evolution in correct sequence.

PART-D

V Answer any FOUR of the following questions in about 200-250 words each, wherever applicable: 4x5=20

- 35) Draw a neat labelled diagram of the sectional view of male human reproductive system.
- 36) State the law of independent assortment. Illustrate it with schematic representation in a pea plant.

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- 37) a) What is female heterogamety ? Explain it with an example. (3M)
b) What are mutagens. Give an example. (2M)
- 38) Give below are sequences of nucleotides in a particular m-RNA and amino acids coded by it;
5' - AUG UUU UUC GAG UUA GUG UAA - 3'
met phe phe glu leu val
Write the properties of genetic code that can be correlated from the above given data.
- 39) Describe Griffith's experiment to show transformation in bacteria.
- 40) a) Draw the schematic structure of transcription unit. (3M)
b) List the differences between euchromatin and heterochromatin. (2M)
- 41) State Hardy-Weinberg's equilibrium. Explain any four factors that effect Hardy-Weinberg's equilibrium.
- VI Answer any ONE of the following questions in about 200-250 words each, wherever applicable: 1x5=5**
- 42) Answer the following :
a) Double fertilization is a unique event taking place in flowering plants. Briefly describe this process. (3M)
b) Arrange the following terms in the correct development sequence :
Pollen grain, Sporogenous Tissue, Microspore tetrad, Pollen mother cell, Male gamete (2M)
- 43) a) Using standard pedigree symbols construct a pedigree chart of inheritance of X-linked disorder for the following :
Given, the normal male parent has four children. Out of the four children only one male and one female carries the gene for the disease. The affected son marries normal woman. They get three children out of which one is male and one is female.
b) Derive any two conclusions from the pedigree chart drawn.
- 44) "A health camp was organised in the village to conduct routine check-ups for the villagers. Five patients with the following symptoms were recorded and preventive medicines were prescribed. Identify the diseases based on the given symptoms.
a) High fever 39° C to 40° C
b) Chills and high fever recurring every 3-4 days.
c) Nasal congestion and discharge
d) Blockage of intestine with internal bleeding
e) Lips and nails turned greyish to bluish in colour.

- 8) If one parent has blood group A and the other parent has blood group B, then which blood group will the offspring have?
a) AB b) O c) B or O d) A, B, AB or O
- 9) What is the process of the production of non-parental phenotypes called?
a) Linkage b) Recombination c) Mutation d) Replication
- 10) What would be the distance between base pairs of a DNA, whose pitch is 3.4 Å and roughly has 10 base pair in each turn?
a) 0.34 nm b) 0.34 Å c) 3.4 nm d) 3.4 Å
- 11) The role of RNA polymerase II is transcription of
a) rRNA b) tRNA c) mRNA d) ssRNA

(P.T.O.)