

2015

Time : 3 hours

Full Marks : 100

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer five questions, selecting two from each Group, in which Q. No. 1 is compulsory.

1. Choose the correct answer out of various options given below :  $1 \times 20 = 20$

(a) Nobel prize for discovery of DNA double helix model was given to :

- (i) Watson, Crick and Chargaff
- (ii) Watson, Crick and Franklin
- (iii) Watson, Crick and Willkins
- (iv) Watson, Crick and Asthbury

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(Turn over)

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(b) Membrane proteins show an unequal distribution in the plasma membrane :

- (i) Fatty acid
- (ii) Glycerol
- (iii) Ions
- (iv) Glucose

(c) Which of the following lacks the protein tubulin

- (i) Cilium
- (ii) Flagellum
- (iii) Microtubule

(iv) Plasma membrane

(d) Endoplasmic reticulum is absent in :

- (i) Prokaryotic cells
- (ii) Plasma cells
- (iii) Interstitial cells
- (iv) All of the above

(e) Number of Golgi bodies increases during

- (i) Respiration
- (ii) Active transport

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(2)

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- ✓ (iii) Cell division
- (iv) None of the above
- (f) Ribosomes are attached to Endoplasmic reticulum by :
- ✓ (i) Glycoprotein
- (ii) Glycolipid
- (iii) Oligosaccharide
- (iv) Protein
- (g) During DNA replication, the two strands are separated by :
- (i) Gyrase
- (ii) Topoisomerase
- (iii) DNA polymerase
- ✓ (iv) Unwindase
- (h) The formation of acrosome is associated with :
- (i) Lysosome
- (ii) Nucleus
- ✓ (iii) Golgi complex
- (iv) Mitochondria

- (i) Standard error of the mean is calculated by the formula :
- (i) S. D. / N
- (ii)  $\sqrt{\text{Variance}}$
- ✓ (iii) S. D. /  $\sqrt{N}$
- (iv)  $\sqrt{N} / \text{S. D.}$
- (j) Formula to deduce  $\lambda^2$  (Chi-Square) is represented by :
- (i)  $\frac{(O-E)}{E}$
- ✓ (ii)  $\sum \frac{(O-E)^2}{E}$
- (iii)  $\frac{(O-E)}{O}$
- (iv)  $\sum \frac{(O-E)^2}{O}$
- (k) The distance between smallest and largest observation is :
- ✓ (i) Range
- (ii) Mean deviation

- (iii) Mean variation  
(iv) Standard deviation
- (l) Restriction enzymes are synthesized by :  
 (i) Bacteria only  
(ii) Yeast and bacteria only  
(iii) Eukaryotic cells only  
(iv) All of the above
- (m) Standard deviation of 5, 5, 5, 5, 5, 5 and 5 is :  
(i) 0.7  
(ii) 0.4  
(iii) 1.0  
 (iv) 00 (zero)
- (n) The reciprocal of arithmetic mean is called :  
(i) Geometric mean  
 (ii) Harmonic mean  
(iii) Both (i) and (ii)  
(iv) None of the above
- (o) Vaccination was introduced by :  
 (i) E. Jenner  
(ii) L. Pasteur

- (iii) Funk  
(iv) Mc. Collum
- (p) Yoghurt is :  
(i) Fermented beverage  
 (ii) Fermented milk  
(iii) Distilled beverage  
(iv) Vitamin rich compound
- (q) Antibiotics are mostly obtained from :  
 (i) Bacteria  
(ii) Viruses  
(iii) Angiosperms  
(iv) Fungi
- (r) Yeast is an important source of :  
(i) Vitamin C  
(ii) Riboflavin  
 (iii) Sugar  
(iv) Protein
- (s) Hybridoma technology is used in :  
 (i) Producing monoclonal antibodies  
(ii) Polyclonal antibodies  
(iii) Biclinal antibodies  
(iv) None of the above

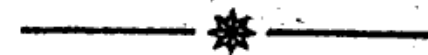
- (i) Jolly
- (ii) Ross Harrison
- (iii) Alexis Carrel
- (iv) Kary Mullis

**Group – A**

2. Give an account of the Ultra-structure and functions of Plasma membrane. 10+10 = 20
3. Describe the Ultra-structure of Mitochondria and discuss the electron transport mechanism. 20
4. Give an account of the ultrastructure and functions of Golgi body. 15+5 = 20
5. What is Standard Deviation ? Calculate it from the data given below : 5+15 = 20  
Haemoglobin content of the 10 specimens of Labeo is :  
20, 25, 15, 10, 22, 13, 11, 18, 17, 21 g / 100ml

**Group – B**

6. Give an account of the evolution of coat color in mammals. reference to coat color in mammals. 20
7. Describe the structure of chromosome in the light of modern researches. 20
8. Give an account of the concept and scope of biotechnology. 20
9. Describe the process of Sex determination in man. 20



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