* J B - 3 1 6 1 *

JB-3161

Second Year B. Sc. (Sem. IV) Examination

April/May – 2013

Electronics : Paper - III

(Amplifiers and Linear Integrated Circuits)

Time : Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **S. Y. B. Sc. (Sem. 4)**

Name of the Subject :

☛ **Electronics : Paper - 3**

☛ Subject Code No. : **3 1 6 1** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Question one is compulsory.

(3) Assume data wherever necessary.

(4) Draw neat circuit diagrams wherever necessary.

1 Write very short answers. **8**

(1) What is cross over distortion ?

(2) What do you mean by positive feedback ?

(3) What are the requirements for oscillation ?

(4) Explain transistor as a switch.

(5) What is the amount of phase shift offered by each stage of RC circuit in Phase Shift Oscillator ?

(6) What is the use of speedup capacitor in bistable multivibrator ?

(7) Distinguish between Class A and Class B operation in amplifiers.

(8) What are the needs for tuned amplifier ?

2 (a) Derive the relation for the frequency of oscillation and gain conditions for phase shift oscillator. Draw a neat diagram of a transistorized phase shift oscillator. **10**

(b) An RC phase shift oscillator has $R = 20k\Omega$ and $C = 0.01\mu F$. What is its frequency of oscillation ? **4**

OR

2 (a) Explain the working principle of astable multivibrator. Derive the relation for frequency oscillation. Draw the diagram of a output waveforms. **8**

(b) Design an astable multivibrator to generate a square wave of frequency 2kHz. $V_{cc} = 15V, I_{csat} = 5\,mA\, and\, h_{fe\min} = 20$ **6**

3 (a) Show that even harmonics are cancelled in push-pull amplifier. Discuss the Class-AB push-pull amplifier. **10**

(b) Prove that the power efficiency of a resistive load power amplifier is 25% while that of a transformer coupled power amplifier is 50%. **4**

OR

3 (a) Explain the negative resistance oscillator. **10**

(b) Find out the frequency of the saw tooth wave form in a UJT oscillator with $R = 5k\Omega,\ C = 1\mu F$ and $\eta = 0.5$. **4**

4 Write short notes. (any two) **14**

(1) Complementary Symmetry power amplifier

(2) LC oscillators.

(3) Monostable multivibrator.

(4) Difference amplifier.
