MF840 EXAM 2

Shi Bo

TOTAL POINTS

91 / 116

QUESTION 1

Problem 1 Short questions 18 pts

1.1 Proof of [3]. handwritten work **6 / 6**

   ✓ **- 0 pts** Correct

   - 2 pts Click here to replace this description.

   - 4 pts Click here to replace this description.

1.2 What is the sample size T **6 / 6**

   ✓ **- 0 pts** Correct

   - 3 pts BF=1

   - 3 pts Click here to replace this description.

1.3 BFs are difficult to compute **3 / 6**

   - 0 pts Correct

   - 3 pts Savage Density Ratio=1

   ✓ **- 3 pts** Click here to replace this description.

QUESTION 2

Problem 2: Precision of MCMC estimates 12 pts

2.1 Assume independent draws **6 / 6**

   + 0 pts missing

   ✓ **+ 6 pts** correct

   + 2 pts wrong result

2.2 3 answers: New estimate, How many draws, RNE **6 / 6**

   + 0 pts missing

   + 3 pts wrong result

   ✓ **+ 6 pts** correct

QUESTION 3

Problem 3: Savage Density Ratio 30 pts

3.1 Estimates **6 / 6**

   ✓ **- 0 pts** Correct

   - 6 pts Click here to replace this description.

   - 1 pts $$\hat{\alpha}$$

   - 2 pts $$\hat{\beta}, std(\beta)$$

3.2 s0 = **2 / 2**

   ✓ **- 0 pts** Correct

   - 1 pts Click here to replace this description.

   - 1 pts Click here to replace this description.

3.3 Marginal prior p(alpha) **3 / 4**

   - 0 pts Correct

   - 2 pts Marginal distribution is Student-t

   ✓ **- 1 pts** h

   - 1 pts Click here to replace this description.

3.4 Marginal posterior p(alpha | Data) **2 / 6**

   + 0 pts Correct

   ✓ **+ 1 pts** $$\nu_1=12+96$$

   + 1 pts
   $$\bar{\bar{\alpha}}=\frac{g}{1+g}\hat{\alpha}$$

   + 1 pts $$V(\alpha)=\frac{s_1^2g}{1+g}(X'X)^{-1}_{1,1}$$

   + 1 pts $$\nu_1s_1^2=\nu_0s_0^2+||y-X\bar{\bar{\bm{\beta}}}||^2+(\bar{\bar{\bm{\beta}}}-\bar{\bm{\beta}})'A(\bar{\bar{\bm{\beta}}}-\bar{\bm{\beta}})$$

   + 1 pts $$A=(X'X)/g$$

   ✓ **+ 1 pts** Student-t

3.5 Figure of prior and posterior **6 / 6**

   + 0 pts Correct

   ✓ **+ 6 pts** Click here to replace this description.

   + 3 pts prior

3.6 BF0/1 **0 / 6**

- **0 pts** Correct

✓ **- 3 pts** Numerator

✓ **- 3 pts** Denominator

Problem 4: Gibbs Sampling 50 pts

4.1 Rewrite (4.3) , (4.4) , (4.5) 6 / 6

+ **0 pts** missing

+ **4 pts** some error

+ **2 pts** many error

✓ + **6 pts** correct

4.2 Difference, two answers 4 / 4

+ **0 pts** missing

✓ + **4 pts** correct

+ **0 pts** Click here to replace this description.

4.3 Q =   Ugly p(sigma | D) 4 / 4

+ **0 pts** missing

+ **2 pts** wrong result

✓ + **4 pts** correct

4.4 (4.8)   (4.9')   (4.10') 6 / 6

+ **0 pts** missing

+ **2 pts** many error

+ **4 pts** some error

✓ + **6 pts** correct

4.5 nu1 , nu1 s1s1^2, 2x2 matrix, 2x1 vector 4 / 6

+ **0 pts** missing

+ **2 pts** many error

✓ + **4 pts** some error

+ **6 pts** correct

4.6 How many burnt, RNE?, worry?, Table is 9 points 6 / 12

+ **0 pts** missing

+ **3 pts** many error

✓ + **6 pts** some error

+ **12 pts** correct

4.7 Posterior Plots 3 / 6

+ **0 pts** missing

✓ + **3 pts** wrong result

+ **6 pts** correct

4.8 Diagnostic Plots 6 / 6

+ **0 pts** missing

+ **3 pts** wrong result

✓ + **6 pts** correct

5 Code 6 / 6

+ **0 pts** Correct

✓ + **6 pts** Click here to replace this description.

ıll gradescope

1.1 Proof of [3]. handwritten work **6 / 6**

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   - 2 pts Click here to replace this description.

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    - 1 pts $\hat{\alpha}$

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