[3762]-133

# S.E. (Electrical) (I Sem.) EXAMINATION, 2010

#### ANALOG AND DIGITAL ELECTRONICS

#### (2008 COURSE)

### Time: Three Hours

Maximum Marks: 100

- N.B. :— (i) Answers to the two Sections should be written in separate answer books.
  - (ii) Neat diagrams must be drawn wherever necessary.
  - (iii) Your answers will be valued as a wingle.
  - (iv) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
    - (v) Assume suitable data, if ne essary.

## SECTION I

1. (A) Draw and explain KC coupled BJT amplifier.

[8]

(B) Draw and explain configuration of BJT amplifier with input and output characteristic. [8]

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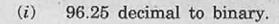
- 2. (A) Draw and explain construction of FET with its characteristics. [8]
  - (B) Splain push-pull amplifier with neat circuit diagram. [8]

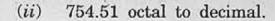
P.T.O.

| 3.      | (A)     | with the neip of heat circuit diagram explain application of         |
|---------|---------|--|
| 88      | 1-[3    | op-amp as:   |
|         | T.      | (i) Schmitt Trigger  |
|         |         | (ii) Precision rectifier. [12]                                       |
| 100     | (B)     | Explain application of op-amp as differentiator. [6]                 |
| ed (fin | agnal I | probability and library small Or surplied of more interests -i. Also |
| 4.      | (A)     | Compare open-loop and closed-loop configuration of op-amp            |
|         |         | on the basis of gain, input impedance, output impedance,             |
|         |         | bandwidth. [8]   |
| aline:  | (B)     | What is instrumentation applifier ? Draw its circuit using           |
|         |         | op-amp and explain it. Also give its applications. [10]              |
| 5.      | (A)     | Draw the construction degram of IC 555 and explain the function      |
|         | 81      | of each pin. [8]   |
| [8]     | (70)    | Explain LM317 IC as adjustable voltage regulator. [8]                |
| Tugo    | (B)     | Explain LM317 IC as adjustable voltage regulator. [8]                |
| [8]     |         | Orași Durbalunta burgina don   |
| 6.      | (A)     | What are different configuration of active filters? Draw the         |
| tul?    | HATE    | Requency response of each configuration. [8]                         |
| [8]     | (8)     | Explain generation of sine wave using op-amp with related circuit    |
| [8]     | 2       | diagram. [8]   |
|         |         | uiagram  |

### SECTION II

7. (a) Convert the following numbers:





- (iii) 111101100 binary to octal.
- (iv) 7BC.A3 hexadecimal to octal.



(b) Using Boolean Algebra show that :

(i) 
$$\overline{x}y\overline{z} + \overline{x}yz + xy\overline{z} + xyz = y$$
 [2]

(ii) 
$$D(\overline{A} + B) + \overline{B}(C + AD) = D + \overline{B}C$$
 [3]

$$(iii)$$
  $(A + B) (A + C) = A + BC$  [3]

- 8. (a) Draw the logic symbol and construct the truth table for each of the following gates and write the output equation :
  - (i) Two input NAND gate
  - (ii) Three input OR gate
  - (iii) Two input EXOR gate
  - Three input AND gate
  - (v) Single input NOT gate. [10]
  - (b) Explain SOP and POS form of K-map for three variables. [8]

| ve JK flip-flop in detail with input-output |
|---|
| [8]   |
| shift registers :                           |
| out shift register.                         |
| lel out shift register. [8]                 |
| Or C  |
| ng counter in detail with truth table and   |
| [8]   |
| operation of MOD-X asynchronous counter     |
| agram. (8)                                  |
|   |
| A R. V. P. AU III. PLANT TO SHE             |
| <b>Q</b> [8]                                |
| ed DAC in detail. [8]                       |
| Or  |
| lexer using two 1 : 4 demultiplexers.[8]    |
| R in detail. [8]                            |
| and (CAsonigal south)                       |
| nies 1998 Begins (Griffel von 1997)         |
| word state both test designed               |
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