MTH202 FINAL TERM SOLVED OBJECTIVE FILE

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Question No: 1 (Marks: 1) - Please choose one

If p = It is raining

q = She will go to college

"It is raining and she will not go to college" will be denoted by

► $p \wedge \sim q$
► $p \wedge q$
► $\sim (p \wedge q)$
► $\sim p \wedge q$

Question No: 2 (Marks: 1) - Please choose one

In a directed graph of a Irreflexive relation, there should be
►Loop on a one point
►No loop at any point
►No point connected

Question No: 3 (Marks: 1) - Please choose one

The statement p ®q º ~p Ú q º ~(p Ù ~q) describes

► Commutative Law

► Implication Laws

► Exportation Law

► Equivalence

Question No: 4 (Marks: 1) - Please choose one

How many functions are there from a set with three elements to a set with two elements?

► 6

► 8

2*2*2 =8

► 12

Question No: 5 (Marks: 1) - Please choose one

If a set contains exactly *m* distinct elements where *m* denotes some non negative integer then the set is .

► Finite

► Infinite

► None of these

Question No: 6 (Marks: 1) - Please choose one

Let f and g be the functions defined by
f(x)= 2x+3 & g(x)= 3x+2 then composition of f and g is

► 6x+6

► 5x+5

► 6x+7 F(X)=2X(3X+2)+3 => 6X+7

Question No: 7 (Marks: 1) - Please choose one

Let f is defined recursively by

F(0)=3

F(n+1)=2f(n)+2

Then f(2)=

► 8

► 10

► 18 F(2) = 2F(1)+2 => 2(8)+2 => 18

► 21

Question No: 8 (Marks: 1) - Please choose one

If A and B are two disjoint (mutually exclusive) events then

P(AÈB) =

► P(A) + P(B) + P(AÇB)
► P(A) + P(B) + P(AUB)
► P(A) + P(B) - P(AÇB)
► P(A) + P(B) - P(AÇB)
► P(A) + P(B)

Question No: 9 (Marks: 1) - Please choose one

If a pair of dice is thrown then the probability of getting a total of 5 or 11 is

- $\frac{1}{18}$
- $\frac{1}{9}$
- $\frac{1}{6}$ **6*6 =36**

4/36+2/36=6/36=1/6

Question No: 10 (Marks: 1) - Please choose one

If a die is rolled then what is the probability that the number is greater than 4

- $\frac{1}{3}$
- $\frac{3}{4}$
- $\frac{1}{2}$ **(5,6)**

2/6 = 1/2

Question No: 11 (Marks: 1) - Please choose one

What is the expectation of the number of heads when three fair coins are tossed?

► 1

► 1.34

► 2

► 1.5

Question No: 12 (Marks: 1) - Please choose one

If A, B and C are any three events, then

P(AÈBÈC) is equal to

► P(A) + P(B) + P(C)

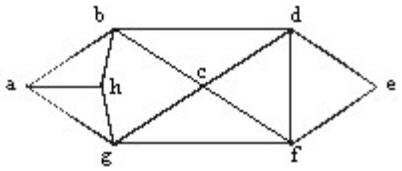
► P(A) + P(B) + P(C)- P(AÇB) - P (A ÇC) - P(B ÇC) + P(A ÇB ÇC)

► P(A) + P(B) + P(C) - P(AÇB) - P (A ÇC) - P(B ÇC)

► P(A) + P(B) + P(C) + P(A ÇB ÇC)

Question No: 13 (Marks: 1) - Please choose one

The Hamiltonian circuit for the following graph is



► abcdefgh

► abefgha

► abcdefgha

Question No: 14 (Marks: 1) - Please choose one

Let n and d be integers and d ¹ 0. Then n is divisible by d or d divides n
If and only if

► n= k.d for some integer k

► n=d

► n.d=1

► none of these

Question No: 15 (Marks: 1) - Please choose one

The contra positive proof of a statement pàq involves

► Considering p and then try to reach q

► Considering ~q and then try to reach ~p

► Considering p and ~q and try to reach contradiction

► None of these

Question No: 16 (Marks: 1) - Please choose one

The sum of two irrational number must be an irrational number

► **False**

► True

Question No: 17 (Marks: 1) - Please choose one

The square root of every prime number is irrational

► **True**

► False

► Depends on the prime number given

Question No: 18 (Marks: 1) - Please choose one

The greatest common divisor of 27 and 72 is

► 27

► 9

72 = 27 · 2 + 18 => 27 = 18 · 1 + 9 => 18 = 9 · 2 + 0
=>(72, 27) = 9.

► 1

► None of these

Question No: 19 (Marks: 1) - Please choose one

If T is a full binary tree and has 5 internal vertices then the total vertices of T are

► 11

2(K+1)=2(5+1)=11

► 12

► 13

► None of the these

Question No: 20 (Marks: 1) - Please choose one

Suppose that a connected planar simple graph has 30 edges. If a plane drawing of this graph has 20 faces, how many vertices does the graph have?

►12
F=e-v+2
20=30-v+2
v=10+2=12

►13

►14

Question No: 21 (Marks: 1) - Please choose one

How many different ways can three of the letters of the word BYTES be chosen if the first letter must be B ?

► P(4,2)

► P(2,4)

► C(4,2)

► None of these

Question No: 22 (Marks: 1) - Please choose one

The value of 0! Is

► 0

► 1

►Cannot be determined

Question No: 23 (Marks: 1) - Please choose one

An arrangement of objects with the consideration of order is called

► **Permutation**

► Combination

► Selection

► None of these

Question No: 24 (Marks: 1) - Please choose one

If A and B are two disjoint sets then which of the following must be true

► **n(AÈB) = n(A) + n(B) because p(AUB)=P(A)+P(B)**

► n(AÈB) = n(A) + n(B) - n(AÇB)

► n(AÈB)= ø

► None of these

Question No: 25 (Marks: 1) - Please choose one

Among 200 people, 150 either swim or jog or both. If 85 swim and 60 swim and jog, how many jog?

► **125**

► 225

► 85

► 25

Question No: 26 (Marks: 1) - Please choose one

If a graph is a tree then

► it has 2 spanning trees

► it has only 1 spanning tree

► it has 4 spanning trees

► it has 5 spanning trees

Question No: 27 (Marks: 1) - Please choose one

Euler formula for graphs is

► f = e-v

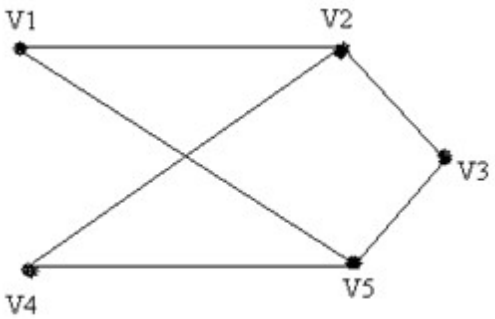
► f = e+v +2

► f = e-v-2

► f = e-v+2

Question No: 28 (Marks: 1) - Please choose one

The given graph is



►**Simple graph**

►Complete graph

►Bipartite graph

►Both (i) and (ii)

►Both (i) and (iii)

Question No: 29 (Marks: 1) - Please choose one

An integer n is odd if and only if n = 2k + 1 for some integer k.

►**True**

► False

► Depends on the value of k

Question No: 30 (Marks: 1) - Please choose one

If $P(A \cap B) \neq P(A)P(B)$ then the events A and B are called

► Independent

►**Dependent**

► Exhaustive

Question No: 31 (Marks: 2)

Let A and B be the events. Rewrite the following event using set notation

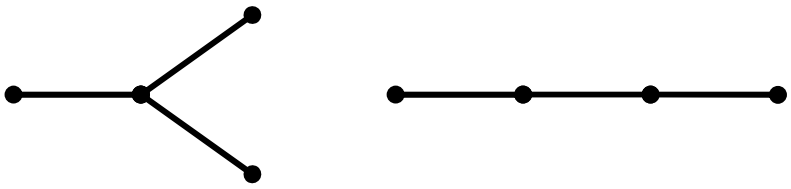
"A or not B occurs"

Question No: 32 (Marks: 2)

Find a non-isomorphic tree with four vertices.

Any tree with four vertices has (4-1=3) three edges. Thus, the total degree of a tree with 4 vertices must be 6 [by using total degree=2(total number of edges)].

Also, every tree with more than one vertex has at least two vertices of degree 1, so the only possible combinations of degrees for the vertices of the trees are 1, 1, 1, 3 and 1, 1, 2, 2.
The corresponding trees (clearly non-isomorphic, by definition) are



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Question No: 33 (Marks: 2)

Write the following in the factorial form:

n(n -1)(n-2)…(n-r+1)

$$n(n-1)(n-2)\ldots(n-r+1)=\frac{n(n-1)(n-2)\ldots(n-r+1)-(n-r)!}{(n-r)!}$$

$$=\frac{n!}{(n-r)!}$$

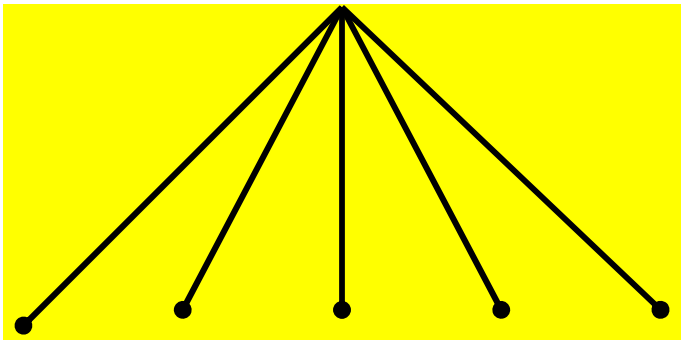
Question No: 34 (Marks: 3)

Compute ëxû and éxù for $x = 25/4$

Question No: 35 (Marks: 3)

Find a spanning tree for the graph $k_{1,5}$?

$k_{1,5}$ represents a complete bipartite graph on (1,5) vertices, drawn below:



Clearly the graph itself is a tree (six vertices and five edges). Hence the graph is itself a spanning tree.

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Question No: 36 (Marks: 3)

The members of a club are 12 boys and 8 girls. In how many ways can a committee of 3 boys and 2 girls be formed?

Question No: 37 (Marks: 5)

Is it possible to have a simple graph with four vertices of degree 1, 1, 3, and 3.If no then give reason?(Justify your answer)

Question No: 38 (Marks: 5)

Draw a binary tree to represent the following expression

a/(b-c.d)

The internal vertices are arithmetic operators, the terminal vertices are variables and the operator at each vertex acts on its left and right sub trees in left-right order.

Question No: 39 (Marks: 5)

There are 25 people who work in an office together. Four of these people are selected to attend four different conferences. The first person selected will go to a conference in New York, the second will go to Chicago, the third to San Francisco, and the fourth to Miami. How many such selections are possible?

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