SHRI S.H.KELKAR COLLEGE OF ARTS, COMMERCE & SCIENCE, DEVGAD

FIRST TERM END EXAMINATION

USPH302

MAX.MARKS:75 DURATION: 2 HOURS

N.B (i) All questions are compulsory.
(ii) Figures to the right indicate full marks.
(iii) Use of non-programmable calculator is allowed.

Q 1.A) Attempt **any One.** 08

1. What are the methods of transistor biasing? Explain base resister bias.
2. What are the types of feedback of amplifiers? And give general theory of feedback.

B) Attempt **any One.** 08

1. Explain the stabilisation and its need for the transistor.
2. Explain the following terms in relation to amplifiers
   i) input resistance ii) output resistance

C) Attempt **any One.** 04

1. In collector feedback biased silicon transistor circuit. Rc=1K, R_b=120K and β=100. Determine the operating point if v_{CC} =+12V
2. It is desired to set the operating point at 4V, 1.2 mA by biasing silicon transistor with collector feedback resistor R_B. If β=120, find the value of RB.

Q. 2. A) Attempt **any One.** 08

1. Explain phase shift oscillator
2. By means of a neat circuit diagram explain the working of Op-amp as Integrator. Derive the necessary relation

B) Attempt **any One.** 08

1. Write a note on requirements of sustained oscillators.
2. Explain non-inverting amplifier.

C) Attempt **any One.** 04

1. A colpitt's oscillator is designed by using the following passive component, C_1=0.02 μF, C_2= 0.002μF and L=10μH. calculate oscillating frequency.
2. In a typical circuit of Wien bridge oscillator, what should be the value of R when the frequency of 1 KHz is required with C=0.1 Wien bridge oscillator μF? If R_3 is 1.5 K. what must be the value of R_4?

Q.3 A) Attempt **any One.** 08

1. State the difference between latch and flipflop
2. Explain the types of registers in brief.

B) Attempt **any One.** 08

1. With circuit diagram explain edge triggered JK flipflop
2. Explain the types of the counters.

C) Attempt **any One.** 04

1. Explain parallel in parallel out (PIPO) shift register.
2. Explain clocked pulses in flipflop.

Q.4.Attempt any **Three** 15

1. Write a note on conditions of faithful amplification.
2. Determine the open circuit voltage of the source, v_s to provide an amplifier input voltage v_i of 0.25 volt when the internal resistance of the source is 50ohms.
3. Determine the maximum frequency that may be used for an opamp with slew rate 0.5 V/μs. the circuit has R_f=240Kohm, R_1= 10Kohm and input voltage v_i=0.02V having angular frequency $\omega=300x10^3$ rad/s.
4. What are the effects of positive feedback in oscillators?
5. Write a note on flipflop.
6. Explain parallel in serial out shift register. (PISO)