



Previous Year Solved Question Paper  
of

**G.A.T.E. (XL) 2012**

**LIFE SCIENCES**

**XL: L Zoology**

**Examination**

*(Original Question Paper with Answer Key)*

**GRADUATE APTITUDE TEST IN ENGINEERING**



For more question papers, please visit: [www.easybiologyclass.com](http://www.easybiologyclass.com)

## GATE XL 2012

## L : ZOOLOGY

## Q. 1 – Q. 10 carry one mark each.

- Q.1 Trees in the equatorial region of earth supply oxygen into the atmosphere that sustains species living in distant polar regions. This relationship is called as  
(A) mutualism (B) symbiosis  
(C) commensalism (D) parasitism **C**
- Q.2 A swimmer is preparing to swim 'non-stop' across the English channel (a distance of 34 kilometers). Consumption of which of the following category of food/s should the swimmer increase to accomplish this feat?  
(A) Proteins (B) Fats  
(C) Proteins and Carbohydrates (D) Carbohydrates **B**
- Q.3 Some species of beetles and fishes can survive at sub freezing temperature. They accomplish this by maintaining cellular integrity using one of the following mechanisms.  
(A) Expressing anti-freeze proteins  
(B) Accumulating fats  
(C) Increasing accumulation of complex polyols  
(D) Reducing the availability of total water in the body **A**
- Q.4 Zygotic genes required for the formation of a group of adjacent segment in the developing Drosophila embryo is called  
(A) Maternal gene (B) Pair rule gene (C) Homeotic gene (D) Gap gene **D**
- Q.5 A typical receptor senses extracellular stimuli by virtue of its localization on plasma membrane. The receptor to which of the following ligands is an exception to this rule?  
(A)  $\gamma$ -amino butyric acid (B) Acetylcholine  
(C) Estrogen (D) Luteinizing hormone **C**
- Q.6 The relationship between genes and enzymes was first suggested by the discovery of  
(A) in-born errors of metabolism in human  
(B) sexual phenotype in insects  
(C) metabolic pathways in fungi  
(D) gene regulation in bacteria **A**
- Q.7 The blind spot in the retina is blind because of which of the following reasons?  
(A) It is the region where the optical nerve leaves the retina.  
(B) The opsin is not expressed in this region.  
(C) It lies in the shadow of pupil.  
(D) It is the junction between rods and cones. **A**
- Q.8 Lamprey, a jawless fish, belongs to which one of the following 'Classes'?  
(A) Myxini (B) Cephalaspilomorphi  
(C) Conodonts (D) Anaspida **B**
- Q.9 Chorionic gonadotropin plays an important role in the establishment and maintenance of pregnancy and is synthesized in the placenta of  
(A) Cattle (B) Pigs (C) Mice (D) Human **D**

- Q.10 Glucose and hexanoic acid, each having six carbon atoms can undergo complete biological oxidation. In terms of net ATP generation, which of the following statements is CORRECT?
- (A) Glucose produces more ATP than hexanoic acid  
 (B) Only glucose can generate ATP  
 (C) Both glucose and hexanoic acid produce same amount of ATP  
 (D) Hexanoic acid produces more ATP than glucose

D

**Q. 11 - Q. 20 carry two marks each.**

- Q.11 Match the following evolutionary biologists with their respective theory
- |                           |   |
|---------------------------|---|
| I) August Weisman         | i) Neutral theory of molecular evolution    |
| II) Jean-Baptiste Lamarck | ii) Handicap principle                      |
| III) Amotz Zahavi         | iii) Germ plasm theory                      |
| IV) Motoo Kimura          | iv) Inheritance of acquired characteristics |
- (A) I-ii, II-iv, III-i, IV-iii  
 (B) I-iii, II-iv, III-ii, IV-i  
 (C) I-iii, II-iv, III-i, IV-ii  
 (D) I-iii, II-i, III-iv, IV-ii

B

- Q.12 A female cat with a mutant phenotype was bred with a wild-type male cat. All progeny (4 males and 4 females) show the mutant phenotype. On the other hand, all progeny (4 males and 4 females) from the reciprocal cross between a mutant male and a wild-type female show the wild-type phenotype. Which of the following explain the inheritance pattern of the mutation?
- (A) Recessive  
 (B) Linked inheritance  
 (C) Mitochondrial inheritance  
 (D) Autosomal inheritance

C

- Q.13 If all the nucleotides have equal probability of occurrence in a 4 Mbp long DNA sequence, then how many times will the site of *EcoRI*, restriction endonuclease occur?
- (A) 976  
 (B)  $4^6$   
 (C)  $6^4$   
 (D) 1000

A

- Q.14 Seasonally breeding animals and birds measure the day length, i.e. photoperiod and use these measurements as predictive information to prepare themselves for breeding. Besides melatonin, which of the following hormones is involved in this biological process?
- (A) Gonadotropin releasing hormone  
 (B) Growth hormone  
 (C) Thyroxine  
 (D) Adrenocorticotrophic hormone

C

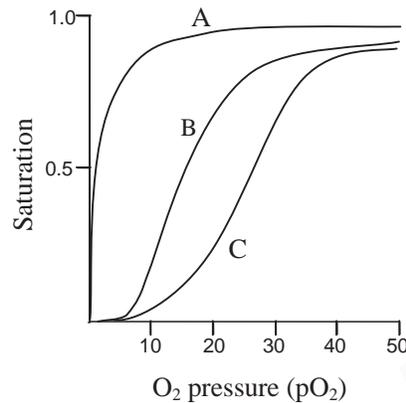
- Q.15 Red-Green color blindness is an X-linked recessive disorder. In a population which is in the Hardy-Weinberg equilibrium, the incidence of occurrence of this in males is 1:1000. What will be the expected incidence of affected homozygous females?
- (A) 1 in 1002000  
 (B) 1 in 2000000  
 (C) 1 in 1001000  
 (D) 1 in 1000000

D

- Q.16 Golgi apparatus is also termed as cellular post office, since it packages and transports cellular proteins across various organelles and outside the cell. In general, the Golgi is perinuclear in location and is closely associated with the endoplasmic reticulum. A chemical compound, Monensin inhibits all trafficking from Golgi. If Golgi is visualized by immunofluorescence microscopy after treatment with this compound, the Golgi will be
- (A) absent  
 (B) normal  
 (C) swollen  
 (D) fragmented

C

- Q.17 In an individual, three distinct proteins bind oxygen depending on the location and development stage. While hemoglobin is the major oxygen binding protein in adults, myoglobin is present in skeletal muscles and fetal hemoglobin is present in fetal stage only. The following graph shows the oxygen binding capacity of these proteins. The A, B and C plots represent oxygen binding capacity of



- (A) hemoglobin, fetal hemoglobin and myoglobin, respectively  
 (B) fetal hemoglobin, hemoglobin and myoglobin, respectively  
 (C) hemoglobin, myoglobin and fetal hemoglobin, respectively  
 (D) myoglobin, fetal hemoglobin and hemoglobin, respectively **D**
- Q.18 A patient comes with symptoms of autonomic hemolysis. The diagnostic tests reveal that he has auto-antibodies to red blood cells (RBCs). Which one of the following mechanisms is the cause of this condition?
- (A) Neutrophils release granzymes which lyse RBCs  
 (B) Complement is activated and membrane attack complex lyse RBCs  
 (C) Cytotoxic T-cells lyse RBCs  
 (D) Interleukin-2 binds to the receptor on RBCs **B**
- Q.19 The nerve impulse at the neuromuscular junction results in discharge of acetylcholine (Ach) from its vesicles into the synaptic cleft. Ach gets degraded by acetylcholine esterase and is present in which one of the following locations?
- (A) Post synaptic membrane  
 (B) Both pre and post – synaptic clefts  
 (C) Presynaptic membrane  
 (D) Synaptic cleft **A**
- Q.20 Increasing estradiol (E2) hormone from ovarian follicles prior to ovulation has been hypothesized to play a critical role for induction of pheromones. These pheromones render females sexually receptive to males to facilitate mating. An investigator performs experiments in sheep in which females are gonadectomized, then treated with E2 or vehicle alone and allowed to breed. Which one of the findings listed below will validate the hypothesis that pheromones are induced by E2?
- (A) Sexual receptivity is regained only in vehicle treated females.  
 (B) Sexual receptivity is regained only in E2 treated females  
 (C) Sexual receptivity was regained irrespective of E2 treatment  
 (D) Sexual receptivity is not regained by any treatment **B**

**END OF SECTION - L**

Please visit: [www.easybiologyclass.com](http://www.easybiologyclass.com) for:

- Lecture Notes
- Biology PPTs
- Biology MCQs
- Online Mock Tests (MCQ)
- Video Tutorials
- Practical Aids
- Model Question Papers of NET, GATE, DBT, ICMR Exams
- CSIR NET Life Sciences Previous Year Question Papers
- GATE Previous Year Question Papers
- DBT BET JRF Previous Year Question Papers
- ICMR JRF Entrance Exam Resources
- Jobs Notifications
- Higher Studies in Biology / Life Sciences
- Seminar / Workshop/ Conference Notifications
- And many more....



Please subscribe our **youtube** channel: **easybiologyclass**  
<https://www.youtube.com/user/easybiologyclass/videos>



You can access more PDFs & PPTs from our **Slideshare** account  
<http://www.slideshare.net/EasyBiologyClassEBC/>



Our sister concern: [www.angiospermtaxonomy.com](http://www.angiospermtaxonomy.com)