

SAMPLE PAPER

Max. Marks : 180

Duration : 180 Minutes

Please read the instructions carefully. You are allotted additional 5 minutes specifically for this purpose.

CLASS - X

Write your Name and VTSE SAMPLE PAPER Student Registration No. In the space provided below.

NAME :

REG. NO. :

GENERAL INSTRUCTIONS EXAMINATION HALL

A. General :

- 1 This Question Paper contains 60 questions. Please check before starting to attempt. The question paper consists **3 parts Physics (1 to 20), Chemistry(21 to 40), Mathematics(41 to 60).**
- 2 Space is provided within question paper for rough work hence no additional sheets will be provided.
- 3 Blank paper, clipboard, log tables, slide rules, calculators, cellular phones, pagers and electronic gadgets in any form are **not** allowed inside the examination hall.
- 4 Do not Tamper / mutilate the **ORS** or this booklet.
- 5 **SUBMIT** the ORS to the invigilator after completing the test & take away the test paper with you.
- 6 Any student found/reported using unfair means to improve his/her performance in the test, shall be disqualified from VTSE.
- 7 Objective Response Sheet (ORS), is provided separately.
- 8 Do not break the seals of the question-paper booklet before instructed to do so by the invigilators.

B. How to fill Objective Response Sheet (ORS) for filling details marking answers:

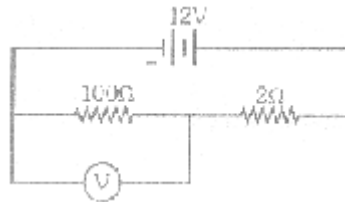
- 9 Use only HB Pencil/Blue or Black ball point pen for filling the ORS. Do not use Gel/Ink/Felt pen as it might smudge the ORS.
- 10 Write your VTSE Student Registration No. in the boxes given at the top left corner of your ORS with blue/black ball point pen. Also, darken the corresponding bubbles with HB Pencil/Blue or Black ball point pen only.
- 11 If any student does not fill his/her VTSE Student Registration No. correctly and properly, then his/her ORS will not be checked/ evaluated.
- 12 Since it is not possible to erase and correct pen filled bubble, you are advised to be extremely careful while darken the bubble corresponding to your answer.
- 13 Neither try to erase / rub / scratch the option nor make the Cross (X) mark on the option once filled. Do not scribble, smudge, cut, tear, or wrinkle the ORS. Do not put any stray marks or whitener anywhere on the ORS.
- 14 If there is any discrepancy between the written data and the bubbled data in your ORS, the bubbled data will be taken as final.

C. Question paper format and Marking scheme :

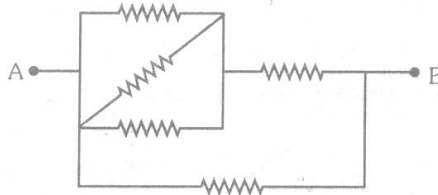
- 15 All questions are compulsory.
- 16 Correct Question will be awarded with + 3 marks.
- 17 Incorrect Question will be awarded with deduction -1 mark.
- 18 No attempt question will be awarded 0 mark.

PHYSICS

1. If a charged body attracts another body, the charge on the other body :-
 (A) must be negative (B) must be positive
 (C) must be zero (D) may be negative or positive or zero
2. 1 MeV is equal to :-
 (A) 1.6×10^{-19} J (B) 1.6×10^{-14} J (C) 1.6×10^{-13} J (D) 1.6×10^{-13} J
3. A man has five resistors each of value $\frac{1}{5} \Omega$. What is the maximum resistance he can obtain by connecting them
 (A) 1Ω (B) 5Ω (C) $\frac{1}{2} \Omega$ (D) $\frac{1}{5} \Omega$
4. Materials which allow larger currents to flow through them are called :-
 (A) Insulators (B) Conductors (C) Semiconductors (D) Alloys
5. If I is the current through a wire and e is the charge of electrons, then the number of electrons in t seconds will be given by :-
 (A) $\frac{Ie}{t}$ (B) Ite (C) e/It (D) It/e
6. In the circuit shown in Fig., the reading of the voltmeter V will be :-



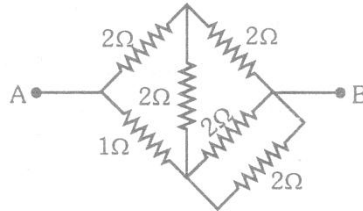
- (A) 4 V (B) 2 V (C) 6 V (D) 3 V
7. Five identical resistance coils are connected in the network as shown in fig. and the resistance measured between A and B is 1Ω . Then the individual coils must have a resistance of :-



- (A) 1Ω (B) $\frac{1}{4} \Omega$ (C) $\frac{7}{4} \Omega$ (D) $\frac{4}{7} \Omega$

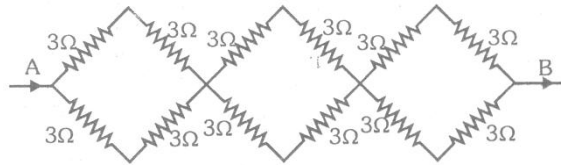
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8. What is the resistance between A and B in the given network [Fig.] ?



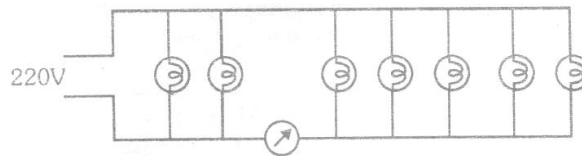
- (A) $\frac{3}{4} \Omega$ (B) $\frac{4}{3} \Omega$ (C) 2Ω (D) $\frac{1}{2} \Omega$

9. In the network of resistors shown in the adjoining figure, the equivalent resistance between A and B is :-



- (A) 54Ω (B) 18Ω (C) 36Ω (D) 9Ω

10. Seven identical lamps of resistance 220Ω each are connected to a 220 V line as shown in Fig. Then the reading in the ammeter will be :-



- (A) $\frac{1}{10} \text{ A}$ (B) $\frac{2}{5} \text{ A}$ (C) $\frac{3}{10} \text{ A}$ (D) $\frac{1}{2} \text{ A}$

11. Current flowing in conductor A is 2 A and current flowing in conductor B is 4 A . The ratio of magnetic field produced around conductor A to the magnetic field produced around conductor B at a distance 10 cm from both the conductors is :

- (A) $2 : 1$ (B) $1 : 2$ (C) $4 : 1$ (D) $\sqrt{2} : 1$

12. Current flowing in conductors A and B is same, what is the ratio of the magnetic field produced around the conductor A at a distance of 5 cm from the conductor to the magnetic field produced around the conductor B at a distance of 2 cm from this conductor is

- (A) 0.04 (B) 0.4 (C) 4.0 (D) 10

13. Same amount of current flows in the same direction. long the two parallel conductors separated by a small distance:

- (A) Both conductors attract each other (B) Both conductors repel each other
(C) Conductors neither attract each other nor repel each other
(D) Both conductors rotates about their axis

14. When an electric current flows through a long solenoid, magnetic field is set up in and around the solenoid :

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- (A) Magnetic field inside the solenoid is non-uniform and weak
 (B) Magnetic field outside the solenoid is uniform and strong
 (C) Magnetic field inside the solenoid increases as we move towards the ends of the solenoid
 (D) Magnetic field of solenoid resembles the magnetic field of the bar magnet .
15. Magnetic field produced at the centre of a current carrying circular wire is :
 (A) Directly proportional to the square of the radius of the circular wire
 (B) Directly proportional to the radius of the circular wire
 (C) Inversely proportional to the square of the radius of the circular wire
 (D) Inversely proportional to the radius of the circular wire.
16. A deviation in the path of a ray of light can be produced
 (A) by a glass prism but not by a rectangular glass
 (B) by a rectangular glass slab but not by a glass prism
 (C) by a glass prism as well as a rectangular glass slab
 (D) neither by a glass prism nor by a rectangular glass slab
17. The wavelengths corresponding to violet, yellow and red lights are λ_v , λ_y and λ_r respectively.
 (A) $\lambda_v > \lambda_y > \lambda_r$ (B) $\lambda_v < \lambda_y < \lambda_r$ (C) $\lambda_y < \lambda_v < \lambda_r$ (D) $\lambda_y < \lambda_r < \lambda_v$
18. If you want to see your full image then the , minimum size of the plane mirror
 (A) should be of your height (B) should be half of your height.
 (C) should be twice of height. (D) depends upon your distance from the mirror
19. An object A is placed at a distance d in front of a plane mirror. If one stands directly behind the object at a distance S from the mirror, then the distance of the image of A from the individual is
 (A) 2 S (B) 2 d (C) S + d (D) S + 2d
20. The focal length of concave mirror is f and the distance from the object to the principal focus is x. The magnification obtained will be
 (A) $(f + x)/f$ (B) f / x (C) $\frac{\sqrt{f}}{\sqrt{x}}$ (D) f^2 / x^2

CHEMISTRY

21. $\text{Fe}_2\text{O} + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$ This reaction is an example of –
 (A) Combination reaction (B) Double displacement reaction
 (C) Decomposition reaction (D) Displacement reaction
22. In reaction $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$ the reducing agent is-
 (A) SO_2 (B) H_2S (C) H_2O (D) S
23. Which of the following reaction is metathesis reaction?
 (A) $\text{FeCl}_3 + 3\text{NaOH} \rightarrow \text{Fe}(\text{OH})_3 + 3\text{NaCl}$ (B) $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$

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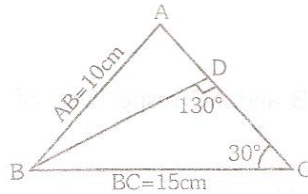
- (C) $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$ (D) $\text{N}_2 + \text{O}_2 \rightarrow 2\text{NO}$
- 24.** What happens when dil hydrochloric acid is added to iron fillings?
 (A) Hydrogen gas and Iron chloride are produced.
 (B) Chlorine gas and Iron hydroxide are produced.
 (C) NO reaction takes place.
 (D) Iron salt and water are produced.
- 25.** When Iron nails are added to an aqueous solution of copper sulphate, a chemical change occurs, which of the following is not true about this reaction?
 (A) Blue colour of the solution fades. (B) Iron nails becomes brownish colour.
 (C) It is a displacement reaction. (D) Iron nails dissolves completely.
- 26.** A solution reacts with crushed egg-shells to give a gas that turns that lime-water milky. The solution contains-
 (A) NaCl (B) HCl (C) LiCl (D) KCl
- 27.** 10 mL of a solution of NaOH is found to be completely neutralized by 8mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount HCl solution (the solution as before) required to neutralise be-
 (A) 4 mL (B) 8 mL (C) 12 mL (D) 16 mL
- 28.** Which one on of the following types of medicines is used for treatment indigestion-
 (A) Antibiotic (B) Analgesic (C) Antacid (D) Antiseptic
- 29.** Which of the following is not a strong acid?
 (A) H_2SO_4 (B) CH_3COOH (C) HNO_3 (D) HCl
- 30.** Soda ash is –
 (A) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ (B) Na_2CO_3 (C) NaOH (D) NaHCO_2
- 31.** Which of the following will not decolourise bromine water?
 (A) C_4H_8 (B) C_3H_4 (C) C_3H_8 (D) C_4H_6
- 32.** The functional group in aldehydes is
 (A) $-\text{CHO}$ (B) $\begin{array}{c} | \\ -\text{C} = \text{O} \end{array}$ (C) $-\text{COOH}$ (D) $-\text{COOR}$
- 33.** Ethanol on complete oxidation gives
 (A) CO_2 and water (B) Acetaldehyde (C) Acetic acid (D) Acetone
- 34.** Which class of organic compounds give effervescence with NaHCO_3 solution?
 (A) Esters (B) Alcohols (C) Carboxylic acids (D) Aldehydes
- 35.** Carboxylic acids are obtained from alcohols by -
 (A) Oxidation (B) Reduction (C) Hydrolysis (D) Pyrolysis
- 36.** Soaps are prepared by alkaline hydrolysis of-
 (A) Carboxylic acids (B) Lower esters (C) Higher esters (D) None of these
- 37.** Which non-metal is the best conductor of electricity –
 (A) Phosphorus (B) Fluorine (C) Graphite (D) Bromine

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38. Which compound is used in photography –
 (A) AgNO_3 (B) AgO (C) AgBr (D) AgCl
39. Which of the following has lowest number of electrons in the valence shell ?
 (A) O (B) C (C) N (D) B
40. Which of the following pairs of elements does not belong to same group ?
 (A) Cl, Br (B) N, P (C) Mg, Ca (D) Al, Si

MATHEMATICS

41. In the adjoining figure, $AD : DC = 2 : 3$, then $\angle ABC$ is equal to :



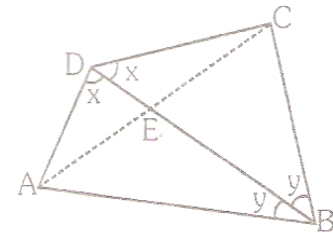
- (A) 30° (B) 40° (C) 45° (D) 110°
42. Let ABC be an equilateral triangle. Let $BE \perp CA$ meeting CA at E, then $(AB^2 + BC^2 + CA^2)$ is equal to :
 (A) $2BE^2$ (B) $3BE^2$ (C) $4BE^2$ (D) $6BE^2$
43. The diagonal BD of a quadrilateral ABCD bisects $\angle B$ and $\angle D$, then :

(A) $\frac{AB}{CD} = \frac{AD}{BC}$

(B) $\frac{AB}{BC} = \frac{AD}{CD}$

(C) $AB = AD \times BC$

(D) None of these



44. If x, y, z are real numbers such that $\sqrt{x-1} + \sqrt{y-2} + \sqrt{z-3} = 0$ then the values of x, y, z are respectively
 (A) 1, 2, 3 (B) 0, 0, 0 (C) 2, 3, 1 (D) None of these
45. The sum of the factors of 19600 is –
 (A) 54777 (B) 33667 (C) 5428 (D) None of these
46. In how many ways can 576 be expressed as a product of two distinct factors ?
 (A) 10 (B) 11 (C) 21 (D) None of these
47. If a, b are the zeros of $f(x) = x^2 + px + 1$ and c, d are the zeros of $f(x) = x^2 + qx + 1$ the value of $E = (a - c)(b - c)(a + b)(b + d)$ is –
 (A) $p^2 - q^2$ (B) $q^2 - p^2$ (C) $q^2 + p^2$ (D) None of these
48. If c, d are zeros of $x^2 - 10ax - 11b$ and a, b are zeros of $x^2 - 10cx - 11d$, then value of $a + b + c + d$ is –
 (A) 1210 (B) -1 (C) 2530 (D) -11

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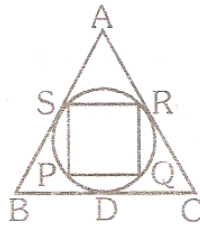
49. The pair of linear equations $2kx + 5y = 7$, $6x - 5y = 11$ has a unique solution if –
 (A) $k \neq -3$ (B) $k \neq 3$ (C) $k \neq 5$ (D) $k \neq -5$

50. If $\sin \alpha + \cos \alpha = a$, then $\sin^6 \alpha + \cos^6 \alpha$ is equal to :

- (A) $1 + \frac{3}{4}(a^2 - 1)^2$ (B) $1 - \frac{3}{4}(a^2 - 1)^2$ (C) $\frac{3 + 4(a^2 - 1)^2}{4}$ (D) $\frac{3 - 3(a^2 - 1)^2}{4}$

51. A circle is inscribed in an equilateral triangle of sides a , the area of any square inscribed in the circle is :

- (A) $6a^2$
 (B) $3a^2$
 (C) $\frac{a^2}{6}$
 (D) $\frac{a^2}{3}$

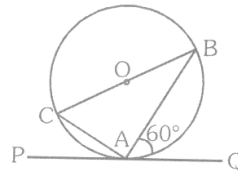


52. If $\sin \theta_1 + \sin \theta_2 + \sin \theta_3 = 3$ then $\cos \theta_1 + \cos \theta_2 + \cos \theta_3$ is equal to :

- (A) 3 (B) 2 (C) 1 (D) 0

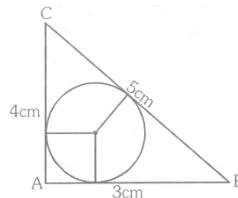
53. In the given figure, PAQ is the tangent. BC is the diameter of the circle. $m \angle BAQ = 60^\circ$, find $m \angle ABC$:

- (A) 25°
 (B) 30°
 (C) 45°
 (D) 60°



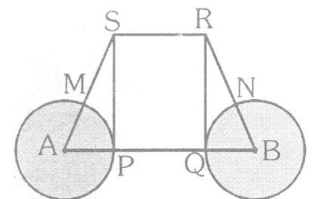
54. ABC is a right angled triangle $AB = 3$ cm, $BC = 5$ cm and $AC = 4$ cm, then the inradius of the circle is :

- (A) 1 cm
 (B) 1.25 cm
 (C) 1.5 cm
 (D) none of these

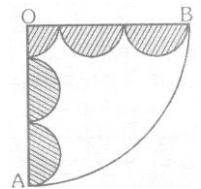


55. In the adjoining figure PQRS is a square and $MS = RN$ and A, P, Q and B lie on the same line. Find the ratio of the area of two circles to the area of the square. Given that $AP = Ms$.

- (A) $\frac{\pi}{3}$ (B) $\frac{2\pi}{3}$
 (C) $\frac{3\pi}{2}$ (D) $\frac{6}{\pi}$



56. A circular paper is folded along its diameter, then again it is folded to form a quadrant. Then it is cut as shown in the figure, after it the paper was reopened in the original circular shape. Find the ratio of the original paper to that of the remaining paper? (The shaded portion is cut)



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off from the quadrant. The radius of quadrant OAB is 5 cm and radius of each semicircle is 1 cm) :

- (A) 25 : 16 (B) 25 : 9 (C) 20 : 9 (D) None of these

57. If $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in A.P., then $\left[\frac{1}{a} + \frac{1}{b} - \frac{1}{c}\right]\left[\frac{1}{b} + \frac{1}{c} - \frac{1}{a}\right]$ is equal to :

- (A) $\frac{4}{ac} - \frac{3}{b^2}$ (B) $\frac{b^2 - ac}{a^2 b^2 c^2}$ (C) $\frac{4}{ac} - \frac{1}{b^2}$ (D) None of these

58. $1^2 + 1 + 2^2 + 2 + 3^2 + 3 + \dots + n^2 + n$ is equal to :

- (A) $\frac{n(n+1)}{2}$ (B) $\left[\frac{n(n+1)}{2}\right]^2$ (C) $\frac{n(n+1)(n+2)}{3}$ (D) $\frac{n(n+1)(n+2)(n+3)}{4}$

59. If a,b,c are positive real no., then least value of $(a + b + c) \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$ is :

- (A) 1 (B) 6 (C) 9 (D) None of these

60. If the orthocenter and centroid of a triangle are (-3, 5) and (3, 3) then it's circumcentre is :

- (A) (6, 2) (B) (3, -1) (C) (-3, 5) (D) (-3, 1)

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
D	C	A	B	D	A	C	B	D	D	B	B
13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
A	D	D	A	B	B	C	B	D	B	A	A
25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.
D	B	D	C	B	B	C	A	A	C	A	C
37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.
C	A	D	D	B	C	B	A	A	A	B	A
49.	50.	51.	52.	53.	54.	55.	56.	57.	58.	59.	60.
A	B	C	D	B	A	B	A	A	C	C	A

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