Exam No: _____

GANPAT UNIVERSITY

B. TECH SEM- III (MC) REGULAR EXAMINATION– NOV-DEC 2016

2MC301: Analog Circuits & Devices

TIME: 3 HRS **TOTAL MARKS: 60**

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.

(2) Figures on right indicate marks.

(3) Be precise and to the point in answering the descriptive questions.

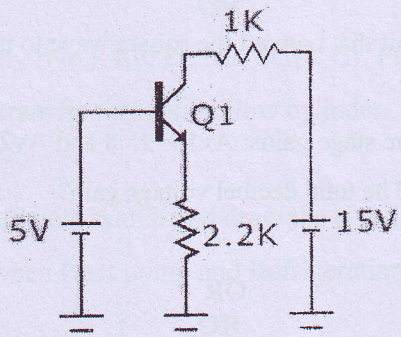
(4) Use second approximation and β_{dc}=100 if not mentioned.

SECTION: I

Q.1

A. Explain all three approximation of transistor. **(04)**

B. Find the Q point for following emitter biased circuit with β_{dc}=100. (Use second approximation) **(03)**



C. Give basic idea of photo transistor and opto-couplers. **(03)**

OR

Q.1

A. Explain all regions of collector curve. **(04)**

B. For base biased circuit with V_{CC} = 8V, V_{BB} =4V, R_B = 100KΩ, R_C = 1.5KΩ, use the second approximation to calculate the base current. What is the voltage across the base resistance? Find collector current if β_{dc}=150. **(03)**

C. Discuss emitter biased LED driver how it is different from base biased LED Driver. **(03)**

Q.2

A. Draw VDB circuit with V_{CC} = 10V, R_1 =10KΩ, R_2 = 2.2KΩ, R_C = 3.6KΩ, R_E = 1KΩ, and find Q point. **(04)**

B. Give short note on voltage waveform for based biased amplifier. **(03)**

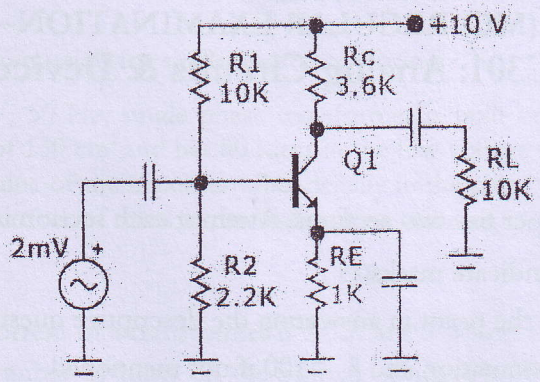
C. Derive equation for voltage gain using π model. **(03)**

OR

Q.2

A. Explain VDB load line and Q point. (04)

B. Find the voltage gain for figure given below (Use second approximation if needed) (06)



Q.3

A. Discuss clipping of large signals for different location of Q points on ac load lines, also explain concept of MPP. (05)

B. Classify the amplifier on the base of range of frequency. (05)

SECTION: II

Q.4

A. Design and explain the circuit that convert the square wave to triangular wave. (04)

B. Explain Twin-T oscillator. (04)

C. A two stage amplifier has the stage gains: Av1 = 25.8 and Av2 = 117. What is the decibel voltage gain of each stage? The total decibel voltage gain? (02)

OR

Q.4

A. Explain voltage controlled oscillator (VCO). (04)

B. Explain zero crossing detector using OPAMP. (03)

C. Prove that for good OPAMP the CMRR value is very high. (03)

Q.5

A. Explain Summing, Scaling and Averaging amplifier using OPAMP in inverting configuration. (05)

B. Draw and explain the functional block diagram for 555 timer. (05)

OR

Q.5

A. Explain inverting comparator using OPAMP as a Schmitt trigger. (05)

B. Explain monostable operation mode in 555 timer. (05)

Q.6

A. Explain difference (subtractor) amplifier using OPAMP. (05)

B. Prove that a differential amplifier reject the common signals apply at inputs. (05)

----------END OF PAPER----------