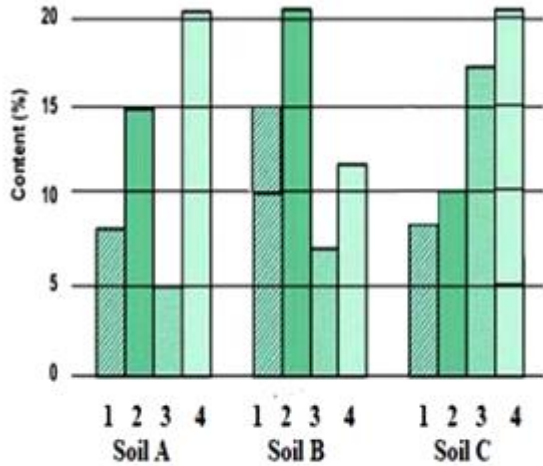


**BCM SCHOOL BASANT AVENUE, DUGRI LUDHIANA  
XII BIOLOGY  
ASSIGNMENT**

**1 Calculate the total number of dominant alleles in a population of 1,000 individuals in Hardy Weinberg equilibrium, if the frequency of recessive allele at an autosomal locus is 0.2.**

- a) 960                      b) 800    c) 1600                      d) 1920

**2 Observe the contents 1,2,3 and 4 of soil samples A,B and C shown in the graph. If the temperature and soil moisture of all soil samples are identical, which soil sample (s) will show faster decomposition?**



1 indicates lignin content, 2 indicates chitin, 3 indicates Nitrogen content and 4 indicates sugar content

- a) Soil Sample A                      b) Soil Sample B  
c) Soil Samples A and B both      d) Soil Sample C

**3 Assertion (A) : Cocaine are drug of abuse.  
Reason (R) : Cocaine interferes in the working of central nervous system.**

**4 A young boy when brought a pet dog home started to complain of watery eyes and running nose. The symptoms disappeared when the boy was kept away from the pet.**  
(i) Name the type of antibody and the chemicals responsible for such a response in the boy.  
(ii) Mention the name of any one drug that could be given to the boy for immediate relief from such a response.

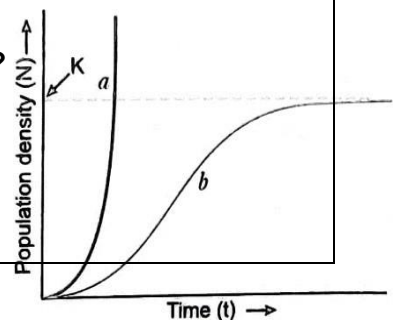
**5 Causative agents of HIV-AIDS and COVID-19 belong to the same group of viruses. To diagnose and amplify the genetic material for further study of COVID-19 virus, 'RT-PCR' test is carried out.**

- (a). What does RT-PCR stand for?  
Explain the various steps of PCR technique

**6 Study the population growth curves in the graph given below and answer the questions that follow:**

- (a) Identify the growth curves 'a' and 'b'.  
(b) Which one of them is considered a more realistic one and why?

(c) If  $\frac{dN}{dt} = rN \left\{ \frac{K-N}{K} \right\}$  is the equation of the logistic growth curve, what does K stand for?



7	<p>(a) Earlier, insulin was extracted from pancreas of slaughtered cattle and pig. This insulin is not in use as some patients developed allergic reaction to this foreign protein.</p> <p>(b) Eli Lilly used the following procedure for insulin synthesis:</p> <ul style="list-style-type: none"><li>(i) Two DNA sequences corresponding to A and B chains of insulin were prepared.</li><li>(ii) These sequences were then introduced in plasmids of E. coli.</li><li>(iii) The two insulin chains are produced separately.</li><li>(iv) The two chains are extracted and combined by creating disulphide bonds to form the assembled mature molecule of insulin.</li></ul> <p>The pro-hormone produced in the human body has an extra stretch of C-peptide.</p>