The following topics are covered in the methods test item data bank. Topics listed are general topics. Individual test items may include reference to more detailed aspects of general topics.
Sample items are available at http://www2.chass.ncsu.edu/garson/pa765/sampleexam.htm.

RESEARCH DESIGN
purpose of residual analysis
standardizing data
levels of measurement
normal curve & confidence levels
types of ordinal scales
types of validity
threats to validity
types of reliability
reliability analysis
testing for normality
testing for homoscedasticity
testing for linearity
testing for unidimensionality
Cronbach’s alpha
data transformation
data screening
skew, kurtosis
MAR, MCAR
data imputation

SIGNIFICANCE
assumptions of significance testing
significance v. power
type I and II errors
power
confidence intervals
chi-square tests
t-tests

FACTOR ANALYSIS & RELATED
types of extraction
orthogonal vs. oblique rotation
communality
eigenvalues
factor loadings
confirmatory factor analysis in SEM
cluster analysis
what is canonical correlation

MULTIDIMENSIONAL SCALING
distance measures
stress
testing ordinality vs. metricity

CLUSTER ANALYSIS
Euclidean distance
cluster vs. factor analysis
UPGMA
hierarchical vs. k-means vs. 2-step clustering

CORRELATION/ PARTIAL CORRELATION
strict monotonicity
assumptions of correlation
attenuation
types of explanation & suppression
control variables/control effects
canonical correlation

REGRESSION
assumptions of regression
model specification
standardized and unstandardized b
R-square
significance of b and of model
SPSS curve estimation procedure
WLS regression

CURVE ESTIMATION (IN SPSS)
what does it do?

ANOVA FAMILY
general linear model (GLM)
anova, ancova, manova, mancova
assumptions of anova
homogeneity of variance
Levene's test
factors vs. covariates
within- and between-group designs
LOG-LINEAR ANALYSIS
assumptions
difference from logistic regression
sampling adequacy
likelihood ratio tests
parsimonious model
types of models
link function
effect size measure
odds and odds ratios

LOGISTIC REGRESSION
assumptions
linearity in the logit
logits
odds & odds ratios, \( \exp(b) \)
likelihood ratio test
Box-Tidwell test
significance
maximum likelihood
binomial vs. multinomial
reference categories
classification table

PARTIAL LEAST SQUARES REGRESSION
features of
path v. regression PLS
AVE
composite reliability
communality
redundancy
inner v. outer model

PROBIT REGRESSION
inverse of the standard normal distribution
ordinal signal-response models
test of parallel lines
probit regression (Analyze, Regression, Probit in SPSS)
logit v. probit
potency
natural response rate

ORDINAL REGRESSION
logit link
location
threshold
singularity
likelihood ratio (-2LL)

NONLINEAR REGRESSION
intrinsically nonlinear
overfitting
logistic population growth model
bootstrap estimates
Anova table

GENERALIZED LINEAR MODEL AND GEE
distribution assumptions
link functions
linearity in the link
common models
Poisson regression
offset variables
comparing models
likelihood ratio test
information theory measures
odds ratio of 1.0
Type III sum of squares
Cook's distance, leverage, Mahalanobis distance
generalized score chi-square in GEE
QIC in GEE

COX REGRESSION AND EHA
parametric v. nonparametric
right-censored data
time-dependent v. time-invariant
status variable
proportional hazard assumption
survival function
hazard ratio, baseline hazard ratio
dfBeta
Weibull model
accelerated failure time model
competing risks models
frailty models
unobserved heterogeneity

LINEAR MIXED MODELS
hierarchical data
correlated error
ICC
subject variable(s)
random intercept v. random coefficients models
grand mean centering
covariance matrix type
variance components v. unstructured models
diagonal type assumption
deviance
log likelihood in a good model
fixed v. random effects
variance components
within-groups variance component
between-groups variance components
Wald test of aan effect
likelihood ratio test of an effect
estimated marginal means
.MDM files
sigma-squared and tau in HLM software
constraining gammas in HLM software

STRUCTURAL EQUATION MODELING
assumptions
comparison with OLS regression
comparison with path analysis
measured vs. latent variables
ordinal data and Bayesian estimation
overidentification
model development approaches
path significance tests
likelihood ratio test
modification indexes
critical ratios
assigning a metric
confirmatory factor analysis
measurement vs structural model
multiplication rule for compound paths
goodness of fit measures
checking cross-group invariance
mixture analysis