MATHEMATICS PAPER TWO REVISION QUESTIONS…ELEMENTARY PROBABILITY

1. **Given A and B are events such that p(A)=0.5, p(B)=0.7 and P(AUB)= 0.8. Find p(AnB) and $P(A^1/B^1)$**
2. **A and B are independent events and are such that P(A)=x, P(B)=x+0.2 and P(AnB)=0.15. find the value of x and P(AUB).**
3. **A and B are two exhaustive events such that P(A)=$\frac{8}{15}$, P(AnB)=$\frac{1}{5}$. Find P(B).**
4. **Events C and D are such that P(C)=$\frac{4}{7}$, $P(CnD^1)$=$\frac{1}{3}$, P(C/D)=$\frac{5}{14}$, find P(CnD), P(D), and $P(D/C^1)$.**
5. Events A and B are mutually exclusive such that P(A)=0.5 and P(AUB)=0.9. find $P(A^1UB)$.
6. In a game, the probability that Grace wins is 0.4, while those of Joan and Emma are 0.2 and 0.3 respectively. Find the probability that;
   (i) Grace or Emma wins the game
   (ii) Neither Joan nor Emma wins the game
7. Events A and B are such that P(B)=$\frac{1}{6}$, P(AnB)=$\frac{1}{12}$, P(B/A)=$\frac{1}{3}$. Find P(A) and $P(A^1/B^1)$
8. Events X and Y are such that $P(X^1)$=$\frac{3}{5}$, $P(Y/X^1)\frac{1}{3}$ and $P(Y^1/X)\frac{1}{4}$. Find P(Y) and $P(X^1/Y)$.
9. The probability that it will be sunny tomorrow is $\frac{1}{3}$. If it is sunny, the probability that shamim plays tennis tomorrow is $\frac{4}{5}$ if it is not sunny, the probability that shamim plays tennis tomorrow is $\frac{2}{5}$. Find the probability that;
   (i) Shamim plays tennis tomorrow
   (ii) Tomorrow will be sunny given that shamim plays tennis
10. The proportion of female students at kyambogo college is 55%. If 30% of the male and 5% of the female students study chemistry, what is the probability that a chemistry student chosen at random is a girl.
11. In a survey, 70% of men and 55% of women said they smoked. If the ratio of men to women is 3:2, and a person chosen at random is a smoker, what is the probability that this person is a woman.

12. Three girls jane, Susan and Irene pack biscuits in a factory. Jane packed 55%, Susan packed 30% and the remainder was packed by Irene. The probability that jane breaks some biscuits in is 0.7, and the respective probabilities of Susan and Irene are 0.2 and 0.4. what is the probability that a packet found by the checker was not packed by jane?

13. When visiting a friend, Joab may go by road, air or rail. The probabilities that he uses the road, air and rail are 0.3, 0.1 and 0.6 respectively. The corresponding probabilities of arriving on agreed time are 0.2, 0.8 and 0.1 respectively. Find the probability of having used a road if he arrived late.

14. Two independent events are such that the probability of both occurring is $\frac{1}{6}$ and that of neither of them occurring is $\frac{1}{3}$. Determine the probability of each of the events occurring.

15. Events A and B are such that P(A)=$\frac{1}{3}$, P(B)=$\frac{1}{4}$ and P(A or B but not both)=$\frac{5}{12}$. Calculate P(AnB), P(B/A^1) and P(AnB/AUB).

16. Two events A and B are such that p(A^1nB) =3x, P(AnB^1)=2x and P(A^1nB^1)=x and P(B)=$\frac{4}{7}$. Find x and P(AnB).

17. Two events A and B are such that P(A)=0.6, P(B)=0.25 and P(AUB)=0.725. determine the value of P(A^1UB^1) and P(A/B^1)

18. An experiment consists of removing 2 sweets one at a time without replacement from a box containing 3 red and 4 blue sweets.

a. If A is the event that both sweets picked are of the same colour, find the probability that event A occurred.

b. If the experiment is repeated 70 times, find the probability that event A occurred;

   (i) Between 20 and 35 times

   (ii) At least 25 times

19. A box P contains 3 green, 1 red and 1 blue balls. Box Q contains 1 green, 2 red and 2 blue ball. A balanced die is thrown and if a score is a six, box p is chosen otherwise box Q is chosen. A ball is chosen at random from the chosen box. Given that the green ball is drawn, find the probability that it came from box P.

20. Two hunters A and B shoot at an animal. The probability that A hits the animal is $\frac{1}{2}$ and that of B not hitting the animal is $\frac{1}{3}$. if the hunters shoot at once, find the probability that ;

(i) Both A and B hit the animal

(ii) Only one hit the animal.

21. In a certain inter university tournament, 35% of the spectators watched football but not cricket. 10% watched cricket but not football and 40% did not watch either game. Find the probability that they watched football, given that they did not watch cricket.

22. A box contains 3 red and 5 white ball. When a red ball is drawn, it is returned otherwise it is not returned. If two balls are drawn in succession at random from the box, find the probability that at least one red ball is picked.

23. Events A and B are such that $P(A)=\frac{8}{15}$, $P(B)=\frac{1}{3}$ and $P(A^1/B)=\frac{1}{5}$. Find the probability that;

(i) At least one event occurs

(ii) Event B does not happen if event A has not happened.

24. Box A contains 4 red and 3 green marbles and box B contains 7 red and 4 green marbles. A box is selected and two marbles chosen from it one at a time without replacement. If A is twice as likely to be chosen as B, find the probability that both marbles are;

(i) Of alternating colours

(ii) From box A given that they are of alternating colours.

25. Two tetrahedral dice both numbered 1 to 4 are thrown. If one die is unbiased and the other is biased such that a four is as likely to show up as any other number, find the probability that a total of four is obtained.