

# MENIIT

## NEET • IIT-JEE



## MTSE SAMPLE PAPER

**Standard - X**  
**(Moving to Standard - XI)**

**Code : CE-SP**

# MERIT & APTITUDE TEST

## (CODE: CE)

Time: 90 Minutes

Maximum Marks: 220

### Instructions

#### (A) GENERAL

1. This booklet is your Question Paper. It contains **FOUR sections**. **Section-(A) has 12 questions of Physics, Section-(B) has 12 questions of Chemistry, Section-(C) has 16 questions of Mathematics and Section-(D) contains 15 questions from Mental Aptitude.**
2. This booklet contains **55 questions of four mark each in all**. All the questions are **COMPULSORY**.
3. Blank papers, clip boards, log tables, slide rule, calculators, cellular phones and electronic gadgets in any form, are not allowed.
4. Write your **Name and Roll No.** in the space provided at the bottom of this sheet.

#### (B) FILLING IN THE OMR SHEET

5. On the OMR sheet, **write in ink** your Name, Roll No., name of the centre and put your signature in the appropriate boxes.
6. Every question has **four choices** for its answer (A), (B), (C) & (D). Only **one** of them is the right answer.
7. On the OMR sheet, for each question number, darken **only one** bubble with pen only corresponding to what you consider to be the most appropriate answer.

#### (C) MARKING SCHEME

8. (i) You will be awarded **4 marks** if you have darkened the bubble corresponding to the right answer.  
(ii) In case you have darkened the wrong bubble no marks will be deducted for that response. **There is NO NEGATIVE MARKING.**

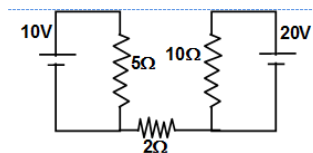
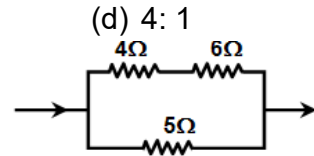
**Name of the Candidate** :

**Roll Number** :

**Date of Examination** :       **Centre:**

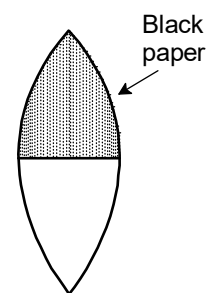
**SECTION – (A) PHYSICS**

- Two resistors of  $6\Omega$  and  $9\Omega$  are connected in series to a  $120\text{ V}$  source. The power consumed by the  $6\Omega$  resistor is  
 (a)  $384\text{ W}$                       (b)  $576\text{ W}$                       (c)  $1500\text{ W}$                       (d)  $1800\text{ W}$
- Two wires of same length and material have radii  $r$  and  $2r$ . The ratio of their specific resistances is  
 (a)  $1:2$                               (b)  $1:1$                               (c)  $1:4$                               (d)  $4:1$
- In the given circuit, the heat produced in the  $5\Omega$  resistor due to the current flowing through it is  $10$  calories per second. The heat generated in the  $4\Omega$  resistors is  
 (a)  $1\text{ cal/sec}$                               (b)  $2\text{ cal/sec}$   
 (c)  $3\text{ cal/sec}$                               (d)  $4\text{ cal/sec}$
- Find current in  $2\Omega$  resistor  
 (a)  $0$     (b)  $2\text{ A}$   
 (c)  $4\text{ A}$     (d)  $1\text{ A}$



- A light ray is made to incident on a glass plate with angle of incidence  $15^\circ$  and then reflected. Then the angle of deviation is  
 (a)  $45^\circ$                               (b)  $130^\circ$                               (c)  $150^\circ$                               (d)  $90^\circ$
- The velocity of light in air is  $3 \times 10^{10}\text{ ms}^{-1}$  and in glass is  $2 \times 10^{10}\text{ ms}^{-1}$ . The refractive index of glass w.r.t air is  
 (a)  $2/3$                               (b)  $3/2$                               (c)  $4/3$                               (d)  $9/4$ .
- A virtual, erect and magnified image of an object is to be produced with a concave mirror of focal length  $12\text{ cm}$ . Which of the following object distance should be chosen for this purpose?  
 (a)  $10\text{ cm}$                               (b)  $14\text{ cm}$                               (c)  $18\text{ cm}$                               (d)  $24\text{ cm}$
- Total internal reflection is possible only when light travels from  
 (a) denser to rarer medium                              (b) rarer to denser medium  
 (c) either of these                              (d) none of these
- The focal length of the eye lens increases when eye muscles  
 (a) are relaxed and lens becomes thinner  
 (b) contract and lens becomes thicker  
 (c) are relaxed and lens becomes thicker  
 (d) contract and lens becomes thinner

10. A long-sighted person cannot see objects nearer to his eye than 50 cm. To enable him to read a book 25 cm away, he should use spectacle lenses whose power in dioptres is \_\_\_\_\_.
- (a) -6                                      (b) -4                                      (c) -2                                      (d) +4
11. When light rays enter the eye, most of the refraction occurs at the
- (a) crystalline lens                                      (b) outer surface of the cornea  
(c) iris                                      (d) pupil
12. How will the image formed by a convex lens be affected if the upper half of the lens is wrapped with a black paper?
- (a) The size of the image is reduced to one-half.  
(b) the upper half of the image will be absent.  
(c) The brightness of the image is reduced.  
(d) There will be no effect.



**SECTION – (B) CHEMISTRY**

13. Which of the following statements is incorrect?
- (a) In oxidation, oxygen is added to a substance  
(b) In reduction, hydrogen is added to a substance  
(c) Oxidizing agent is oxidized  
(d) Reducing agent is oxidized
14. In the given reaction  

$$\text{NaH} + \text{H}_2\text{O} \longrightarrow \text{NaOH} + \text{H}_2$$
 In this reaction hydrogen undergoes:
- (a) Oxidation only                                      (b) Both oxidation and reduction  
(c) Reduction only                                      (d) None of these
15. The function of quick lime in soda lime mixture is to
- (a) Absorb moisture present in soda lime  
(b) Increase the efficiency of soda lime  
(c) Increase the pH of soda lime  
(d) Take part in reaction with NaOH
16. The pH of a solution of HCL is 4. This shows that the molarity of the solution is
- (a) 4.0M                                      (b) 0.4M  
(c) 0.0001M                                      (d) 0.001M
17. Which of the following does not form an acidic salt?
- (a) Phosphoric acid                                      (b) Carbonic acid  
(c) Hydrochloric acid                                      (d) Sulphuric acid
18. Which salt is acidic in nature?
- (a)  $\text{NH}_4\text{Cl}$                                       (b)  $\text{CH}_3\text{COONH}_4$   
(c)  $\text{NaCl}$                                       (d)  $\text{Na}_2\text{CO}_3$
19. Which of the following non-metals is used as a disinfectant?

- (a) Chlorine (b) Nitrogen  
 (c) Oxygen (d) Sulphur
20. When hydrochloric acid is added to barium hydroxide, a white-coloured compound is formed. Which of the following option gives the complete chemical reaction?  
 (a)  $\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaCl}_2 + 2\text{HOH}$  (b)  $2\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaCl}_2 + 2\text{HOH}$   
 (c)  $2\text{HCl} + \text{Ba}(\text{OH})_2 \rightarrow \text{BaH}_2 + 2\text{HCl} + \text{O}_2$   
 (d)  $\text{HCl} + 2\text{Ba}(\text{OH}) \rightarrow 2\text{BaCl}_2 + 2\text{HOH} + \text{O}_2$
21. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?  
 (i) Good thermal conductivity (ii) Good electrical conductivity  
 (iii) Ductility (iv) High melting point  
 (a) (i) and (ii) (b) (i) and (iii)  
 (c) (ii) and (iii) (d) (i) and (iv)
22. Which of these is not a metal?  
 (a) Mg (b) Hg (c) Tl (d) Br
23. Which of these is a weak acid?  
 (a)  $\text{HNO}_3$  (b)  $(\text{COOH})_2$  (c)  $\text{H}_2\text{SO}_4$  (d) HI
24. Which of these displacement reactions will not occur?  
 (a)  $\text{Cu}(\text{NO}_3)_2 + 2\text{Ag} \rightarrow 2\text{AgNO}_3 + \text{Cu}$  (b)  $\text{FeSO}_4 + 2\text{Na} \rightarrow \text{Na}_2\text{SO}_4 + \text{Fe}$   
 (c)  $\text{CuCl}_2 + \text{Zn} \rightarrow \text{ZnCl}_2 + \text{Cu}$  (d)  $\text{ZnCl}_2 + \text{Mg} \rightarrow \text{MgCl}_2 + \text{Zn}$

**SECTION – (C) MATHEMATICS**

25. If 7 times the 7<sup>th</sup> term of an AP is equal to 11 times the 11<sup>th</sup> term, then the product  $a_{18} \times a_{19}$  will be:  
 (a) 77 (b) 1 (c) 18 (d) 0
26. If  $0.04x + 0.09y = 1$  and  $0.7(x - 2) + 0.05y = 10$  then find  $x/y^2$ .  
 (a) 1 (b) 2 (c) 3 (d) 4
27.  $4^x + 4^{(x+1)} = 80$  then value of  $x^x$  is:  
 (a) 2 (b) 6 (c) 8 (d) 4
28. The quadratic equations  $x^2 - 4ax + 27 = 0$  and  $x^2 - ax - 54 = 0$ , where  $a > 0$ , have one root in common. Find the value of a.  
 (a) 4 (b) 3 (c) 6 (d) 2
29. If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2 - 3x + 4 = 0$ , then the equation, whose roots are  $\alpha^2/\beta, \beta^2/\alpha$ , is:  
 (a)  $4x^2 + 9x + 16 = 0$  (b)  $4x^2 - 9x + 16 = 0$   
 (c)  $x^2 - 9x + 16 = 0$  (d)  $x^2 + 9x + 16 = 0$

30. The sum of a number and its positive square root is  $\frac{6}{25}$ . Find the number.

- (a)  $\frac{34}{25}$                       (b)  $\frac{36}{25}$                       (c)  $\frac{1}{25}$                       (d)  $\frac{24}{25}$

31. If  $u_i = \frac{x_i - 25}{10}$ ,  $\sum f_i u_i = 20$ ,  $\sum f_i = 100$ , then  $\bar{x} =$

- (a) 23                      (b) 24                      (c) 25                      (d) 27

32. Watching from a window 40 m high of a multi – storeyed building, the angle of elevation of the top of a tower is found to have measure 45. The angle of elevation of the top of the same tower from the bottom of the building is found to have measure 60. Find the height of the tower.

- (a) 94.6 m                      (b) 96.4 m                      (c) 98 m                      (d) 98.4 m

33. Find the zeros of the polynomial  $f(x) = 2x^3 - 15x^2 + 37x - 30$  if they are in A.P.

- (a)  $2, 3, \frac{5}{2}$                       (b)  $-2, -3, \frac{5}{2}$                       (c)  $-2, 3, -\frac{5}{2}$                       (d)  $2, -3, \frac{5}{2}$

34. The houses of a row are numbered consecutively from 1 to 49. There is a value of x such that the sum of the numbers of the houses preceding the house numbered x is equal to the sum of the numbers of the houses following it. The value of k if  $x^2 - kx + 700 = 0$  is

- (a) 35                      (b) 45                      (c) 55                      (d) 65

35. If  $a \cos \theta - b \sin \theta = c$ , then  $a \sin \theta + b \cos \theta =$

- (a)  $\pm\sqrt{a^2 + b^2 + c^2}$                       (b)  $\pm\sqrt{a^2 + b^2 - c^2}$   
 (c)  $\pm\sqrt{c^2 - a^2 + b^2}$                       (d) None of these

36. Can  $x^2 - 1$  be the quotient on division of  $x^6 + 2x^3 + x - 1$  by a polynomial in x of degree 5?

- (a) Yes                      (b) No  
 (c) Maybe                      (d) Cannot be determined

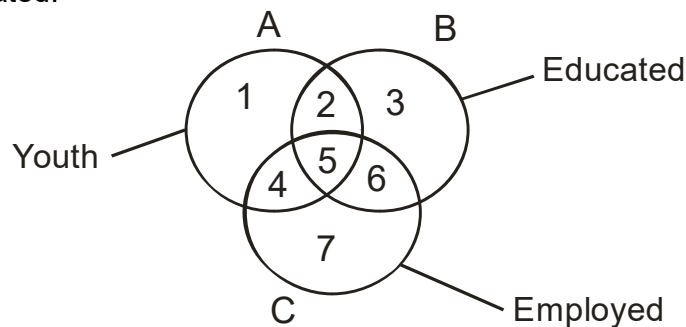
37. If three vertices of a parallelogram are  $(a + b, a - b)$ ,  $(2a + b, 2a - b)$ ,  $(a - b, a + b)$ . The fourth vertex will be

- (a)  $(2a + b, -b)$                       (b)  $(b, b - 2a)$   
 (c)  $(b, -b)$                       (d)  $(-b, b)$

38. A train after travelling 50 km met with an accident and then proceeds at  $\frac{3}{4}$ th of its former speed and arrives at its destination 35 minutes late. Had an accident occurred 24 kms further, it would have reached destination only 25 minutes late. The speed of the train is?
- (a) 36 km/hr      (b) 48 km/hr      (c) 54 km/hr      (d) 58 km/hr
39. The sum of n terms of two arithmetic progressions are in the ratio  $(n + 1) : (n + 2)$ , then the ratio of their 12th terms is?
- (a)  $\frac{13}{14}$       (b)  $\frac{11}{12}$       (c)  $\frac{24}{25}$       (d)  $\frac{23}{24}$
40. If  $\sec\theta + \tan\theta = 2 + \sqrt{5}$ , then the value of  $\sec\theta$  is: ( $0^\circ \leq \theta \leq 90^\circ$ )
- (a)  $\sqrt{5}$       (b)  $2\sqrt{5}$       (c)  $\frac{4}{5}$       (d)  $\frac{\sqrt{3}}{2}$

**SECTION – (D)      APTITUDE**

41. Introducing a man Neeraj said, “His wife is the only daughter of my wife.” How Neeraj is related to that Man?  
 (a) Father      (b) Grandfather      (c) Father-in-law      (d) Brother
42. On what dates of August 1980 did Monday fall?  
 (a) 4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup> & 25<sup>th</sup>      (b) 3<sup>rd</sup>, 10<sup>th</sup>, 17<sup>th</sup> & 24<sup>th</sup>  
 (c) 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup> & 27<sup>th</sup>      (d) 9<sup>th</sup>, 16<sup>th</sup>, 23<sup>th</sup> & 30<sup>th</sup>
43. If PORTER is written as QNSSFQ, then BRIGHT would be coded as:  
 (a) CQJFIS      (b) CNJHIS      (c) CQJFGS      (d) CNJHIU
44. Study the diagram below and identify the region representing youth who are employed but not educated.

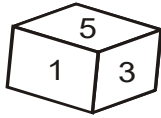


- (a) 4 only      (b) 1, 4, 7      (c) 4, 7      (d) 4, 5, 6
45. If ‘+’ means ‘divided by’, ‘-’ means ‘multiplied by’, ‘×’ means ‘minus’ and ‘÷’ means ‘plus’, which of the following will be the value of the expression  $16 \div 8 - 4 + 2 \times 4$ ?  
 (a) 16      (b) 28      (c) 32      (d) 44

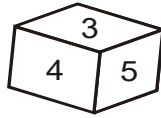
46. If  $\div$  means  $+$ ,  $-$  means  $\div$ ,  $\times$  means  $-$  and  $+$  means  $\times$ , then  $\frac{(36 \times 4) - 8 \times 4}{4 + 8 \times 2 + 16 \div 1} = ?$   
 (a) 0 (b) 8 (c) 15 (d) 20

47. Laxman went 15 kms to the west from my house, then turned left and walked 20 kms. He then turned East and walked 25 kms finally turning left covered 20 kms. How far was he from his house?  
 (a) 5 kms (b) 10 kms (c) 40 kms (d) 80 kms

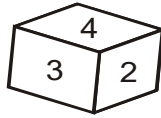
48. Find out the missing number in the following sequence: 1, 3, 3, 6, 7, 9, ?, 12, 21.  
 (a) 10 (b) 11 (c) 12 (d) 13



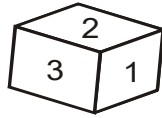
(i)



(ii)



(iii)



(iv)

49. What is number is opposite 4?  
 (a) 1 (b) 2 (c) 5 (d) 6

50. Numbers are arranged according to some rule in the cells made into a square. One cell is left empty, and we have to find the way the numbers are arranged and mark the answer from the choice given below:  
 (a) 12 (b) 15 (c) 30 (d) 28

9	3	?	21
7	5	9	27

51. Out of the four alternatives, choose the one which expresses the right meaning of the given word: Proliferate:  
 (a) Pro-literate (b) Prohibit (c) Stipulate (d) Reproduce

52. Out of the four alternatives, choose the one which expresses the right meaning of the given word: Easy:  
 (a) Elementary (b) Artful (c) Infantile (d) Pretentions

53. Which one is like count, List and Weight?  
 (a) number (b) Measure (c) Sequence (d) Compare

54. How many times do the hands of a clock coincide in a day?  
 (a) 24 (b) 22 (c) 21 (d) 20

55. How many times do the hands of a clock point towards each other in a day?  
 (a) 24 (b) 22 (c) 12 (d) 22

★★★★★



**ANSWER KEY | SAMPLE PAPER (ENGG)****Standard – X Moving to Standard – XI • (Code : CE-SP)**

- |         |         |         |
|---------|---------|---------|
| 1. (a)  | 20. (b) | 39. (c) |
| 2. (b)  | 21. (d) | 40. (a) |
| 3. (b)  | 22. (d) | 41. (c) |
| 4. (a)  | 23. (b) | 42. (a) |
| 5. (c)  | 24. (a) | 43. (a) |
| 6. (b)  | 25. (d) | 44. (a) |
| 7. (a)  | 26. (a) | 45. (b) |
| 8. (a)  | 27. (d) | 46. (d) |
| 9. (a)  | 28. (b) | 47. (b) |
| 10. (d) | 29. (a) | 48. (d) |
| 11. (b) | 30. (c) | 49. (a) |
| 12. (c) | 31. (d) | 50. (b) |
| 13. (c) | 32. (a) | 51. (d) |
| 14. (a) | 33. (a) | 52. (a) |
| 15. (a) | 34. (c) | 53. (b) |
| 16. (c) | 35. (b) | 54. (b) |
| 17. (b) | 36. (b) | 55. (b) |
| 18. (a) | 37. (d) |         |
| 19. (a) | 38. (b) |         |