ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

SEMESTER FINAL EXAMINATION **SUMMER SEMESTER, 2019-2020**

DURATION: 1 Hour **FULL MARKS: 50**

CSE 4615: Wireless Networks

Programmable calculators are not allowed.

Figures in the right margin indicate marks. **You need to answer all four questions.**

Write your Student ID and Name on top of the **first page** and **student ID and page no in every page** of the answer script. Submission pdf should be named as **Full_Student_ID<space>Course_Code.pdf**

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1. Determine the best path for a packet transmission in the Energy Harvesting Wireless Sensor Network (EH-WSN) of figure 1(a) from source **S** to destination **D** using Wastage Aware Routing (WAR). Show the wastage calculations for each path/step. Each node label represents battery life and harvest rate. For example, for node 1, remaining battery life is 0.7B while harvest rate is 0.2B. **10**

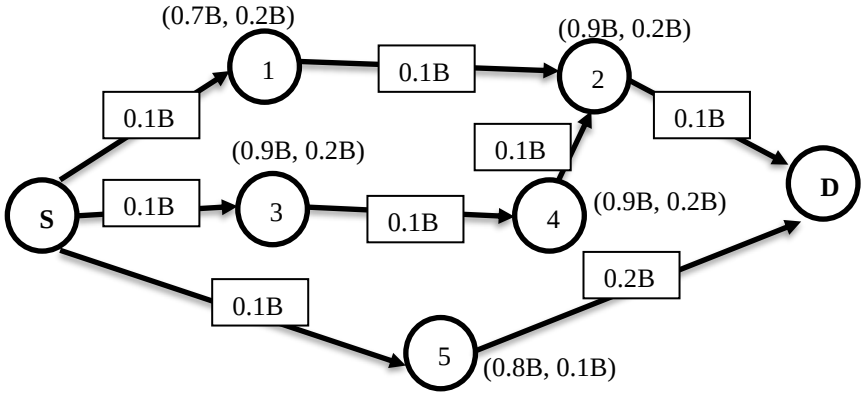

Figure 1(a)

2. Wireless Sensor Networks have many applications and the MAC protocols for each scenario is different so that the network can adapt to any environment. For each of the three following scenarios, mention an appropriate MAC protocol and justify your reasoning: **15**
   i. Collect temperature data from dormant volcanoes to detect eruption.
   ii. Monitoring Natural habitats (like ZebraNet) using visual and GPS data.
   iii. Monitoring the activities in a building using visual/audio sensors (from within the building).

3. For the given network in figure 3(a) select the best path from source **S** to destination **D** when the routing metric is hop-count and ETT, respectively. For each metric, show your calculations for selecting the best path separately. Assume that the size of the probing packet is 150 Bytes. **10**

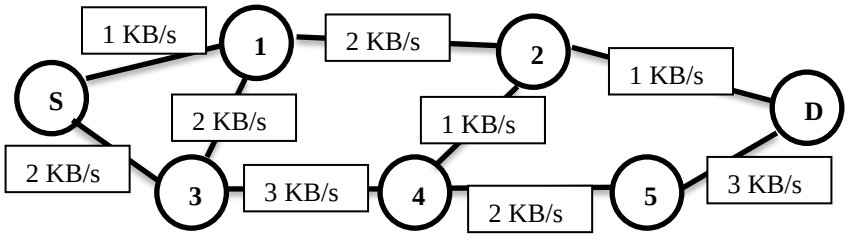

Figure 3(a)

4. For the figure 3(a) form the routing tables of nodes 1, 2, 3, 4, and 5, for the protocols DSDV and AODV. Which of the two protocols are better and why? Give appropriate reasoning. **15**