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Seat No.:

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SARDAR PATEL UNIVERSITY
B. Sc (V Semester)
US05CELE-01
Discrete and Linear Circuits Paper-1

11/11/2019, Monday
10.00 am to 1.00 pm
Total Marks 70

Q.1 Multiple Choice Questions:

10

1. Which signal is sampled from the output circuit in the transconductance amplifier?
 - (i) Voltage
 - (ii) Current
 - (iii) resistance
 - (iv) Conductance
2. In the feedback amplifier, the sensitivity D is equal to
 - (i) $A\beta$
 - (ii) $1 - A\beta$
 - (iii) $1 + A\beta$
 - (iv) $1/1 + A\beta$
3. In Phase shift oscillator one RC network gives phase shift of
 - (i) 30°
 - (ii) 90°
 - (iii) 60°
 - (iv) 180°
4. Which oscillator is suited to the range of frequency from few kilo hertz to few megahertz
 - (i) Phase shift oscillator
 - (ii) Crystal oscillator
 - (iii) Wein Bridge oscillator
 - (iv) Hartley Oscillator
5. For Class A amplifier current in output flows for
 - (i) one half of input cycle
 - (ii) more than onehalf of input cycle
 - (iii) whole input cycle
 - (iv) None of the above
6. Radio frequency oscillators generates
 - (i) 20 Hz to 20 KHz
 - (ii) 20 KHz to 30 MHz
 - (iii) 30 KHz to 300 MHz
 - (iv) None of the above
7. Distortion introduced by non-linearity of dynamic transfer characteristic can be eliminated by
 - (i) Audio Amplifier
 - (ii) Pushpull amplifier
 - (iii) Radio amplifier

(1)

(P.T.O.)

- (iv) None of above
8. IC -----is called dissipating IC
- (i) 741
(ii) 723
(iii) 7805
(iv) 7905
9. In shunt regulator circuit, Zener is connected in
- (i) series with load
(ii) parallel with load
(iii) Both (i) and (ii)
(iv) None of above
10. 79XX is a ----- regulator IC
- (i) positive voltage
(ii) negative voltage
(iii) complex voltage
(iv) None of above

Q. 2 Answer any Ten questions in short.

20

1. State general characteristics of negative feedback.
2. Define De sensitivity?
3. What are the four possible topologies of feedback amplifier?
4. State two differences Hartley oscillator and Colpitt's oscillator.
5. Where crystal oscillators are used and why?
6. Sketch the circuit of Phase shift oscillator using BJT?
7. Draw circuit diagram for Pushpull amplifier with complementary symmetry.
8. What is difficulty with complementary symmetry amplifier?
9. What do you mean by crossover distortion?
10. Draw block diagram of regulated power supply
11. List maximum ratings of IC regulator?
12. Name the protection techniques for transistor in IC regulated power supply.

Q.3 Explain with neat diagram the amplifier as Voltage amplifier, Current amplifier, Transconductance amplifier and Transresistance amplifier. 10

OR

Q.3 Explain general characteristics of negative feedback. 10

Q. 4 Draw the circuit diagram of Wein bridge oscillator and explain it in detail. 10

OR

Q.4 Draw circuit diagram of crystal oscillator and explain it in detail. 10

Q.5 Describe in detail Class A Pushpull amplifier. 10

OR

Q.5 Explain in detail Second Harmonic Distortion in amplifiers. 10

Q.6 Describe characteristics (parameters) of a regulator IC-723. 10

OR

Q.6 Explain block diagram of Switching regulator IC. 10