GANPAT UNIVERSITY
B. TECH SEM- IV (BM&I) CBCS REGULAR EXAMINATION– APRIL-JUNE 2016
2BM401: ANALOG INTEGRATED ELECTRONICS

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) Conventional terms and notations are used.
(4) Draw figures & circuits, write equations and assume data wherever necessary.

SECTION: I

Q.1   **(10)**

a)   Define Integrated Circuits (IC). Differentiate between Analog and Digital IC's. Write its scale   **5**
of integration.

b)   Derive following equation for closed loop inverting amplifier given below: **5**

$$1) \; A_F = -\frac{R_F}{R_1} \quad 2) \; A_F = \frac{AK}{1+AB}$$

Calculate output voltage for gain 10 and input voltage 2v.

OR

Q.1   **(10)**

a)   Draw different configurations of Differential amplifier using transistor. What is single ended   **5**
and double ended operation?

b)   Explain integrator with neat circuit diagram and write equation for calculating frequency.   **5**
Draw the output waveform if input is sine and square wave.

Q.2   **(10)**

a)   Describe how inverting configuration of OP-AMP can work as summing, scaling and   **5**
averaging amplifier. Write output voltage equations.

b)   Draw and explain circuit diagram of zero crossing detector. Draw input-output waveforms for   **5**
non-inverting comparator of Op-Amp if input is 4v and Vref is +2V.

OR

Q.2   **(10)**

a)   What is Switching Mode Power Supply (SMPS)? Describe its working principle.   **5**

b)   Write note on voltage controlled Oscillator.   **5**

Q.3   **(10)**

a)   Design first order High pass Butterworth filter at 1KHz cutoff frequency with pass band gain   **5**
of 2. Plot its frequency response. Assume necessary data.

b)   Draw differential amplifier with one Op-Amp. Derive equation of voltage gain.   **5**

Q.4 (10)

a) With the help of block diagram explain working of 555 timer as Monostable Multivibrator? 5

b) Define: Filter. Give classification of filter. What are the advantages of active filter over passive filter? Write application of filter. 5

OR

Q.4 (10)

a) Construct ± 5 V fixed power supply using voltage regulated IC. 5

b) Explain working of sample and hold circuit using MOSFET. 5

Q.5 (10)

a) Explain pin diagram of 555 timer and state its applications. 5

b) Describe working of Instrumentation amplifier with circuit diagram and equations. Calculate the output voltage if inputs to amplifier is 6mv and 4mv respectively. Keep gain of amplifier 100. 5

OR

Q.5 (10)

a) With the help of circuit diagram explain RC phase shift oscillator. Write equation to calculate frequency if R is 10KΩ and C is 0.01μF. 5

b) Define duty cycle. Write note on switching voltage regulator. 5

Q.6 (10)

a) Write shot note on: Square wave generator. 3

c) Distinguish between signal generator, oscillator and function generator. 3

b) Write note on V to I converter. 4

---END OF PAPER---