IDC 202 (Chemical Biology) 1st mid-semester exam (IISER Mohali) Instructor: Dr. S. Mukhopadhyay

Date: September 11, 2018. Time: 11 am – 12 pm

Please tick (√) the right answers. Total marks: 10 x 2 = 20. Negative marks for wrong answers: -1

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1. The dependence of van der Waals attractive interaction on the distance (r) between two atoms scales as
(a) $1/r$ (b) $1/r^2$ (c) $1/r^4$ (d) $1/r^6$

2. O-H bond distance in liquid water is
(a) 0.1 Å (b) 1 Å (c) 10 Å (d) 100 Å

3. The hydrophobic effect is largely driven by the
(a) enthalpy of hydrophobic substances (b) entropy of hydrophobic substances
(c) enthalpy of water (d) entropy of water

4. The mode of action of aspirin involves the following. Aspirin
(a) catalyzes COX synthesis (b) inhibits COX synthesis
(c) enhances COX function (d) inhibits COX function

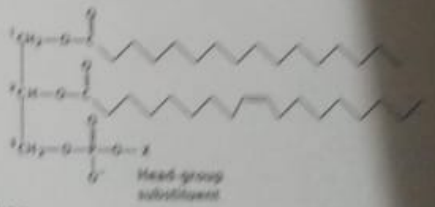
5. Bile salts are biological detergents because
(a) they remove hydrophobic dirt from our intestine (b) they solubilize proteins and enzymes
(c) they solubilize fats and cholesterol (d) they remove metabolites

6. Which one of the following statements about cholesterol is wrong?
(a) It provides rigidity to the cell membranes
(b) It is present in the membrane micro-domain or lipid raft
(c) It is synthesized from bile acid in the liver
(d) It is a precursor for the synthesis of the steroid hormones

7. Statins belong a class of cholesterol-lowering drugs. The mode of action of statins involves the
(a) removal of cholesterol from cell membranes (b) dissolution of gallstone (c) inhibition of the biosynthesis of 3-hydroxy 3-methylglutaryl-CoA (HMG-CoA) in the mevalonate pathway (d) inhibition the HMG-CoA reductase enzyme in the mevalonate pathway

8. Fluorescence recovery after photobleaching can be used to monitor the following dynamics
(a) Cell division (b) lateral diffusion of lipids (c) uncatalyzed flip-flop diffusion of lipids
(d) water transport across the membrane

9. The general structure of glycerophospholipid is given. The lipid is called phosphatidylcholine when the head-group substituent (X) is



(a) –H (b) $-CH_2-CH_2-\overset{+}{N}H_3$ (c) $-CH_2-CH_2-\overset{+}{N}Me_3$ (d) $-CH_2-CH_2-\overset{+}{N}Et_3$

10. Amylose is a water-soluble polysaccharide that contains the following linker
(a) β(1→4) (b) α(1→4) (c) α(1→6) (d) β(1→6)

18/20