



Previous Year Solved Question Paper
of

G.A.T.E. (XL) 2017

LIFE SCIENCES

XL: T Zoology

Examination

(Original Question Paper with Answer Key)

GRADUATE APTITUDE TEST IN ENGINEERING



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Zoology (XL-T)

Question Number : 76

The characteristic feature of deuterostomes is depicted by

- (A) coelom formed by the hollowing out of a previously solid cord of mesodermal cells
- (B) spiral and determinate cleavage
- (C) formation of mouth from blastopore
- (D) formation of anus from blastopore

Ans. D

Question Number : 77

One of the most remarkable features of evolution is the formation of amnion and allantois. This appeared for the “first time” in evolutionary time scale in

- (A) reptiles
- (B) birds
- (C) fishes
- (D) humans

Ans. A

Question Number : 78

A woman with blood group A gave birth to a baby with blood group AB. The blood group of the father would be

- (A) only AB
- (B) only B
- (C) either AB or B
- (D) blood group O

Ans. C

Question Number : 79

The enzyme amylase can break alpha glycosidic linkages between glucose monomers. Hence, amylase can digest which one of the following carbohydrates?

- (A) Cellulose
- (B) Starch
- (C) Chitin
- (D) Xylans

Ans. B

Question Number : 80

The metabolic pathway which is common to both fermentation and cellular respiration is

- (A) the TCA cycle
- (B) the electron transport chain
- (C) glycolysis
- (D) synthesis of acetyl CoA from pyruvate

Ans. C

Question Number : 81

A female “Spotted sand piper” courts males repeatedly. This behavior can be explained by the term

- (A) polyandry
- (B) polygyny
- (C) monogamy
- (D) sexual cannibalism

Ans. A

Question Number : 82

Malaria is caused by *Plasmodium* species, which is a parasite having a complex life cycle. The fusion between male and female gametocytes of *Plasmodium* happens inside

- (A) human liver
- (B) human RBCs
- (C) mosquito midgut
- (D) mosquito salivary glands

Ans. C

Question Number : 83

Aromatase inhibitors are often prescribed for post-menopausal women to treat estrogen receptor positive breast cancer patients, because these class of drugs

- (A) reduce prostaglandin biosynthesis
- (B) reduce the level of estradiol biosynthesis
- (C) inhibit conversion of testosterone to dihydrotestosterone
- (D) are non-toxic in post-menopausal women

Ans. B

Question Number : 84

The covalent modification performed by kinases which regulate proteins in signaling pathways is

- (A) glycosylation
- (B) methylation
- (C) ubiquitination
- (D) phosphorylation

Ans.D

Question Number : 85

Which one of the following statements is NOT correct?

- (A) During metaphase, the 2 copies of chromosomal DNA are held together at the centromere
- (B) The short arm of chromosomes is referred to as p and the long arm is referred to as q
- (C) The terminal structures at the end of the chromatids are referred to as telomeres
- (D) The terms heterochromatin and euchromatin refer to the active and repressed regions of the chromosome respectively

Ans. D

Question Number : 86

A particular species is found to have $2n=16$ chromosomes. The number of linkage groups in this species will be _____

Ans. 8.0 - 8.0

Question Number : 87

In the Meselson and Stahl experiment, *E. coli* was grown in a medium containing $^{15}\text{NH}_4\text{Cl}$. After 24 hours, *E. coli* were transferred to medium containing $^{14}\text{NH}_4\text{Cl}$. After the fourth generation in medium containing $^{14}\text{NH}_4\text{Cl}$, the ratio between hybrids ($^{15}\text{N}/^{14}\text{N}$) and light ($^{14}\text{N}/^{14}\text{N}$) labeled DNA will be $1:n$, where the value of n is _____

Ans. 7 - 7

Question Number : 88

The population data present in an island is as follows

Genotype	Number
<i>AA</i>	300
<i>Aa</i>	500
<i>aa</i>	200
Total	1000

The allele frequency of *A* (upto two decimals) will be _____

Ans. 055 - .55

Question Number : 89

A cell in G1 phase has 16 chromosomes. The total number of chromatids that would be found per cell during Metaphase II of meiosis are _____

Ans. 16 - 16

Question Number : 90

Upon activation of phospholipase C by ligand binding to G-protein coupled receptor, the Ca^{+2} concentration in cytosol will

- (A) decrease due to blockage of $InsP_3$ gated channel on endoplasmic reticulum
- (B) decrease due to blockage of $InsP_3$ gated channel on plasma membrane
- (C) increase due to efflux of Ca^{+2} from $InsP_3$ gated channel on mitochondria
- (D) increase due to efflux of Ca^{+2} from $InsP_3$ gated channel on endoplasmic reticulum as well as influx of Ca^{+2} from $InsP_3$ gated channel on plasma membrane

Ans. D

Question Number : 91

Match the following molecules in Group I with their function in Group II

Group I

- P. Transferrin
- Q. Insulin
- R. α -macroglobulin
- S. Fibronectin

Group II

- (i) Uptake of glucose
- (ii) Binds iron
- (iii) Substratum for cell attachment
- (iv) Proteinase inhibitor
- (v) Binds to oxygen in RBC

- (A) P-ii; Q-i; R-iv; S-iii
- (B) P-ii; Q-i; R-v; S-iii
- (C) P-ii; Q-i; R-iv; S-ii
- (D) P-i; Q-iii; R-ii; S-v

Ans. A

Question Number : 92

If a heavy chain of an antibody molecule weighs 65,000 Daltons (Da) and a light chain weighs 25,000 Da, the approximate calculated weight of an IgM antibody in Da will be

- (A) 90,000
- (B) 180,000
- (C) 360,000
- (D) 900,000

Ans. B OR D

Question Number : 93

MATCH the signaling pathways in Group I with their functions in Group II, during the process of development

Group I

- P. Hedgehog signaling
- Q. Hox proteins
- R. Wnt signaling
- S. Notch signaling

Group II

- (i) Involved in signaling at 4-cell embryo stage in *C. elegans* through *glp 1* expression
- (ii) Involves frizzled receptor on target cell membrane and establish polarity in insects
- (iii) Plays critical role in facial morphogenesis in vertebrates and its mutation causes cyclopia
- (iv) Required for *T-bx* transcription factor expression for vertebrate limb development

- (A) P-iii; Q-ii; R-iv; S-i
- (B) P-iii; Q-iv; R-ii; S-i
- (C) P-iv; Q-iii; R-ii; S-i
- (D) P-iii; Q-iv; R-i; S-ii

Ans. B

Question Number : 94

In a population which is in Hardy-Weinberg equilibrium, the frequency of the recessive genotype of a certain trait is 0.09. The percentage of individuals with heterozygous genotype is ___ %

Ans. 42 - 42

Question Number : 95

An enzyme preparation has activity of 2 Units per 20 μ l, and protein concentration 0.4 mg/ml. The specific activity (Units/mg) of this enzyme will be ____

Ans. 250 - 250

Food Technology (XL-U)

Question Number : 96

Indicate the correct group that contains a monosaccharide, a disaccharide and a trisaccharide.

- (A) Glucose, sucrose, mannose
- (B) Ribose, lactose, raffinose
- (C) Mannose, maltose, lactose
- (D) Raffinose, stachyose, glucose

Ans. B

Question Number : 97

In which of the following products, 'must' is used as the substrate for fermentation?

- (A) Beer
- (B) Wine
- (C) Idli
- (D) Tempeh

Ans. B

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