# MILITARY TECHNOLOGICAL COLLEGE

## GFP EXIT EXAM PRE-SCREENING SPECIMEN PAPER

| Module name | Basic Mathematics | Module code | MTCG1016 |
|---|---|---|---|
| Total Questions | 25 | Duration of exam | 60 Minutes |

**Instructions:**

- Use of only non- programmable calculators is allowed.
- The figures shown, if any, are only for illustration.
- **This exam carries 100% of the overall module mark.**



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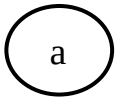
**Circle the correct answer in the following questions.** ☞




**Each question carries 4 marks.** **[Total Marks 100]**

1) Which number is a **rational number?**

| | | |
|---|---|---|
| a) $\sqrt{3}$ | b) 1.73205087 | c) $\frac{-3}{5}$ |

2) Simplify $(-3)^2 - (2)(-2)^2 + (-5)$

| | | |
|---|---|---|
| a) $-4$ | b) $-6$ | c) 12 |

3) **Cardinality** of the set of even prime numbers is …

| | | |
|---|---|---|
| a) 2 | b) 1 | c) $\infty$ |

4) In a class of 150 students, 60 like music, 110 like sports and 35 like both music and sports. How many students like sports but not music?

| | | |
|---|---|---|
| a) 90 | b) 75 | c) 115 |

5) Find the greatest number which divides 44 and 68 leaving 8 as the remainder?

| | | |
|---|---|---|
| a) 12 | b) 6 | c) 18 |

6) Two numbers have **HCF of 15** and **LCM of 300**. If one of the number is 60 , what is the second number?

| | | |
|---|---|---|
| a) 75 | b) 90 | c)45 |

7) How many significant figures are there in $\mathbf{0.00013}$ ?

| | | |
|---|---|---|
| a) 6 | b) 5 | c) 2 |

8) Simplify $\frac{2x^0}{3^{-1}}$

| | | |
|---|---|---|
| a) $\frac{2}{-3}$ | b) 6 | c) $\frac{3}{2}$ |

9) Simplify $\left(\frac{27\,x^6\,y^3}{3\,x^{-2}\,y^2}\right)^2$

| | | |
|---|---|---|
| a) $81\,x^8\,y^2$ | b) $9\,x^8\,y^2$ | c) $81\,x^{16}\,y^2$ |

10) Factorise $7x^2 - 28$

| | | |
|---|---|---|
| a) $7(x-2)(x+2)$ | b) $7(x^2-4)$ | c) $(7x+4)(7x-4)$ |

11) $15$ marks out of $60$ as a percentage is equal to….

| | | |
|---|---|---|
| a) 20% | b) 15% | c) 25% |

12) $3$ pipes take $60\ minutes$ to water the field. How long will it take $5$ pipes to water the same field?

| | | |
|---|---|---|
| a) 36 minutes | b) 1 hour 40 minutes | c) 30 minutes |

13) Solve $2.5\,x - 0.3(x-4) = 10$

| | | |
|---|---|---|
| a) $-4$ | b) 4 | c) 5 |

14) Interval notation of $-7 \leq x < 8$ is …….

| | | |
|---|---|---|
| a)$(-7,8)$ | b) $(-7,8]$ | c) $[-7,8)$ |

15) Bashar is **4** years older than Rashid. Four years from now, the sum of their ages will be **36**. How old is Bashar at present? …

| | | |
|---|---|---|
| a) 16 | b) 18 | c) 12 |

16) Solve the following equation $(\boldsymbol{x-4})^{\boldsymbol{2}}-\boldsymbol{9}=\boldsymbol{0}$

| | | |
|---|---|---|
| a) $x = -1$ *or* 7 | b) $x = 1$ *or* 7 | c) $x = -7$ *or* 1 |

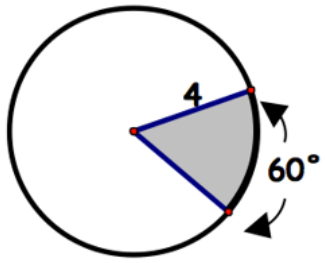
17) The solution of $\boldsymbol{4+\sqrt{(2x+3)}=7}$ is……

| | | |
|---|---|---|
| a) $x = -3$ | b) $x = 0$ | c) $x = 3$ |

18) The value of the angle $\frac{\boldsymbol{3\pi}}{\boldsymbol{4}}$ radians in degree is…

| | | |
|---|---|---|
| a) 125° | b)135° | c) 270° |

19) What is the area of the shaded region?




| | | |
|---|---|---|
| a) 8.38 $units^2$ | b) 480 $units^2$ | c) 301.59 $units^2$ |

20) The diagonal of a square is $\boldsymbol{35.355\ m}$. What is the length of one side of the square?

| | | |
|---|---|---|
| a) 25m | b) $24m$ | c) $23m$ |

21) The top of the Eiffel Tower is seen from a distance of $\mathbf{500}\ \boldsymbol{m}$ away from its base at an angle of $\mathbf{45°}$ **.** The height of the tower is..

| | | |
|---|---|---|
| a) 125m | b) $250m$ | c) $500m$ |

22) If the distance between the points $(\mathbf{5}, \mathbf{-2})$ and $(\mathbf{1}, \boldsymbol{a})$ is $\mathbf{5}$ units, then find the possible value(s) of $\boldsymbol{a}$ ?

| | | |
|---|---|---|
| a) $-5$ and 2 | b) 1 and $-5$ | c) $-1\ and\ -5$ |

23) Find the equation of a line passing through the point $(\mathbf{-7}, \mathbf{2})$ and is parallel to the line $\mathbf{-4x + 10y = -5}$

| | | |
|---|---|---|
| a) y $= \frac{2}{5}x + \frac{14}{5}$ | b) $5y - 2x = 24$ | c) $-2x + 5y = -24$ |

24) The centre of the circle $\boldsymbol{x^2 + y^2 = 1}$ is ……

| | | |
|---|---|---|
| a) $(1, 1)$ | b) $(-1, -1)$ | c) $(0, 0)$ |

25) The equation of the circle with tangent $\boldsymbol{y = -1}$ and centre at $(\mathbf{1}, \mathbf{3})$ is …

| | | |
|---|---|---|
| a)$(x-1)^2 + (y-3)^2 = 4$ | b) $(x+1)^2 + (y+3)^2 = 16$ | c) $(x-1)^2 + (y-3)^2 = 16$ |



**END OF QUESTIONS**

# DRAFT / ROUGH WORK

## Answer

1) c
2) a
3) b
4) b
5) a
6) a
7) c
8) b
9) c
10) a
11) c
12) a
13) b
14) c
15) a
16) b
17) c
18) b
19) a
20) a
21) c
22) b
23) b
24) c
25) c