No. of Printed Pages : 5

BIEL-027

DECVI/DELVI/DCSVI/ACECVI/ACELVI/ ACSVI

Term-End Examination

02120

June, 2012

BIEL-027 : APPLIED ELECTRONICS

Time : 2 Hours *Maximum Marks : 70*

Note : (1) *Question No. 1 is **compulsory.***
(2) *Attempt **any five** questions.*
(3) *Each question carry **equal** marks.*
(4) *Use of scientific calculator is **allowed.***
(5) *Answer must be given in English only.*

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1. This question contains fill in the blanks, and objective type questions. **7x2=14**

(a) Tuned amplifiers are generally not used in : **2**
(i) TV receivers
(ii) Radio receivers
(iii) Public address systems
(iv) Radar receivers

(b) To increase the bandwidth, the distributed amplifier uses ________. **2**

(c) A monostable multivibrator has : **2**
(i) two stable states
(ii) one stable states
(iii) no stable states
(iv) two quasi stable states

(d) Crystal oscillator uses ________. 2

(e) Transfer gain Af of a feed back amplifier is given by ________. 2

(f) The maximum theoretical collector circuit efficiency of class B amplifier is 2

(i) 15% (ii) 25%

(iii) 50% (iv) 78.5%

(g) In a class AB amplifier with sinusoidal input signal, the output current flows for ________. 2

2. (a) Explain how is FET used as a Voltage Variable Resistance (VVR) ? Define 7

(i) transconductance g_m

(ii) drain resistance r_d

(b) How are the power amplifiers classified ? Explain each type. Draw the circuit diagram of a Class AB push - pull amplifier with its working. 7

3. (a) Explain the working of a Wein - bridge oscillator. Derive an expression for the frequency of oscillation. What are the merits and demerits of this oscillator ? 7

(b) Explain the effect of negative feedback on 7

(i) gain and stability

(ii) distortion of an amplifier

4. (a) Explain the working of UJT as relaxation oscillator. Give their application. **7**

(b) Draw the block diagram of CRO, and explain the function of time base generator and Trigger circuit of CRO. **7**

5. (a) Sketch I_R and V_o w.r.t time for the n/w shown in figure (1) for the input V_i shown in the same figure. Assume that both diodes are silicon type $R_f = 0\Omega$ and $R_r = \infty$ with $V_f = 0.7V$. **7**

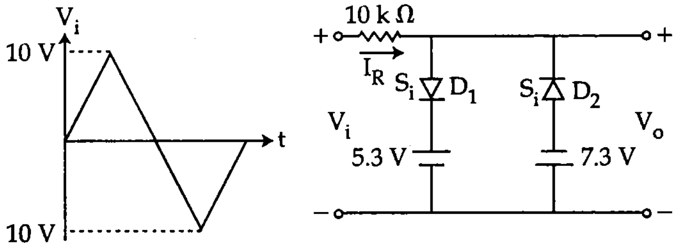

Figure (1)

(b) Determine output voltage V_0 for the circuit shown in figure (2) for the i/p signal shown in same figure. **7**

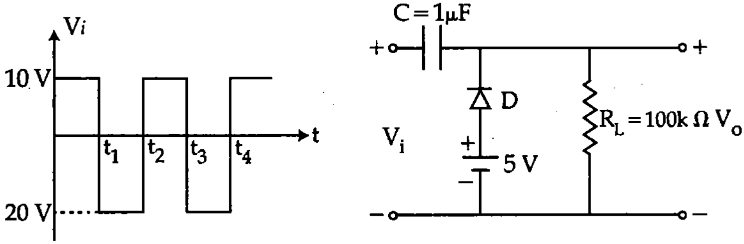

Figure (2)

6. (a) What is the need for trouble shooting ? Explain the important steps for testing. 7

(b) Derive the input resistance and o/p resistance of current series feedback. 7

7. (a) Draw and explain the working of Monostable Multivibrator. Give its specific application. 7

(b) Consider the class B amplifier of figure (3) with $R_L = 16\Omega$ and $V_{CC} = 12V$. If the i/p ac signal produces a peak voltage o/p of $V_m = 6V$ across the load resistor R_L, find the i/p power, o/p power, amplifier efficiency and power dissipated by the transistor. 7

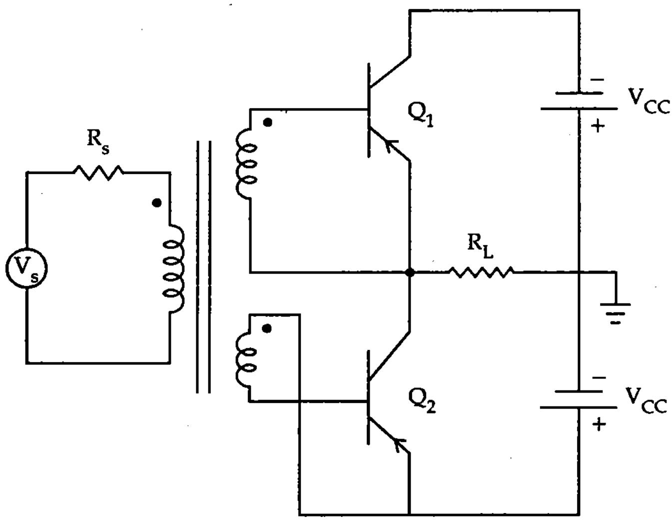

Figure (3)

8. Write short note on ***any four*** of the following : **3.5x4=14**

(a) Classification of feedback

(b) Barkhansen criterion

(c) Hartley Oscillator

(d) Miller sweep generator

(e) Enhancement type MOSFET

(f) Active testing.