GATE ASSIGNMENT 2
EE1030 : Matrix Theory
Indian Institute of Technology Hyderabad

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2012 MA 53 to 65

LINKED QUESTION AND ANSWERS
Statement for Linked Answer Questions 52 and 53:
The joint probability density function of two random variables X and Y is given as

$$f(x, y) = \begin{cases} \frac{6}{5}\left(x + y^2\right), & 0 \le x \le 1, 0 \le y \le 1 \\ 0, & \text{elsewhere} \end{cases}$$

1) $E(X)$ and $E(Y)$ are, respectively,

   a) $\frac{2}{5}$ and $\frac{3}{5}$ b) $\frac{3}{5}$ and $\frac{3}{5}$ c) $\frac{3}{5}$ and $\frac{6}{5}$ d) $\frac{4}{5}$ and $\frac{6}{5}$

2) $Cov(X, Y)$ is:

   a) -0.01   b) 0   c) 0.01   d) 0.02

Statement for Linked Answer Questions 54 and 55:
Consider the functions $f(z) = \frac{z^2 + \alpha z}{(z+1)^2}$ and $g(z) = \sinh(z - \frac{\pi}{2\alpha})$, where $\alpha \ne 0$.
3) The residue of $f(z)$ at its pole is equal to 1. Then the value of α is.

   a) -1   b) 1   c) 2   d) 3

4) For the value of α obtained in Q.54, the function $g(z)$ is not conformal at a point.

   a) $\frac{\pi(1+3i)}{6}$ b) $\frac{\pi(3+i)}{6}$ c) $\frac{2\pi}{3}$ d) $\frac{i\pi}{2}$

General Aptitude (GA) Questions (Compulsory)
Q. 56 – Q. 60 carry one mark each.

5) Choose the most appropriate word from the options given below to complete the following sentence:
   Given the seriousness of the situation that he had to face, his ___ was impressive.

a) beggary   b) nomenclature   c) jealousy   d) nonchalance

6) Choose the most appropriate alternative from the options given below to complete the following sentence:
   If the tired soldier wanted to lie down, he _ _ _ the mattress out on the balcony.

   a) should take   b) shall take   c) should have take   d) will have taken

7) If $(1.001)^{1259} = 3.52$ and $(1.001)^{2062} = 7.85$, then $(1.001)^{3321} =$

   a) 2.23   b) 4.33   c) 11.37   d) 27.64

8) One of the parts (A, B, C, D) in the sentence given below contains an ERROR. Which one of the following is INCORRECT?
   I requested that he should be given the driving test today instead of tomorrow.

   a) requested that   c) the driving test
   b) should be given   d) instead of tomorrow

9) Which one of the following options is the closest in meaning to the word given below?
   Latitude

   a) Eligibility   b) Freedom   c) Coercion   d) Meticulousness

   Q. 61 - Q. 65 carry two marks each.

10) There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weighings required to identify the heavier bag is

    a) 2   b) 3   c) 4   d) 8

11) Raju has 14 currency notes in his pocket consisting of only Rs. 20 notes and Rs. 10 notes. The total money value of the notes is Rs. 230. The number of Rs. 10 notes that Raju has is

    a) 5   b) 6   c) 9   d) 10

12) One of the legacies of the Roman legions was discipline. In the legions, military law prevailed and discipline was brutal. Discipline on the battlefield kept units obedient, intact and fighting, even when the odds and conditions were against them.
    Which one of the following statements best sums up the meaning of the above passage?
    a) Thorough regimentation was the main reason for the efficiency of the Roman legions even in adverse circumstances.

b) The legions were treated inhumanly as if the men were animals.

c) Discipline was the armies' inheritance from their seniors.

d) The harsh discipline to which the legions were subjected to led to the odds and conditions being against them.

13) A and B are friends. They decide to meet between 1 PM and 2 PM on a given day. There is a condition that whoever arrives first will not wait for the other for more than 15 minutes. The probability that they will meet on that day is

a) $\frac{1}{4}$ b) $\frac{1}{16}$ c) $\frac{7}{16}$ d) $\frac{9}{16}$

14) The data given in the following table summarizes the monthly budget of an average household.

Category	Amount(Rs.)
Food	4000
Clothing	1200
Rent	2000
Savings	1500
Other Expenses	1800

The approximate percentage of the monthly budget **NOT** spent on savings is

a) 10%   c) 81%

b) 14%   d) 86%