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S-3772

M. Sc. (Tech.) Instrumentation (Part- I) (Sem. I) Examination

March / April – 2011

INS-12 : General Electronics : Paper - II

(New Course)

Time : **3** Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ M. Sc. (TECH.) INSTRUMENTATION (PART-1) (SEM. 1)

Name of the Subject :

☛ INS-12 : General Electronics : Paper - 2 (New)

☛ Subject Code No. : 3 7 7 2 ☛ Section No. (1, 2,.....) : NIL

Seat No. :

Student's Signature

(2) Attempt all questions.

(3) Use of programmable calculator is allowed.

(4) Assume suitable data whenever necessary.

1 Answer the following questions : (any **three**) **18**

(a) Define zener diode? Draw a circuit uses a breakdown diode to regulate voltage across a load. **6**

(b) (1) What is difference between JFET and MOSFET ? **2**

(2) What are the Four advantages of integrated circuit ? **2**

(3) Define single stage transistor Amplifier. **2**

(c) (1) What are the different ideal characteristics of an op.amp ? **3**

(2) Draw the circuit of an op-amp integrator and indicate how to apply the initial condition. Explain the function or it's operation. **3**

(d) (1) Write short note on cascade amplifier . **4**

(2) Define input offset voltage and input offset current. **2**

2 Answer the following questions : (any **three**) **18**

(a) (1) Draw a darlington pair emitter follower ckt. **2**

(2) Derive an expression for the gain of negative voltage feedback amplifier. **4**

(b) (1) What do you understand by ASCII code ? **2**

(2) Convert the following number. **4**

(a) $(100110101)_2$=($)_8$

(b) $(2AF)_{16}$ =($)_8$

(c) $(623)_8$=($)_2$

(d) $(128)_{16}$= ($)_8$

(c) (1) Draw the logic circuit for this boolean equation. **2**

$y = \overline{A}\overline{B}\overline{C} + A\overline{B}\overline{C}D + AB\overline{C}D + ABC\overline{D}$

(2) Write short note on shift registers. **4**

(d) (1) With the help of circuit diagram explain UJT relaxation oscillator **4**

(2) The intrinsic stand off ratio for a UJT is determined to be 0.6 if the interbase resistance is 10 KΩ . What are the value of RB_1 and RB_2 ? **2**

3 Answer the following question : (Any **three**) **18**

(a) What is k-map? Explain the k-map simplification of logical function in sop form and describe Don't care condition. **6**

(b) With the help of timing diagram. Explain a decode counter. **6**

(c) (1) Write short note on A to D converters. **3**

(2) What are the advantages of negative feedback ampilifiers ? **3**

(d) (1) Write short note on transistor transistor logic (TTL) **3**

(2) Describe a clocked R_S flip flop. **3**

4 Answer the following question : **16**

(a) (1) Explain in detail data selector multiplexer. **6**

(2) Explain RAM and ROM organization. **2**

(b) (1) What is difference between positive logic and negative logic ? **2**

(2) Describe the operation of half substractor. **4**

(3) What is difference between positive feedback and negative feedbck amplifiers. **2**
