University of Rajshahi

Department of Computer Science and Engineering

B.Sc.Engg.Part-1 Odd Semester, Examination-2013

Course: APEE 1131 (Electrical Circuit and Electronics)

Time: 3Hrs. Full Marks : 52.5

[Answer SIX (06) questions taking at least THREE (03) from each Section]

**Section A**

1. a) What is stability facetor? Show the stability factor 2.75

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b) Show the relationship between α and β for a transistor? 2

c) How will you draw thw load line? Why it is so impotean? 2

d) For a certain transistor, Ic =500 mA, I =50,µA, IB∞=5µA. Determine i) value

for α,β and IE ii) the new level of required to make Ic =10mA. 2

2. a) State and prove maximum power theorem. 4.75

b) In figure-1, let the battery e,m,fs be 6v and 12v, their internal resistence 0.5Ω and 1Ω. The values of the resistances are as indicated. Fine the current flowing in indifferent brances and voltage across 6Ω resistor. 4

3. a) What is filter? What are the different kinds of flters? 2

b) Deduce an expression for cut off frequency of a law pass filter. 3.75

C) Cut off frequency and characteristics impedance of a high pass filter are 20000 c/s and 600 ohms respectively. Compute the value of the shunt and series elements for T type filter. 3

4. a) What is p-n junction diode? How can you use a junction diode as a rectifier? Explain. 3

b) Draw the V-I characteristics of a diode? 1.75

c) Briefly discuss the operation of a half wave rectifier. Show the effect of a shun capacitor in the rectifie. 4

**Section B**

5. a) What is an operational amplifier? What do you know about input bias current and input voltage? 4

b) Draw a circuit diagram of a inverting amplifier and find out its voltage gain 4.75

6. a) What is amplifier? What do you mean by class A, class B, and class C amplifier? 2

b) Discuss the characteristics of a CB amplifier? 2.75

c) Show that there is phase reversal between input and output of a CB amplifier? 4

7. a) What is feedback amplifier? Write principles of a feedback amplifer? 6

b) What is oscillator? Draw the circuit diagram of stable and monostable multivibrator. 2.75

8. a) What is LCD? Describe the working principle of LCD. 3.75

b) What are the advantage of LCD? 2

c) What is P-N photodiode? Why it work in reverse biased condition? 3