

HSC 2016 Model Question**(English Version)****Subject: ICT-Information and Communication Technology (Theory)****Time: 03 Hours****Full Marks—75****Section-A****Answer any four (4×10=40)**

1. a. What is global village? Explain the global village with perspective of healthcare and employment. 1+4
b. What do you mean by virtual reality? Discuss its importance in daily life. 1+4
2. a. What is nanotechnology? Describe the uses of nanotechnology in different fields. 1+4
b. What do you mean by genetic engineering? Discuss in details. 1+4
3. a. Add $(1011.101)_2$ and $(11011.101)_2$ and convert the result into hexadecimal. 3+2
b. What do you mean by Boolean postulates? Write the Boolean postulates for addition and multiplication. 1+4
4. a. Convert $(602.52)_8$ into hexadecimal and $(A9C.6B)_{16}$ into decimal. 5
b. Write down De'Morgan's theorems for three variables and prove it. 5
5. a. What do you mean by number system and base of number system? Discuss about various number systems with their symbols and base. 1+4
b. Subtract $(111.11)_2$ from $(11001.11)_2$ and express the result into octal number. 3+2
6. a. Prove that : $xy + \overline{xz} + yz = \overline{xz} + xy$ 4
b. Simplify :
i) $\overline{X.Y(Z + \overline{X})}$
ii) $\overline{ABC} + A\overline{BC} + AB\overline{C} + ABC$ 6

Section-B

Answer any seven (7×5=35)

1. Describe briefly about artificial intelligence and robotics. 5
2. Describe the method and advantages in the treatment using cryosurgery? 5
3. What is space exploration? Describe the uses of ICT in space exploration. 5
4. What is biometrics? Discuss about behavioral and physical biometrics. 5
5. What is bioinformatics? Where and how bioinformatics are used in Bangladesh? Discuss. 5
6. Add $(7F.A5)_{16}$ and $(266.16)_8$ and convert the result into hexadecimal number. 5
7. Write the equivalent binary, octal and hexadecimal of decimal numbers 1 to 20. 5
8. What is signed number? Subtract $(+8)_{10}$ from $(+12)_{10}$ using 2's complement. 5
9. Describe the commandments of Ethics in using ICT. 5
10. Write the full form: AI, NASA, GPS, DNA, CAD, RFID, GMO, EBCDIC, LSB, ASCII 5