NET/GATE Questions

by Manjil Saikia - Thursday, July 28, 2011

http://gonitsora.com/netgate-questions/

Tick out the correct answers. More than one answer may be correct for a question. Tick out all.

1) The number of maximal ideals in $$frac{Z}{36Z}$$ is

A) 1

B) 2

C) 3

D) 4.

2) The number of subfields of $$F_{2^{27}}$$ (distinct from $$F_{2^{27}}$$ itself) is

A) 1

B) 2

C) 3

D) 4.

3) Let $$G$$ be a group of order 10. Then

A) $$G$$ is an abelian group

B) $$G$$ is a cyclic group

C) there is a normal proper subgroup

D) there is a subgroup of order 5 which is not normal.

4) Let $$A$$ be a $$227times 227$$ matrix with entries in $$Z_{227},$$ such that all its eigenvalues are distinct. Then its trace is

A) 0

B) 226

C) not definite

D) $$227^{227}.$$

5) The number of roots of $$z^9+z^5+8z^3+2^z+1=0$$ between the circles $$|z|=1$$ and $$|z|=2$$ are

A) 3

B) 4

C) 5

D) 6.

6) Let $$G$$ be a group of order $$n.$$ Which of the following conditions imply that $$G$$ is abelian?

A) $$n=15$$

B) $$n=21$$

C) $$n=36$$

D) $$n=63.$$

7) Let $$f:(Q,+)rightarrow (Q,+)$$ be a non-zero homomorphism. Then

A) $$f$$ is always one-one

B) $$f$$ is always onto

C) $$f$$ is always a bijection

D) $$f$$ need be neither one-one nor onto.

8) Let $$R$$ be the polynomial ring $$Z_2[x]$$ and write the elements of $$Z_2$$ as $${0,1}.$$

Let $$(f(x))$$ denote the ideal generated by the element $$f(x)in R.$$ If $$f(x)=x^2+x+1,$$ then the quotient ring $$R/(f(x))$$ is

A) a ring but not an integral domain

B) an integral domain but not a field

C) a finite field of order 4

D) an infinite field.

9) Let $$A$$ be an $$ntimes n$$ matrix with complex entries which is not a diagonal matrix. Then $$A$$ is diagonalizable if

A) $$A$$ is idempotent

B) $$A$$ is nilpotent

C) $$A$$ is unitary

D) $$A$$ is any arbitrary matrix.

10) $$T:R^5rightarrow R^5$$ is a linear transformation with a minimal polynomial $$(x^2+1)^2$$ Then

A) there exists a vector $$v$$ such that $$T(v)=v$$

B) there exists a vector $$v$$ such that $$T(v)=-v$$

C) $$T$$ must be singular

D) such a linear transformation is not possible.

11) Let $$f:R^4rightarrow R^3$$ be given by

$$f((a,b,c,d))=(3a-2b+c+d,3a-7b-7c+8d,a+b+3c-2d).$$

Then

A) $$f$$ is onto but not one-one

B) $$f$$ is one-one but not onto

C) $$f$$ is both one-one and onto

D) $$f$$ is neither one-one nor onto.

12) $$F(z-xy,x^2+y^2)=0$$ is the solution of the partial differential equation

A) $$yz_x-xz_y=y^2-x^2$$

B) $$yz_x+xz_y=y^2-x^2$$

C) $$yz_x+xz_y=y^2+x^2$$

D) $$yz_x-xz_y=y^2+x^2.$$

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