Make sure that your scantron matches the color of this page. **Read __ALL__ directions carefully before beginning the exam.**

- *Anyone found using a graphing/programmable calculator or cell phone during the final exam will receive a grade of "0".*
- *You may write on this exam. You may not use other paper unless you raise your hand and it is provided by an instructor.*
- *If you finish after 45 minutes, you can take this test with you. If you finish prior to 45 minutes, you will need to turn this test in along with your scantron.*
- *Please turn in your scantron to __YOUR__ teaching assistant and have a picture ID ready.*
- On your scantron, encode your name as specified on the scantron, encode your Dawgtag as your "Identification Number," and encode your **Section #** "OP" under the area labeled "Special Codes."

SAMPLE SCANTRON

INSTRUCTOR/DAYS IS GIVEN:

Sec	Days	Time	Instructor
2	TR	9-9:50	Wijerathne, Menake
3	WF	9-9:50	Castelli, Vina
4	TR	10-10:50	Cahandrasena, Taniya
6	WF	11-11:50	Parks, Christy
8	TR	12-12:50	Rajapaksha, Dimuthu
9	TR	1-1:50	Panditharathna, Dinush
11	TR	2-2:50	Haile, Mulubrhan
15	WF	1-1:50	Rathnayake, Rasanji
21	MWF	1-1:50	Liew, Jie Shi

1. According to Euler's Theorem, a graph has an Euler circuit if it is connected and
    A) It has exactly two odd vertices.
    B) It has exactly two even vertices.
    C) It has no odd vertices.
    D) It has no even vertices.
    E) None of these

Use the graph to answer the next 2 questions.
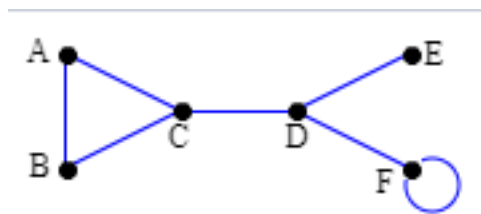
2. What is the degree of vertex F?
    a) 1
    b) 2
    c) 3
    d) 4
    e) None of these

3. Which vertex is <u>not</u> adjacent to vertex C?
    a) A
    b) B
    c) D
    d) F
    e) All of these are adjacent to C

4. A path that passes through each vertex of a graph exactly once is called a(n) _____ path.
    A) Hamilton   B) Euler   C) Tree   D) Kruskal   E) None of these

5. Round the number 2.93176968 to the nearest thousandth.
    a) 2.93   b) 2.931   c) 2.938   d) 3   e) None of these

6. What is the total cost of the Hamilton circuit found by using the <u>cheapest-link algorithm</u>?

    a)   109
    b)   93
    c)   84
    d)   61
    e)   None of these
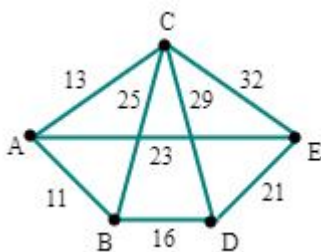
7. A car rents for $250 per week plus $0.25 per mile. Find the cost for a two-week trip of 500 miles
    for a group of three people.
    a) $500   b) $125   c) $750   d) $625   e) None of these

8. A tree with 10 vertices has how many edges?
    a) 10   b) 10!   c) 9   d) 9!   e) None of these

9. A full-time employee who works 40 hours per week earns $25.75 per hour. Estimate that person's
    annual income by rounding 52 weeks to 50 weeks per year, and round the hourly wage to the
    nearest dollar.
    a) $50,000   b) $51,000   c) $52,000   d) $53,000   e) None of these

10. Reduce $\frac{28}{35}$ to its lowest terms.
    a) 4/5   b) 7/5   c) 5/7   d) 4/7   e) None of these

11. A single die is rolled. Find the probability of rolling an odd number or a number less than 6.
    a) 1/2   b) 2/3   c) 1/6   d) 5/6   e) None of these

12. If you are given odds of 4 to 5 in favor of winning a bet, what is the probability of winning the bet?
    a) 4/5   b) 4/9   c) 5/9   d) 5/4   e) None of these

Use the table to answer the next 2 questions.

The table shows the result of a restaurant survey.

Meals	Service good	Service poor	Total
Lunch	37	42	79
Dinner	37	43	80
Total	74	85	159

13. Find the probability that a randomly selected person said the service was good.
    a) 74/159   b) 37/159   c) 37/74   d) 37/79   e) None of these

14. Find the probability that a randomly selected person said the service was good, given that the meal
    was lunch.
    a) 74/159   b) 37/159   c) 37/74   d) 37/79   e) None of these

15.

A restaurant offers the following limited lunch menu.

Main Courses	Turkey, Spaghetti, Meatloaf, Shrimp, Hamburger
Vegetables	Peas, Squash, Cauliflower, Eggplant
Beverages	Coffee, Tea, Milk, Soda
Desserts	Cake, Pie, Sherbet

If one item is selected from each of the four groups, in how many ways can a meal be ordered?

a) 16   b) 64   c) 120   d) 240   e) None of these

16. A construction company is planning to bid on a building contract. The bid costs the company
$1100. The probability that the bid is accepted is $\frac{2}{5}$. If the bid is accepted the company will make
$15,250 minus the cost of the bid. What is the expected value in this situation?
a) $5000   b) $5220   c) $5440   d) $5660   e) None of these

17. You are dealt one card from a standard 52-card deck. Find the probability of being dealt an ace.
a) 1/3   b) 1/4   c) 1/10   d) 1/13   e) None of these

18. A single die is rolled twice. What is the probability of rolling a 1 the first time and a 4 the second
time?
a) 1/6   b) 1/3   c) 1/36   d) 1/12   e) None of these

Use the table to answer the following 2 questions.

A group of 21 people wish to attend a baseball game in either May (M), June (J), August (A), or September (S).
Their votes are summarized in the table.

Number of Votes	8	6	4	3
1st Choice	M	A	S	M
2nd Choice	A	S	J	J
3rd Choice	J	M	M	S
4th Choice	S	J	A	A

19. Which month wins in a head-to-head vote?
a) May   b) June   c) August   d) September   e) There is a tie.

20. Which month is a majority winner?
a) May   b) June   c) August   d) September   e) There isn't a majority winner.

21. An ACT test is normally distributed with a mean of 22 and a standard deviation of 4. Use the normal table to find the percentage of students who scored above 28?
    a) 6%
    b) 6.68%
    c) 93.32%
    d) 1.5%
    e) None of these

22.

Find the median for the data items in the given frequency distribution.

Score, x	1	2	3	4	5	6	7	8
Frequency, f	2	2	2	5	5	2	1	1

   a) 5   b) 4.5   c) 4.2   d) 4   e) None of these

23. A correlation coefficient of _____ shows a perfect negative correlation between 2 variables.
    a) -2   b) -1   c) 0   d) 1   e) None of these

24. What is the value of the 3rd quartile (Q_3) from the 5 number summary for the following data set:
              37,   26,   13,   8,   12,   29,   6,   17,   42,   26

   a) 12   b) 26   c) 29   d) 21.5   e) None of these

25. Find the standard deviation for the group of data items.
              10,   10,   11,   11,   12,   12

    a) 1.12
    b) 1. 58
    c) 0.89
    d) 1.26
    e) None of these

26. Find the mean for the group of data items.
              82,   79,   81,   74,   79,   85

    a) 79
    b) 80
    c) 81
    d) 80.5
    e) None of these

27. The stem-and-leaf plots compare the ages of 30 actors
and actresses at the time they won an award. What is
the age of the youngest actor to win an award?
    a) 13
    b) 21
    c) 31
    d) 30
    e) None of these

Actors	Stems	Actresses
	2	114667
98753221	3	00113344455778
88776543322100	4	11127
7751	5	
210	6	011
7	7	5
	8	4

28. Women's heights average 64 inches with a standard deviation of 4 inches in a certain study. Use
the 68-95-99.7% Rule to determine what percent of women will have heights between 52 inches
and 76 inches.
    a) 68%   b) 95%   c) 99.7%   d) 3%   e) None of these

29. Express the fraction $\frac{1}{4}$ as a percent.
    a) 80.0%   b) 2.5%   c) 0.25%   d) 25.0%   e) None of these

30. A pair of jeans with an original price of $43 are on sale at 30% off. What is the sale price of the
jeans? Round to the nearest cent.
    a) $12.90   b) $30.10   c) $55.90   d) $41.71   e) None of these

31. Find the taxable income for a taxpayer who earned wages of $69,000, received $860 in interest
from a savings account, and contributed $2,300 to a tax-deferred retirement plan. He was entitled
to a personal exemption of $3,800 and had deductions totaling $6,190.
    a) $64,060
    b) $57,570
    c) $62,170
    d) $67,560
    e) None of these

32. You have a part-time job at a local supermarket earning $8.50/hour and working 18 hours/week.
Your employer withholds 10% of your gross pay for federal income taxes. What is the amount of
federal income tax withheld from your check each week?
    a) $153.00   b) $15.30   c) $1.53   d) $0.15   e) None of these

33. You borrow $400 at a simple interest rate of 6% for a period of 7 months. What is the simple
interest owed for the use of the money?
    a) $18.00   b) $14.00   c) $168.00   d) $172.00   e) None of these

34. A bank offers a CD that pays a simple interest rate of 5%. How much must you put in this CD now in order to have $9,800 in 8 years?
    a) $5,600   b) $280   c) $2,800   d) $7,000   e) None of these

35. Suppose you deposit $900 at the end of every 6 months in an account that pays 4.5% interest compounded semi-annually for 7 years. What is the value of the annuity at the end of 7 years?
    a) $13,417   b) $14,619   c) $26,045   d) $54,619   e) None of these

36. What is the periodic deposit needed to reach a financial goal of $77,000 in 12 years, if the deposits are made into an annuity paying 8% interest compounded annually.
    a) $4058   b) $4626   c) $7239   d) $6260   e) None of these

37. Suppose you borrow $10,000 for four years at 8% towards the purchase of a car. You make monthly payments on this loan in the amount of $244. What is the total amount of interest you will pay on this loan?
    a) $13,728   b) $23,504   c) $11,712   d) $1,712   e) None of these

38. The price of a home is $250,000. The bank requires a 10% down payment. After the down payment, the balance is financed with a 30-year fixed-rate mortgage at 7.5%. Determine the monthly mortgage payment (excluding escrowed taxes and insurance) to the nearest dollar.
    a) $2073   b) $1723   c) $1453   d) $1573   e) None of these

39. Most financial advisors say that you should spend no more than 28% of your gross monthly income for your mortgage payment. Suppose your gross annual income is $36,000. What is the maximum amount you should spend each month on a mortgage payment?
    a) $408   b) $672   c) $840   d) $10,080   e) None of these

40. Which of the following statements is true?
    a) Unlike writing a check, using a debit card frees you from paying overdraft charges.
    b) The lower your credit score, the more likely you are to get credit.
    c) The higher your credit score, the more likely you are to get the best interest rates on loans.
    d) When you use a credit card, the money you spend is deducted electronically from your bank account.
    e) None of these are true.

The last page of this exam is the formula sheet and z-score table. You may tear that page out of the exam for your reference.

You must use a pencil to fill in your scantron!

Final Exam Formula Sheet. FEEL FREE TO TEAR OFF THIS LAST DOUBLE SIDED PAGE

Standard Scores and Percentiles

| z-score	Percentile	z-score	Percentile	z-score	Percentile	z-score	Percentile
− 3.5	0.02	− 1.0	15.87	0.0	50.00	1.1	86.43
− 3.0	0.13	− 0.95	17.11	0.05	51.99	1.2	88.49
− 2.9	0.19	− 0.90	18.41	0.10	53.98	1.3	90.32
− 2.8	0.26	− 0.85	19.77	0.15	55.96	1.4	91.92
− 2.7	0.35	− 0.80	21.19	0.20	57.93	1.5	93.32
− 2.6	0.47	− 0.75	22.66	0.25	59.87	1.6	94.52
− 2.5	0.62	− 0.70	24.20	0.30	61.79	1.7	95.54
− 2.4	0.82	− 0.65	25.78	0.35	63.68	1.8	96.41
− 2.3	1.07	− 0.60	27.43	0.40	65.54	1.9	97.13
− 2.2	1.39	− 0.55	29.12	0.45	67.36	2.0	97.72
− 2.1	1.79	− 0.50	30.85	0.50	69.15	2.1	98.21
− 2.0	2.28	− 0.45	32.64	0.55	70.88	2.2	98.61
− 1.9	2.87	− 0.40	34.46	0.60	72.57	2.3	98.93
− 1.8	3.59	− 0.35	36.32	0.65	74.22	2.4	99.18
− 1.7	4.46	− 0.30	38.21	0.70	75.80	2.5	99.38
− 1.6	5.48	− 0.25	40.13	0.75	77.34	2.6	99.53
− 1.5	6.68	− 0.20	42.07	0.80	78.81	2.7	99.65
− 1.4	8.08	− 0.15	44.04	0.85	80.23	2.8	99.74
− 1.3	9.68	− 0.10	46.02	0.90	81.59	2.9	99.81
− 1.2	11.51	− 0.05	48.01	0.95	82.89	3.0	99.87
− 1.1	13.57	0.0	50.00	1.0	84.13	3.5	99.98

TABLE 12.19 Values for Determining Correlations in a Population

n	$\alpha = 0.05$	$\alpha = 0.01$
4	0.950	0.990
5	0.878	0.959
6	0.811	0.917
7	0.754	0.875
8	0.707	0.834
9	0.666	0.798
10	0.632	0.765
11	0.602	0.735
12	0.576	0.708
13	0.553	0.684
14	0.532	0.661
15	0.514	0.641
16	0.497	0.623
17	0.482	0.606
18	0.468	0.590
19	0.456	0.575
20	0.444	0.561
22	0.423	0.537
27	0.381	0.487
32	0.349	0.449
37	0.325	0.418
42	0.304	0.393
47	0.288	0.372
52	0.273	0.354
62	0.250	0.325
72	0.232	0.302
82	0.217	0.283
92	0.205	0.267
102	0.195	0.254

Example set of 52 poker playing cards

Suit	Ace	2	3	4	5	6	7	8	9	10	Jack	Queen	King
Clubs													
Diamonds													
Hearts													
Spades													

P = the principal amount invested or borrowed (present value)

A = accumulated amount (future value)   r = the interest rate (as a decimal)

t = time (in years)   n = number of compound periods per year

PMT = loan payment

1) Simple Interest:

$$Interest = Prt$$

2) Future Value (with Simple Interest):

$$A = P(1 + rt) \text{ or } P = \frac{A}{(1+rt)}$$

3) Compound Interest -finite # of compound periods:

(Loan or Investment)

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \text{ or } P = \frac{A}{\left(1+\frac{r}{n}\right)^{nt}}$$

4) Compound Interest –continous

$$A = Pe^{rt}$$

e is approximately 2.71828 (but use e-button on calculator)

5) Savings Formula (Annuities)

P = deposit made at the end of each time period

$$A = \frac{P\left[\left(1 + \frac{r}{n}\right)^{nt} - 1\right]}{\left(\frac{r}{n}\right)}$$

6) Savings formula (Annuities)

$$P = \frac{A\left(\frac{r}{n}\right)}{\left[\left(1+\frac{r}{n}\right)^{nt} - 1\right]}.$$

7) Loan Formula (Amortization Formula):

$$PMT = \frac{P\left(\frac{r}{n}\right)}{\left[1-\left(1+\frac{r}{n}\right)^{-nt}\right]}.$$