1- The sample space of a random experiment is S={e_1, e_2, e_3, e_4, e_5} where all these outcomes are equally likely. Let A={ e_1, e_2, e_3} and B={ e_2, e_3, e_4, e_5}. Then find p(A|B).
a) 0.4 b) 0.5 c) 0.6 d) 0.3 e) 0.2

2- From a group of 3 boys and 2 girls, 3 are selected at random without replacement. The probability of selecting at least 1 girl is:
a) 0.5 b) 0.9 c) 0.7 d) 0.6 e) 0.8

3- A fair die is rolled once. The probability that a number greater than 2 OR an even number is:
a) 2/3 b) 5/6 c) 1/3 d) 1/2 e) 1/6

4- In a particular school, 82% of the students have a desktop computer, 47% have both a desktop computer and a laptop computer, and 3% have neither a desktop computer nor a laptop computer. One student is randomly selected from this school. The probability that this student has a laptop computer equals:
a)0.97 b) 0.62 c) 0.79 d) 0.47 e) 0.35

5- Three numbers are selected from the numbers {1, 2, 3, 4, 5} without replacement, The probability that all the selected are odd is:
a)0.3 b) 0.1 c) 0.4 d) 0.6 e) 0.2

6- Let A,B be events such that P(A|B)= P(B|A)=0.5 if P(A)=0.2 then P($\bar{A} \cap B$)=??
a) 0.84 b) 0.90 c) 0.5 d) 0.10 e) 0.16

7- Let A and B be events such that P(A)=0.4, P(B)=0.5 and P($A \cap B$)=0.2 then:
a) $\bar{A}$ and B are mutually exclusive (disjoint).
b) A and B are mutually exclusive (disjoint).
c) P($\bar{B} \cap A$) =0.8
d) A and B are independent.
e) All of the above

8- Rolling a die twice, find the probability of getting 2 in the first trial and a sum less than 6 in both trials.
a)1/12 b) 5/18 c) 13/36 d) 1/18 e) 7/18

9- A class contains 8 students, 6 of them are math and 2 of them are physics. If we choose 2 students from this class without replacement, then the probability that the second student is physics given that the first is physics equals:
a) 2/7 b) 1/6 c) 1/7 d) 2/8 e) 1/8

10- In a random experiment, given that P(B)=0.6, P($\bar{A} \cap \bar{B}$)=0.3, P($A \cap B$)=0.4 find P(A).
a) 0.3 b) 0.5 c) 0.4 d) 0.6 e) 0.7

11- In a certain company, 70% of the employees are men. If 30% of the men and 20% of the women in the company are overweight, then the percentage of overweight employees in this company:
a) 30% b) 25% c) 27% d) 50% e) 35%

12- In a store 30% of the computers are from supplier 1 and the rest are from supplier 2. 20% of the computers from supplier 1 are defective, and 30% of the computers from supplier 2 are defective. A computer is chosen randomly from this store, the probability that it is defective equals:
a) 0.25 b) 0.27 c) 0.20 d) 0.22 e) 0.29

13- In how many ways can the letters of the word ACTIVE be arranged, if the letters C and E must not be together:
a) 96 b) 480 c) 120 d) 720 e) 240

14- The probability that each one of two students will independently solve a certain Math problem is 0.4. In such a case the probability that at least one of them will solve the problem is?
a) 0.16 b) 0.64 c) 0.84 d) 0.19 e) 0.8

15- Consider the experiment of tossing a fair coin two times and the events:
A={(H,H) , (T,H)}.
B={(T,T)}.
C={(H,H) , (T,T)}.
The independent events are:
a) B and C only
b) A and B only
c) A and C only
d) any Two of them
e) None of them

16- Let A,B be Two events of a given sample space. If P(B | A)=0.5, P(A U B)=0.5 and P(A)=0.2, the P(B) is?

a) 0.15 b) 0.25 c) 0.5 d) 0.3 e) 0.4

17- Rolling two fair dice once, the probability that the sum of the two numbers is 10 will be?

a) 4/36 b) 3/36 c) 7/36 d) 6/36 e) 5/36

18- Ahmad is carrying a bag contains 20 Red markers and 35 Blue markers, Lara wants to choose 8 markers, what is the probability that only 3 of the 8 markers are Red.

a) $\frac{\binom{20}{3}\times\binom{35}{0}}{\binom{55}{3}}$ b) $\frac{\binom{20}{3}\times\binom{35}{1}}{\binom{55}{4}}$ c) $\frac{\binom{20}{3}\times\binom{8}{3}}{\binom{55}{8}}$ d) $\frac{\binom{20}{3}\times\binom{35}{5}}{\binom{55}{8}}$ e) $\frac{\binom{20}{3}}{\binom{55}{8}}$

19- The following table presents the number of males and females students in class1 and class2.

	Class 1	Class 2
Male	40	30
female	25	55

If a students is selected randomly, then the probability that this student is a female or from class2 will be:

a) 55/150
b) 110/150
c) 80/150
d) 85/150
e) 65/300

20- If a sample space contains of 8 outcomes, then the number of events containing 3 outcomes is:

a) 56 b) 336 c) 112 d) 168 e) 84

21- In a class 45% of the students are males, 60% of the males and 70% of the females passed the physics exam. If a student is selected randomly from this class and we know that this student passed the physics exam, then the probability that this student is a male will be

a) 0.3 b) 0.455 c) 0.412 d) 0.6 e) 0.27

22- Let A,B be independent event. Assume that P(A) = P(B) = 0.3 then P(A U B) is:
a) 0.51 b) 0.6 c) 0.3 d) 0.39 e) 0.69

23- If an infected person is tested for corona, the probability that the test will give a positive result is 0.60 and if this person is not infected the probability thar it will give a positive result is 0.10. suppose that 2% of the people are corona infected. If one random person is tested for corona using this test, then the probability that the test will give a positive result is:
a) 0.17 b) 0.06 c) 0.11 d) 0.60 e) 0.02

24- In how many ways can 3 children select toys, one toy for each child from a box that contains 5 different toys:
a) 60 ways b) 10 ways c) 6 ways d) 120 ways e) 3 ways

25- A box that contains 2 red and 3 black distinct balls. Two balls are randomly selected from this box without replacement. If the second ball is black then the probability that the first ball was black is:
a) 0.3 b) 0.6 c) 0.7 d) 0.5 e) 0.4

26- In a class of 20 students, 12 study Biology, 15 study History and 2 students study neither Biology nor History. Given that a randomly selected student studies Biology, the probability that this student doesn't study History equals:
a) 0.6 b) 0.75 c) 0.25 d) 0.1 e) 0.8

27- Let A and B be 2 events such that P(A)= 0.2 and P(B)=0.4 and P(A U B)=0.5. Then the value of P(B| A) is:
a) 0.25 b) 1/3 c) 0.5 d) 1/6 e) 2/3

28- A corona virus is spreading through a city. A vaccination is available to protect against the virus. If a person has had the vaccination, the probability of catching the virus is 0.1; without the vaccination, the probability is 0.3. The probability of a randomly selected person catching the virus is 0.22. The probability that a randomly chosen person has been vaccinated is:
a) 0.55 b) 0 c) 0.4 d) 0.33 e) 0.045

29- A corona virus is spreading through a city. A vaccination is available to protect against the virus. If a person has had the vaccination, the probability of catching the virus is 0.1; without the vaccination, the probability is 0.3. The probability of a randomly selected person catching the virus is 0.22. The probability that a randomly chosen person has been vaccinated is:

a) 0.55 b) 0 c) 0.4 d) 0.33 e) 0.045

30- If the probability of hitting a target for each singe trial is 0.8, then the probability of hitting the target 6 times out of 8 trials is:

a) 0.147 b) 0.294 c) 0.341 d) 0.033 e) 0.046

31- Let A and B be two events in a given sample space. If $P(A \cap B') = 0.3$ and P(BIA)=0.2, then P(A):

a) 0.5 b) 0.375 c) 0.25 d) 0.3 e) 0.325

32- If 3 boys and 2 girls are asked to stand next to each other, then the number of ways that only boys stand next to each other will be:

a) 6 b) 12 c) 48 d) 240 e) 64

1	B
2	B
3	B
4	B
5	B
6	D
7	D
8	A
9	C
10	B
11	C
12	B
13	B
14	B
15	C
16	E
17	B
18	D
19	B
20	A
21	C
22	A
23	c
24	A
25	D
26	C
27	C
28	C
29	c
30	b
31	b
32	b