

VP & RPTP SCIENCE COLLEGE

Vallabh Vidyanagar

First Internal Test

BSc [Semester - V] Subject: Physics Course: US05CPHY05

Title: Analog Devices and Circuits

Date: 5-10-2013, Saturday

Time: 3.30 pm to 5.00 pm

Total Marks 30

Q-1 Multiple Choice Questions: [One mark each]

6

[A] A JFET

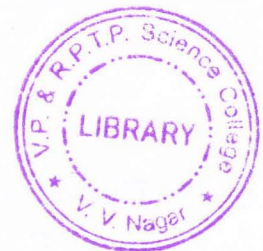
- (i) Is a voltage-controlled device (ii) Is a current-controlled device
(iii) Has a low input resistance (iv) Has a very large voltage gain

[B] Which of the following devices revolutionized the computer industry?

- (i) JFET (ii) D-MOSFET (iii) E-MOSFET (iv) Power FET

[C] The correct sentence is

- (i) For CE configuration, h_{fe} is negative and h_{ie} is positive.
(ii) For CE configuration, h_{ie} is negative and h_{fe} is positive.
(iii) For CE configuration, h_{ie} and h_{fe} both are positive.
(iv) For CE configuration, h_{ie} and h_{fe} both are negative.



[D] The correct relation between h_{fe} , f_{β} and (f_T) is

- (i) $h_{fe} \times f_{\beta} = f_T$ (ii) $h_{fe} \times f_T = f_{\beta}$ (iii) $h_{fe} = f_T \times f_{\beta}$ (iv) None of these

[E] The conversion efficiency of class-A transformer coupled power amplifier with resistive load is _____.

- (i) 25 % (ii) 50 % (iii) 78.5 % (iv) 0 %

[F] The harmonic distortion is due to

- (i) Linear nature of the active devices (ii) Nonlinear nature of the active devices
(iii) Does not depends on active device (iv) None of the above

Q-2 Answer the following questions in short. 6
(Attempt any three questions) [Two marks each]:

- [A] What is FET? What are the types of JFET?
- [B] Describe Gate bias.
- [C] Discuss the effect of an emitter bypass capacitor on low frequency response.
- [D] Discuss classification of small signal tuned amplifiers.
- [E] Define conversion efficiency of an amplifier.
- [F] Draw labeled circuit diagram of other class B push pull amplifier without transformer.

Q-3 Draw and describe transconductance curves of FET. 6
OR

Q-3 What is MOSFET? Discuss the enhancement mode MOSFET. 6

Q-4 Define and explain any two h-parameters of transistor. 6

OR

Q-4 Discuss in detail the factors on which high frequency response of a CE amplifier depends. 6

Q-5 Describe a push pull amplifier which has conversion efficiency is equal to 50%. 6

OR

Q-5 Write a note on class B push pull amplifier. 6

