

FACULTY OF ENGINEERING & TECHNOLOGY
S.E (EC/ECT/IEC/E&C) Year Examination -June – 2015
Electronics Devices & Circuits -I
(Revised)

[Time: Three Hours]

[Max. Marks:80]

“Please check whether you have got the right question paper.”

- i) Q.No1 from section A and Q. No 6 from sections B are compulsory.
 ii) Solve any two questions from Q.No;2,3,4 and 5 and Solve any two questions from Q.no,7,8,9and 10

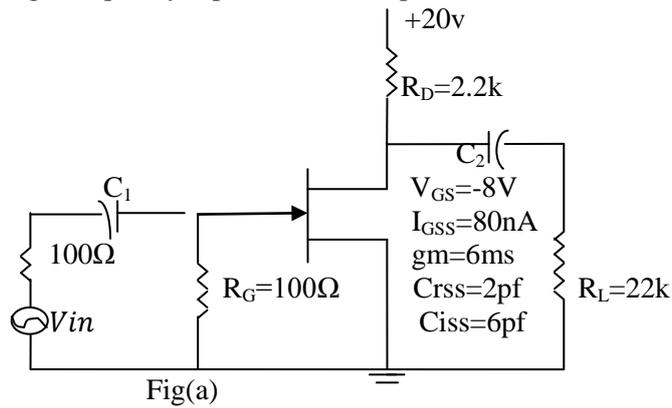
SECTION-A

- Q.1 Solve any five from the following 10
- What is Volta cap diode?
 - Explain the avalanche break down.
 - Explain the role of an inductor in π -type filter .state applications of π -filter.
 - Draw the circuit diagram of RC coupled amp filter.
 - What is emitter follower?
 - Draw the common drain circuit of an FET.
 - What is boot strapping?
 - “A BJT is preferred to JFET for large voltage gain” Justify.
- Q.2 a) Draw the schematic diagram of a p-n junction ,including the charge desity ,electric field intensity and potential – energy barriess at the junction .commnet on Volte –ampere chareteristic of P-N junction. 08
 b) What is solar cell? Explpain how a photo volztic cell generates electricity when irradiated by sunlight . State two application of Solar cell. 07
- Q.3 a) Draw a full wave rectifer circuit using capacitor filter ,,Show input and output wave froms . 08
 b) Consider a single stage CE amplifer with $R_s = 1k\Omega$, $R_1 = 50k$, $R_2 = 2k\Omega$, $R_c = 1k\Omega$, $R_L = 12k\Omega$, $h_{fe} = 50$, $h_{ie} = 1.1k$. find A_I , A_v , R_i , R_o . 07
- Q.4 a) Explain how MOSFET works as ,i)An Amplifer ii)As a SWITCH. 08
 b) How MOSFET capacitance can be vary with respect to the operating regions of MOSFET, Explain . 07
- Q.5 Write notes on 15
- Point Conact Diode .
 - Dartington Amptcfer .
 - CM OS Inverter.

SECTION-B

- Q.6 Solve any five from the following . 10
- What is Optocoupler?
 - Compare the Bote plot with a frequecy curve .
 - What is current series feed back ?
 - An amplifer has a Voltage gain of 1000 without feedback .What will be the gain if a negative feed back path with a feed back factor 0.009 is connected .
 - What is Bark Kausar criteria for oscillation ?
 - Explain the operation of Tank circuit .
 - What is Gain Band width Product ?
 - What is Miller’s effect?

- Q.7 a) What is Hetro junction Bipolar transistor ? Explain 08
 b) Determine the high frequency reponse of the amplifier circuit shown in fig(a). 07



- Q.8 a) Give with small mathematical analysis, the effect of Negative feedback on Input & output Impedance , Voltage and current gains, Band width , Noise & Distortion of an amplifier 08
 b) Explain the operation of RC phase shift oscillator , state its limitations . 07

- Q.9 a) Draw and explain the small signal high frequency hybrid –II model of a transistor. 08
 b) Define the following parameters : 1) f_{α} , 2) f_{β} , 3) f_T , 4) G.B.W 07

- Q.10 Write notes on: 15
 a) Video Amplifier .
 b) Emitter follower at high frequency.
 c) Concept of stability in electronics circuits.