

(4)

Unit-I / FkæF-I

7½

2. A circuit containing an inductance and a capacitance in parallel has an alternating current flowing through it. Obtain the resonant frequency. Point out the difference between series and parallel resonant circuits.

Skeá ðej keálJe meceveevleJ cellSkeá mellef \$e mespefJe nwleLee Gmeceð ðelUeJeeaaOeeje ðeJeeðhle nesjner nw heefj helle keær Devegeeoer DeeJeebe %eete keæpeS- BeCeer SJeameceveevleJ Devegeeoer heefj hellellcellDevleJ keæe GuueKe keæpeS-

3. Describe the method for finding the value of high resistance of the order of mega ohms by the method of leakage. Can this method be used for measuring low resistance? Explain it.
- cevee Deence ceve keá GÙÙe ðeelljeðe keæs %eete keájves keá elueS ueceape eleeDe keæe JeCete keæpeS- Fme eleeDe Éeje kellee evecve ðeelljeðe keæe ceve %eete ekeáÙee pee mekeálee nw FmesmecePeeFÙes

A

(Printed Pages 7)

Roll No. \_\_\_\_\_

**S-602**

B.Sc. (Part-I) Examination, 2015

(Regular & Exempted)

PHYSICS

Second Paper

(Circuit Fundamental & Basic Electronics)

**Time Allowed : Three Hours ] [ Maximum Marks : 50**

Note : Question No.1 is compulsory and attempt one question from each Units I, II, III and IV. Thus answer five questions in all.

ðeMve meb1 DeeveJeeÙe&nwleLee ðelÙe keá FkæF&I, II, III SJel IV mes Skeá ðeMve keæpeS- Fme ðe keáj keájue heeðe ðeMveelkeá Gøej oeepeS-

1. Write short answers of the following:  $2 \times 10 = 20$  evecveeÙeeKele keæe mefhehle Gøej oeepeS :

(i) Show that in a resonant LCR Circuit sharpness of resonance is equal to the quality factor of the resonant circuit.

(2)

oMeeFÜes ekaä BeSeer Devegeeo LCR heej heLe ceWDevegeeo keäer  
lee#eCelee keäeeueŠer ieŠeekeä keä yejejej nee'er nW

(ii) How is an A.C. bridge different from a D.C. bridge?

ÜelÜeeJeleea Oeeje meleg Skeä ebŠ Oeeje meleg mes Üekeäej  
eVee nee'e nW

(iii) How are the thickness and degree of doping different in the emitter, base and collector of a transistor?

ekeämeer Šepemšj keä GImepkeä, DeeOeej SJeB meäeenkeä keäer  
ÜeeF & SJeB [eehe keäer ceŠee ceWkeäee eVeelee nee'er nW

(iv) Explain the difference between voltage negative feedback and current negative feedback.

Jeešlee \$e+Ceelcekeä hejeYej Ce SJeBOeeje \$e+Ceelcekeä hejeYej Ce  
ceWDeVlej mecePeeFÜes

(v) Differentiate between conductor, semi-conductor and insulator.

Üeeuekeä, DeOeeuekeä Je keäÜeeuekeä ceWDeVlej yeleeFS~

(3)

(vi) If the value of  $\alpha_{dc}$  of a transistor is 0.98, what is the value of  $\beta_{dc}$  for the same transistor?

Üeeb ekeämeer Šepemšj keä eueS  $\alpha_{dc}$  keäe ceve 0.98 nW lee  
Gmeer Šepemšj keä eueS  $\beta_{dc}$  keäe ceve keäee nee'e?

(vii) What is the difference between Zener and Avalanche breakdown?

pevej leLee DeJeOeele eVeeve ceWkeäee Delej nW

(viii) Why is modulation necessary for radio communication?

jšÜees meDeej Ce keä eueS ceEgebleve keäeeWDeeJemÜekeä nW

(ix) What is the function of a filter circuit?

eheäušj heej heLe keäe keäee keäee & nee'e nW

(x) Explain the terms frequency response and bandwidth.

DeeJeebe DevegeäÜee SJeB heeb keäe-ÜeeF & keäe keäee DeLe & nW  
mecePeeFS~



(6)

Unit-III / F-III

7 1/2

6. Draw the circuit diagram of a p-n-p transistor in common emitter configuration. Discuss the characteristic Curves. Establish the relation:

$$I_c = \beta_{dc} I_B + I_{CEO}$$

Where the symbols have their usual meaning

What is  $I_{CEO}$ ?

Gyellere% GImepoká elee cell p-n-p ššp emšj keá hej helle eše yeeFÜes- Deeluee#eeCekeá Je eállkeár eš švee keáepes- ešveeueeKele mecyvDe keás mLeehele keáepes :

$$I_c = \beta_{dc} I_B + I_{CEO}$$

penšhej šeekeá mJele: mhe° nš

$I_{CEO}$  kešee nš

7. Describe the action of an emitter follower by drawing a neat diagram. Derive the expression for voltage gain, input impedance and output impedance of the emitter follower.

mJelÜ eše Keškeáj GImepoká Devojeeceerkeár ešveeueeDe mecePeeFÜes-

(7)

Fmekeá Jeesšlee ueeYe, ešveeuee šeeveeDee SJešvee ešveeuee keá JÜepoká JÜepheVe keáepes-

Unit-IV / F-IV

7 1/2

8. What is an oscillator? Derive Barkhausen Criterion for oscillation. With the help of a circuit diagram discuss the working of an oscillator using a transistor.

ošvee kešee nešee nš ošvee keá ešvee yeekešmešvee keá ešvee ešvee šeevee JÜepheVe keáepes- hej helle eše keár ceo mes ešvee Sme ošvee keár ešveeuee keár ešveeuee keáepes ešveeuee ššp emšj šeevee ešvee išvee nes

9. Write notes on any two of the following:

ešveeueeKele cellmes ešveeuee ošvee ešveeuee ešveeuee:

(a) Amplitude modulation

Dešvee cešvee

(b) Deflection sensitivity of CRO

CRO keár ešveeuee mešveeuee

(c) Effects of negative feedback in amplifiers

šeeveeuee hešveeuee keá šeeveeuee hešveeuee