

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 2]

Uni. Roll No. ....

Program/ Course: B.Tech (Sem. 3<sup>rd</sup>)  
Name of Subject: Analog Electronics  
Subject Code: PCEE-102  
Paper ID: 16065

Time Allowed: 3 Hours

Max. Marks: 60

**NOTE:**

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

**Section – A**

[Marks: 02 each]

**Q1.**

- a) What is Quiescent 'Q' point?
- b) Define TUF.
- c) Differentiate transport factor and emitter efficiency.
- d) Illustrate advantage of E-MOFET and D-MOSFET.
- e) Comment about feedback in Oscillator.
- f) List the features of ideal OP-Amp.

**Section – B**

[Marks: 04 each]

**Q2.** Derive mathematical relation for FWR as given below.

- a) DC output current b) RMS value of AC output current c) Peak inverse voltage

**Q3.** Explain different clamper circuits with appropriate example

**Q4.** Consider the transistor circuit, where  $V_{CC}=22.5V$ ,  $R_C=5.6k\Omega$ ,  $R_E=1k\Omega$ ,  $R_2=10k\Omega$  and  $R_1=90k\Omega$ ,  $\beta=55$ ,  $V_{BE}=0.6V$ . The transistor operates in the active region. Determine the operating point of the transistor and stability factor.

**Q5.** Draw I-V characteristics of D-MOSFET & also explain the importance of transfer characteristics.

**Q6.** Explain the transistor hybrid model and also draw small signal model for common emitter amplifier circuit.

**Q7.** Define voltage follower.

EVENING

13/11/2019

[Marks: 12 each ]

Section - C

Q8. A full wave rectifier has load resistance of  $500\Omega$  and the used diodes has internal resistance of  $50\Omega$ . If turn ratio from primary to half of secondary of transformer is 5:1 and primary winding is 240V rms, 50Hz then calculate:  
a) dc and ac output current b) dc and ac output voltage c) dc diode voltage and current  
d) efficiency and regulation factor e) PIV and ripple frequency f) RMS output current

OR

What is voltage divider biasing in MOSFET? Explain mathematical as well as graphical approach for it with appropriate diagram.

Q9. Explain the below terms:

- a) Slew rate
- b) CMRR
- c) Thermal Runaway
- d) Wien Bridge Oscillator

OR

Explain Instrumentation Amplifier with appropriate diagram. Also differentiate Integrator and differentiator

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