UN – 323

V Semester B.C.A. Degree Examination, November/December 2015
(Y2K8 Scheme) (F + R)
Computer Science
BCA – 502 : COMPUTER ARCHITECTURE
(100 – 2013-14 & Onwards) (90 – Prior to 2013-14)

Time : 3 Hours Max. Marks : 90/100

Instructions: *1) Section **A, B, C** is common to **all**. Section **D** is applicable to the students of **2011-12** and Onwards.*
*2) **100** marks for students of **2011-12** and onwards. **90** marks for Repeaters prior to **2011-12**.*

SECTION – A

I. Answer **any ten** questions. **Each** carries **two** marks. **(10×2=20)**

1) State and prove Demorgan's law.
2) Draw the logic diagram of the Boolean function F = AB + A′ B using NAND gates only.
3) What is Decoder Expansion ?
4) What is unidirectional and bidirectional shift register ?
5) Convert $(736.4)_8$ to decimal and binary.
6) What is self complementing code and weighted code ?
7) What are the two types of control organization ?
8) How many bits are needed to specify an address for a memory unit of 4096 words ?
9) What is PSW ?
10) What is an external interrupt ? Give an example.
11) What are peripherals ?
12) What is memory management system ?

P.T.O.

SECTION – B

II. Answer **any 4** full questions. **Each** full question carries **14** marks : **(14×4=56)**

11) Design a combinational logic circuit with 3 input x, y, z and the three output A, B, C. When the binary input 0, 1, 2 or 3, the binary output is one greater than the input ? When the binary input is 4, 5, 6 or 7 the binary output is one less than the input ? **14**

12) a) List all the unused combinations in BCD, 2421, Excess – 3 and Excess – 3 gray code. **(4+10)**

b) Derive a circuit for a 3 bit parity generator and a 4-bit parity checker using an even parity.

13) Explain with a neat block diagram how the basic computer registers are connected to a common bus. **14**

14) a) Explain 3 types of data manipulation instructions. With an example for each. **(6+8)**

b) What are addressing modes ? Explain the different types of addressing modes.

15) Explain the working of a basic computer with a neat flow chart. **14**

16) a) Explain the working of a DMA controller with a block diagram. **(7+7)**

b) Explain associative memory with a neat block diagram.