EECS 116/CS122A – Introduction to Data Management (Sample Midterm)
Midterm Exam (Close Book) Time: 80 minutes

Name:_____SID _____

Assume the e-commercial database shown in the Appendix. Write the following queries in relational algebra. State your assumptions if the semantics is not clear. If you think the query cannot be expressed in relational algebra, you may state so.

1. Find customers who bought an item that was advertised to them.

2. Find customers who bought two of the same item in the same month.

3. Find customers who did not buy any of the items with rating ‘A’.

4. Find customers who bought items priced above the average price of the item in that category in 2017.

5. Find customers who only bought items with rating ‘A’.

6. Find customers whose annual expenditure had increased every year from 2015 to 2017.

7. Find customers who had spent over $1000 from 2015 to 2017.

8. Find customers who spent the most money in 2017.

9. Find the most popular items in 2017.

10. Find the most popular categories in 2013.

Appendix (Relations of an e-commerce database):

item(iid, iname, price, category, rating, month, year)
customer(cid, cname, cstreet, ccity)
browse(cid, iid)
buy(transID cid, iid, year, month, day)
advertise(cid,iid)