F.Y.B.Sc. Physics II Sem-I
2014

6-3-14

Y. B.Sc. PHYSICS-II II- SEMESTER 2013-14 60 MARKS 2 HRS.

te: i) All the questions are compulsory.

ii) Figures to the right indicate full marks.

iii) Use of non programmable calculator is allowed.

.1 Attempt ANY 3:- 15M]

A) Show that when load resistance is equal to the source resistance then maximum power is delivered.

B) In wein bridge $R_1=R_2=10K\Omega$; $C_1=C_2=0.22\mu F$; $R_4=2.2K\Omega$. Find value of R_3 & frequency of applied voltage needed to balance the bridge.

C) Explain the working of ballistic galvanometer of suspended type.

D) Derive the equation for frequency of A.C. Bridge using Wein Bridge.

Q.2 Attempt ANY 3:- 15M]

A) Define radioactivity and explain five kinds of radioactivity.

B) Show that the radius of an atomic nuclei is $R=R_0 A^{1/3}$. A stable nucleus has a radius 1/3 that of O^{189} find the stable nucleus.

C) Calculate the B.E. and B.E./nucleon in Ca^{40} whose mass is 39.9753 amu.

Mass of neutron = 1.008666 amu

Mass of proton = 1.007277 amu.

D) Derive expression for the number of atoms in the first two daughter elements formed in the process of successive disintegration.

(P10)