04602

DECVI/DELVI/DCSVI/ACECVI/ACELVI/ACSVI

Term-End Examination

December, 2011

BIEL-027 : APPLIED ELECTRONICS

Time : 2 hours *Maximum Marks : 70*

Note : *Question No. **1** is **compulsory.***
*Attempt **any five** questions.*
*Each question carry **equal** marks.*

1. This part consists of fill in the blanks, objective and True/False type of questions.

(a) Only the condition βA = _____ must be satisfied for self-sustained oscillations. **2**

(b) Full form of FET is called _____. **2**

(c) Class _____ amplifier is normally operated in a push pull configuration in order to produce an output that is a replica of the input. **2**

(i) AB (ii) C (iii) B (iv) A

(d) Negative feedback results in _____. **2**

(i) decreased voltage gain

(ii) increased voltage gain

(iii) oscillation in the circuit

(iv) none of the above

(e) For a phase - shift oscillator, the gain of the amplifier stage must be greater than _____. 2

(i) 19 (ii) 29 (iii) 30 (iv) 1

State true or false :

(f) The efficiency of any amplifier is the ratio of signal output power to signal input power. 2

(g) In parallel resonant circuit, at resonant frequency the circuit impedance is maximum. 2

2. (a) Why class - AB amplifiers are preferred to the class - B ? Give the circuit diagrams of class - AB push pull power amplifiers. Explain the working. 7

(b) Compare FET and MOSFET mentioning the points of differences between them. Draw the cross section of a n-channel enhancement MOSFET. 7

3. (a) What is meant by figure of merit in series resonant circuit ? Plot a resonance curve for a series resonant circuit and also derive its resonance frequency. 7

(b) Explain briefly tuned amplifier. Mention the merits of tuned amplifiers. A tank circuit uses a capacitor of 100 pF and an inductor of 15 μH. The resistance of the inductor is 5 Ω. Determine. 7

(i) Resonant frequency

(ii) Impedance at resonance

(iii) Q-factor

(iv) Bandwidth

4. (a) Discuss the advantages of negative feedback amplifiers. What do you understand by damped and undamped electrical oscillations ? 7

(b) Explain any example of voltage series feedback with its diagram. 7

5. (a) Explain RC phase shift oscillator and its principle. Why three R - C sections are used in R - C phase shift oscillator ? 7

(b) What do you mean by harmonic and relaxation oscillators ? Give examples of each oscillator. The parameters of a crystal oscillator equivalent circuit are given as Ls = 0.08H, Cs=0.08pF, Rs = 5 kΩ and Cp = 1.0 pF. Find the resonance frequencies fs and fp. 7

6. (a) What is differentiator ? How is it different from integrator ? Draw their waveforms. 7

(b) Write short notes on : 7

(i) Clippers

(ii) Negative resistance generator

7. (a) (i) What is a Schmitt Trigger ? Why is it called a regenerative comparator ? Define V_{UT}, V_{LT} and hysteresis in Schmitt Trigger. 7

(ii) What is multivibrator ? Give two applications of multivibrators. Explain briefly monostable multivibrator.

(b) What do you mean by miller sweep generator ? Discuss important steps of testing of circuits. 7