**Reg. No. :** | | | | | | | | | | |

# Question Paper Code: 41527

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Second Semester

Electronics and Instrumentation Engineering

14UEI207 - ELECTRONIC DEVICES AND CIRCUITS

(Common to Instrumentation and Control Engineering)

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. What is the value of the transition capacitance for a silicon diode when $V_D$=0

   (a) 1pF (b) 3 pF (c) 5 pF (d) 10 pF

2. The input resistance of the base of an emitter follower is usually

   (a) Very low (b) very high (c) shorted to ground (d) open

3. Which of the following fastest switching device?

   (a) JFET (b) BJT (c) MOSFET (d) Triode

4. MOSFET is said to be operate in depletion mode when

   (a) $\Delta V_{gs} > 0$ (b) $\Delta V_{gs} <= 0$ (c) $\Delta V_{gs} = 0$ (d) none

5. The input and output signals for CE amplifier are always

   (a) Equal (b) in phase

   (c) out of phase (d) complementary to each other

6. Which amplifiers have the highest overall efficiency?

(a) Class A (b) class B or AB
(c) class C (d) class D

7. In a feedback amplifier, if the feedback fraction β is positive, then the feedback

(a) Degenerative (b) regenerative
(c) negative (d) reverse

8. In the colpitts oscillator, the elements $X_1$ and $X_2$ are _____ and $X_3$ is a(n)

(a) Inductors, capacitor (b) capacitors, inductor
(c) Capacitors, resistor (d) inductors, resistor

9. An op-amp clamper circuit is also referred as

(a) DC cutter (b) DC inserter (c) DC lifter (d) DC leveller

10. The _____ is(are) an adjustable voltage regulator.

(a) Series 7800 ICs (b) series 7900 ICs
(c) LM317 (d) none of these

PART - B (5 x 2 = 10 Marks)

11. Show the VI characteristics of a tunnel diode.

12. Draw the transistor equivalent circuit of SCR.

13. What is an R-C coupled amplifier?

14. What is Barkhausen criterion?

15. List the important characteristics of a voltage regulator.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the working of transistor as an amplifier. (10)

(ii) Derive the stability factor for a base bias circuit. (6)

Or

(b) (i) Describe the operation of the p-n junction diode with V-I characteristics. (10)

(ii) Explain briefly the Schottky diode. (6)

17. (a) (i) Explain the construction and working of UJT. (8)

(ii) Draw the drain and transfer characteristics of a JFET and Explain. (8)

Or

(b) Explain the structure, working and characteristics of N channel enhancement type MOSFET. (16)

18. (a) Draw the h-parameter equivalent circuit for a typical common emitter amplifier and derive the expression for Ai, Ri, Av and Ro. (16)

Or

(b) Prove that the maximum efficiency of class B amplifier is 78.5% and that of class A type is 50%. (16)

19. (a) Explain the working of Wein bridge oscillator with neat diagram. Also derive the expression for oscillator frequency. (16)

Or

(b) Explain RC phase oscillator and derive its frequency of oscillation. (16)

20. (a) Explain the working and waveforms of monostable multivibrator. (16)

Or

(b) Explain the working of a Schmitt trigger with a neat sketch. (16)

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