# Annual Examination 

Class-XI
Subject-Mathematics
M. Marks: $\mathbf{8 0}$

Time: 3:00 Hrs
General Instructions:

1) This question paper contains four sections $A, B, C$ and $D$.

Each section is compulsory. However, there are internal choices in some questions.
2) Section $A$ has 20 multiple choice questions of 1 mark each.
3) Section $B$ has 6 very short answer type questions 2 marks each.
4) Section $C$ has 8 short answer type questions 3 marks each.
5) Section $D$ has 4 long answer type questions 6 marks each.

## SECTION A (1 marks)

1) A set contains $n$ element then the no. of proper subset will be?
a) $2^{n}$
b) $2^{n}-1$
c) $2^{n-1}$
d) None of these
2)No. of relation from a set $A$ containing 3 elements to another set $B$ containing 2 elements will be
a) 32
b) 16
c) 64
d) None of these
3)A wheel male 360 revolutions in 1 minute through how many radians does it turn in 1 second.
a) $2 \pi$
b) $6 \pi$
c) $12 \pi$
d) $24 \pi$
4)Value of $\sin \left(\frac{-11 \pi}{3}\right)$ will be?
a) $\frac{-1}{2}$
b) -1
c) $\frac{\sqrt{3}}{2}$
d) None of these
5)Number of nonzero integral solution of equation $|1-i|^{x}=2$ will be?
a)1
b)0
c) 2
d) infinite solution
2) value of $(1-i)^{4}$ will be -
a) 4
b)
$-4 \quad$ c)
1
d) None of these
7)solution of inequality $\frac{1}{2}\left(\frac{3 x}{5}+4\right)>\frac{1}{3}(x-6)$ will be
a) $x \geq 120$
b) $x \leq 120$
c) $x \geq-120$
d) None of the these
8)The octant in which the point $(4,2,-3)$ and $(-4,2,-5)$ lies are?
a) $\mathrm{V}, \mathrm{VI}$
b) V, VIII
c) $\mathrm{VI}, \mathrm{VIII}$
d) II, VIII
3) if $5 . P(4, r)=6 . P(5, r-1)$ then the value of $r$ will be.
a) 5
b) 7
c) 9
d) None Of these
4) if the coefficient of $x^{2}$ and $x^{3}$ in the expansion of $(3+a x)^{9}$ are equal then the value of a will be:
a) $\frac{2}{9}$
b) $\frac{9}{7}$
C) $\frac{7}{9}$
d) None of these
5) If $\frac{1}{6!}+\frac{1}{7!}=\frac{x}{8!}$ then the value of $x$ will be?
a) 64
b) 56
c ) 75
d) None of these
6) Using binomial theorem indicate which no. is large(1.1) ${ }^{10000}$ or 1000.
a) I
b) II
c) Both are equal
7) Coordinates of a point in xy plane will be?
a) $(0, y, z)$
b) $(x, 0, y)$
c) $(x, y, 0)$
d) None of these
8) If odds against an event is $5: 11$ then the probability of event will be
a) $\frac{5}{11}$
b) $\frac{11}{5}$
c) $\frac{5}{16}$
d) $\frac{11}{16}$
9) Slope of a line which makes an angle of 30 degree with positive direction of $y$ axis measured anticlock wise direction will be
a) $-\sqrt{3}$
b) $-\frac{-1}{3}$
c) $\sqrt{3}$
d) None of these.
10) What will be the position of the point $\left(\frac{-5}{2}, \frac{7}{2}\right)$ with respect to circle
a) inside
b) outside
c) on the circle
d) None of these.
11) $x^{2}=-16 y$ is equation of a parabola then coordinates of focus and length of latus rectum will be
a) $(0,-4), 16$
b) $(-4,0),-16$
c) $(0,-4),-16$
d) None of these
12) Equation $3 x+2 y=6$ when reduces into intercept form then $x$ and $y$ intercepts will be
a) 2,3
b) 3,2
c) $-2,-3$
d) $-3,-2$
13) If AM and GM of roots of a quadratic equation are 8 and 5 respectively, the equation will be
a) $x^{2}+16 x+5=0$
b) $x^{2}-16 x+5=0$
c) $x^{2}-5 x+16=0$
d) $x^{2}-5 x-16=0$
14) If $a_{n}=\frac{n(n-2)}{n+3}$ then the value of $a_{20}$ will be:
a) $\frac{360}{23}$
b) $\frac{603}{23}$ c) $-\frac{360}{23}$
d) None of these

## SECTION B (2 MARKS QUESTION)

21) Prove thatcos $4 x=1-8 \sin ^{2} x \cos ^{2} y$
22)convert into polar form -1-i
22) Find the ratio in which yz plane divides the line segment formed by joining the points $(-2,4,7)$ and $(3,-5,8)$.
23) Perpendicular from the origin to the line $y=m x+c$ meets it at the point $(-1,2)$. Find the value of $m$ and $c$
24) Find the centre and radius of the circle $2 x^{2}+2 y^{2}-x=0$
25) Find the coordinates of a point on $y$-axis which are at a distance of $5 \sqrt{2}$ from the point $P(3,-2,5)$.

## SECTION C (3 MARKS QUESTION)

27) Write the power set of set $A=\{2,3,4,5\}$
28) Find the domain and range of the function $F(x)=(x-1)^{2}+4$

OR
$F(x)=3 \sin x+4 \cos x$, find the domain and range of the function
29)From a class of 25 students 10 are to be choosen for an excursion party. There are 3 students who decides that either all of them will join or none of them will join. In how many ways can the excursion party be choosen.

> OR

Find the number of words with or without meaning which can be made using all the letters of the word AGAIN. If these words are written as in a dictionary what will be the $50^{\text {th }}$ word?
30) Find the term independedent of x in the expansion of $\left(\sqrt[3]{x}+\frac{1}{2 \sqrt[3]{x}}\right)^{18}, \mathrm{x}>0$
31) Find the sum of $n$ terms of the sequence
$7+77+777+7777+------$ upto $n$ terms.
32) Find the equation of the circle passing through $(0,0)$ and making intercepts $a$ and $b$ on coordinate axes.
33) Find the Image of point $(3,8)$ with respect to the line $x+3 y=7$ assuming the line to be a plane mirror.
34) Prove that: $(\cos x-\cos y)^{2}+(\sin x-\sin y)^{2}=4 \sin ^{2} \frac{x-y}{2}$

## SECTION D (6 MARKS QUESTIONS)

35) If $\operatorname{Cos} x=-\frac{3}{5}, x$ lies in third quadrant find the values of $\operatorname{Sin} \frac{x}{2}, \operatorname{Cos} \frac{x}{2}, \tan \frac{x}{2}$
36) Solve the following system of inequality $x+2 y \leq 10, x+y \geq 1, x-y \leq 0, x \geq 0, y \geq 0$.
37) If $A M$ of 2 numbers is three times their G.M Show that the numbers are in the ratio

$$
3+2 \sqrt{2}):(3-2 \sqrt{2})
$$

38) IF four digit numbers greater than 5000 are randomly formed from digits $0,1,3,5,7$. What is the probability of forming a number divisible by 5 when,
i) Digits are repeated.
ii) Repetition of digits in not allowed.

Or
$A$ and $B$ are events such that $P(A)=0.42, P(B)=0.48, P(A$ and $B)=0.16$ Determine
i) $P(\operatorname{not} A)$
ii) $P(\operatorname{not} B)$
iii) $P(A$ or $B)$

