Igniters FOR TOMORROW

Test Booklet Code

R

IFT

This Booklet contains 8 Pages

Do not open this test Booklet until you are asked to do so.

Class : XI moving **Max Marks : 240**

Subject : Physics, Chemistry, Mathematics & General Aptitude **Time : 2 Hrs**

Name of the Candidate (in Captials) : _____

Roll Number In figures : _____

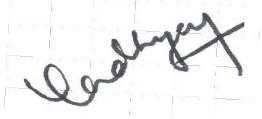
In Words : _____

Centre of Examination (in Captials) : _____

Candidate's Signature : _____

Invigilators's Signature : _____

Centre Superintendent



PHYSICS

Q 1. An incident ray strikes a plane mirror at an angle of 15^o with the mirror. The angle between the incident ray and reflected ray is
(a) 15^o (b) 30^o
(c) 150^o (d) none of these

Q 2. The relation between u, v and f for a mirror is given by:
(a) $f = \frac{uv}{u-v}$ (b) $f = \frac{2uv}{u+v}$
(c) $f = \frac{uv}{u+v}$ (d) none of these

Q 3. Which of the following is a luminous body?
(a) fire (b) earth
(c) moon (d) tree

Q 4. A ray, emerging from a point on the object, passing through the centre of curvature C strikes the mirror normally i.e at 90^o. Then, the angle of incidence is equal to
(a) 0^o (b) 45^o
(c) 90^o (d) 180^0

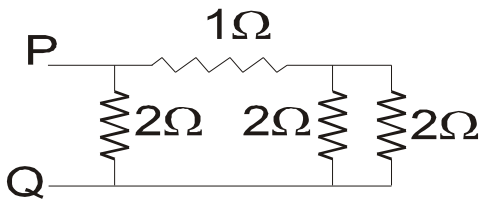
Q 5. A ray of light incident on a plane mirror at an angle θ. If the angle between the incident and reflected rays is 80^o, what is the value of θ ?
(a) 40^o (b) 50^o
(c) 45^o (d) 55^o

Q 6. If is focal lengh of the lens, then the power of a lens is equal to
(a) $\frac{100}{f(cm)}$ (b) $\frac{10}{f(cm)}$
(c) $\frac{100}{f(m)}$ (d) $\frac{1}{100 f(cm)}$

Q 7. Which of the following colours of light undergoes the least deviation while passing through a glass prism?
(a) red (b) blue
(c) yellow (d) green

Q 8. The resistance of a semiconductor material (gremanium or silicon) with rise in temperature.
(a) increases
(b) decreases
(c) remains the same
(d) first increases then decreases

Q 9. The equivalent resistance between P and Q figure



(a) $7\,\Omega$ (b) $2\,\Omega$
(c) $\frac{5}{3}\Omega$ (d) $1\,\Omega$

Q 10. A suitable unit for expressing the strenght of electric field is
`
(a) V/C (b) C/m
(c) N/C (D) C/N

Q 11. Fleming's right hand rule gives
(a) the magnitude of the induced emf
(b) the megnitude of the magnetic field
(c) the direction of the induced emf
(d) both magnitude and direction of the induced emf

Q 12. The frequency of AC mains in india is
(a) 100 Hz (b) 50 Hz
(c) 1/100 Hz (d) 1/50 Hz

Q 13. At grid sub-stations the voltage is stepped up
(a) current (b) electrical energy
(c) power (d) resistance

Q 14. An electric current predominantly produces field around it.
(a) magnetic (b) electric
(c) gravitational (d) all the above

Q 15. If a bar magnet is cut lengthwise into 3 parts, the total number of poles will be
(a) 2 (b) 3
(c) 4 (d) 6

(Space For Rough Work)

CHEMISTRY

Q.16 Four students A, B, C and D observed and compared the pressure exerted by three different faces of a metal cuboid of dimensions 15 cm X 10 cm X 5 cm. They recorded their observations about the depressions observed by them in the sand by the different faces of the cuboid as follows:
(i) 'A' records that the depression is minimum when the face of dimension 15 cm X 10 cm is in contact with the sand.
(ii) 'B' records that the depression is minimum when the face of dimension 15 cm X 5 cm is in con -tact with the sand.
(iii) 'C' records that the depression is minimum when the face of dimension 10 cm X 5 cm is in con -tact with the sand.
(iv) 'D' records that the depression is equal for all the faces.
The correct conclusion is drawn by the student
(a) A (b) B
(c) C (d) D

Q.17 The element, with atomic number 118, will be
(a) transition element (b) alkali
(c) alkaline earth metal (d) noble gas.

Q.18 A fruit juice is tested for its pH value. What could be its possible pH if the colour is changed to red?
(a) Less than 3 (b) More than 8
(c) 7 (d) between 6.5 and 7.5

Q.19 To show that iron is more reactive than copper, the correct procedure is to:
(a) prepare ferrous sulphate solution and dip cop -per strip in it.
(b) prepare copper sulphate solution and dip iron strip in it.
(c) add dil. nitric acid on both strips.
(d) heat iron and copper strips both.

Q.20 The number of gram molecules of oxygen in 6.02×10^{24} CO molecules is
(a) 10 gm molecules (b) 5 gm molecules
(c) 1 gm molecules (d) 0.5 gm molecules.

Q.21 Boron has two stable isotopes, ^{10}B(19%) and ^{11}B(81%). Calculate average at. wt. of boron in the periodic table
(a) 10.8 (b) 10.2
(c) 11.2 (d) 10.0

Q.22 Which one of the following is not isoelectronic with O^{2-}?
(a) Tl^{+} (b) Na^{+}
(c) N^{3-} (d) F^{-}

Q.23 The total number of valence electrons in 4.2 gm of N_3^- ion is (N_A is the Avogadro's number)
(a) 2.1 N_A (b) 4.2 N_A
(c) 1.6 N_A (d) 3.2 N_A

Q.24 An element , X has the following isotopic composition:
^{200}X : 90% ^{199}X : 8.0% ^{202}X : 2.0%
The weighted average atomic mass of the naturally occuring element X is closest to
(a) 201 amu (b) 202 amu
(c) 199 amu (d) 200 amu.

Q.25 Na^+, Mg^{2+}, Al^{3+} and Si^{4+} are isoelectronic. The order of their ionic size is
(a) $Na^+ > Mg^{2+} < Al^{3+} < Si^{4+}$
(b) $Na^+ < Mg^{2+} > Al^{3+} > Si^{4+}$
(c) $Na^+ > Mg^{2+} > Al^{3+} > Si^{4+}$
(d) $Na^+ < Mg^{2+} > Al^{3+} < Si^{4+}$

Q.26 If the atomic number of an element is 33, it will be placed in the periodic table in the
(a) first group (b) third group
(c) fifth group (d) seventh group.

Q.27 Which of the following elements has the maximum electronic affinity?
(a) I (b) Br
(c) Cl (d) F

Q.28 How many chain isomers could be obtained from the alkane C_6H_{14}?
(a) Four (b) Five
(c) Six (d) Seven.

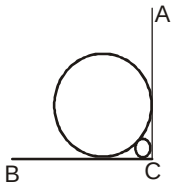
Q.29 Isomers of a substance must have the same
(a) structural formula (b) physical properties
(c) chemical properties (d) molecular formula.

Q.30 Rahul adds aqueous solution of barium chloride to an aqueous solution of sodium sulphate. He would observe that
(a) a pungent smelling gas is evolved.
(b) the colour of the solution turns red.
(c) a yellow precipitate is formed after sometime.
(d) a white precipitate is formed almost immedi -ately.

(Space For Rough Work)

MATHEMATICS

Q 31 In the figure, $\angle$ ACB =90^O and radius of big circle = 2cm, then the radius of small circle is (in cm)



(a) $3-2\sqrt{2}$ (b) $4-2\sqrt{2}$

(c) $7-4\sqrt{2}$ (d) $6-4\sqrt{2}$

Q.32 The value(s) of a for which one of the roots of $x^2+(2a+1)x+(a^2+2)=0$ is twice the other root is

(a) 4 (b) -4

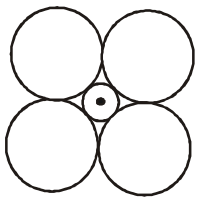
(c) 0 (d) -2

Q.33 The points (4,-1), (6, 0), (7, 2) and (5, 1) are the vertices of a

(a) quadrilateral (b) rhombus

(c) square (d) none of these

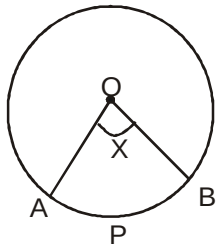
Q.34 In the figure all four outer circles are of same size (radius=r), then the radius of inner circle is



(a) r$\sqrt{2}$ (b) $\sqrt{2}-1$

(c) $\frac{1}{\sqrt{2}}r$ (d) $\left(\frac{2}{\sqrt{2}+1}\right)r$

Q.35 The area of sector OAPB is $\frac{5}{18}$ of the area of the circle, then then the value of x is



(a) 120^o (b) 100^O

(c) 145^o (d) 130^o

Q.36 The radius of the base of a right circular cone of semi-vertical angle α is r. The volume of cone is

(a) $\frac{1}{3}\pi^3\sin\alpha$ (b) $\frac{1}{3}\pi^3\cos\alpha$

(c) $\frac{1}{3}\pi^3\tan\alpha$ (d) $\frac{1}{3}\pi^3\cot\alpha$

Q.37 From the top of a cliff 25 m high the angle of elevation of a tower is found to be equal to the angle of depression of the foot of the tower. The height of the tower is

(a) 25 m (b) 50 m

(c) 75 m (d) 100 m

Q.38 If $x=a\sec\theta$ and $y=b\tan\theta$,then $b^2x^2-a^2y^2=$

(a) ab (b) a^2-b^2

(c) a^2+b^2 (d) a^2b^2

Q.39 The value cos 1^o cos 2^o cos 3^o.....cos 180^o is

(a) 1 (b) 0

(c) -1 (d) None of these

Q.40. If S_n denote the sum of the first n terms of an A.P.if $S_{2n}=3S_n$,then $S_{3n}:S_n$ is equal to

(a) 4 (b) 6

(c) 8 (d) 10

Q.41 If the system of equations

2x + 3y = 7

2ax + (a + b)y = 28

has infinitely many solutions, then

(a) a=2b (b) b=2a

(c) a+2b=0 (d) 2a+b=o

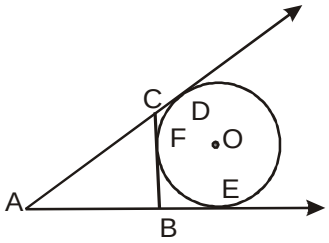
Q.42 The value of $\sqrt{6+\sqrt{6+\sqrt{6+}}}$ ..... is

(a) 4 (b) 3

(c) -2 (d) 3.5

(Space For Rough Work)

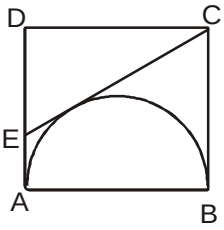
Q.43 In the adjoining figure, if AD, AE and BC are tangents to the circle at D, E and F respectively. Then,



(a) AD = AB + BC + CA
(b) 2AD = AB + BC + CA
(c) 3AD = AB + BC + CA
(d) 4AD = AB + BC + CA

Q.44 Which term of the A.P., 51, 47, 43,..... is a cube of itself?
(a) 11 (b) 12
(c) 13 (d) 14

Q.45 In the figure square ABCD has side length 2. A semicircle with AB as diameter is constructed inside the square, and the tangent to the semicircle from C intersects side AD at E, then the length of CE is:



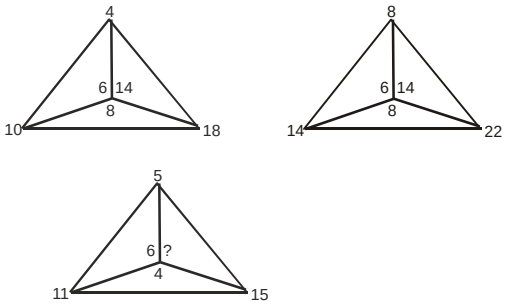
(a) $\frac{2+\sqrt{5}}{2}$ (b) $\frac{5}{2}$
(c) $\sqrt{5}$ (d) $\sqrt{6}$

GENERAL APTITUDE

Q.46 While facing East, Rohit turns to his left and walk 10 meters, then he turns left and walks 10 meters. Now he turns 45° towards his right and goes straight to cover 25 meters. In which direction is the from his starting point?
(a) North-east (b) North-west
(c) South-west (d) South-east

Q.47 Two buses start from opposite points on a main road, 120 km apart. The first bus X runs for 25 kms and takes a right turn and then runs for 15 kms. It then turns left and runs for another 25 kms and takes the direction back to reach the main road. In the mean time, due to minor breakdown, the other bus Y has run only 35 kms along the main road. What would be the distance between the two buses at this point?
(a) 35 kms (b) 45 kms
(c) 60 kms (d) 55 kms

Q.48



(a) 4 (b) 5
(c) 10 (d) 13

Q.49 In a city 40% of the adults are illiterate while 85% of the children are literate. If the ratio of the adults to that of the children is 2:3, then what percent of the population is literate?
(a) 20% (b) 25%
(c) 50% (d) 60%

Q.50 If 9 + 7 = 58;
3 + 11 = 124,
Whis is the value of 13 + 5 ?
(a) 38 (b) 31
(c) 174 (d) 36

Directions (Questions 6 and 7): In each of the following questions, four numbers are given. Out of these three numbers are alike in some way but rest one is different. Choose the one which is different from the other.

Q.51 (a) 246 (b) 356
(c) 527 (d) 639

Q.52 (a) 7 (b) 15
(c) 31 (d) 57

(Space For Rough Work)

Q.53 If 'tee see pee' means 'Drink fruit juice'; 'see kee tee' means 'juice is Sweet' and 'Lee ree mee' means 'He is intelligent', which word in that language means 'sweet'?
(a) see (b) kee
(c) tee (d) pee

Q.54 In a certain code language, '3a, 2b, 7c' means 'Truth is Eternal'; '7c, 9a, 8b, 3a' means 'Enmity' is not Eternal' and '9a, 4d, 2b, 8b, means ' Truth does not perish', Which of the following means 'Enmity ' in that language?
(a) 3a (b) 7c
(c) 8b (d) 9a

Q.55 Ankit, Bansi, Rohan and Sohan are friends. They play cards. Ankit and Bansi become partners. Sohan faces North. If Ankit faces towards West, then who faces towards South?
(a) Bansi (b) Rohan
(c) Sohan (d) Data is inadequate

Q.56 It is 3 O' clock in a watch. If the minute hand points towards the North-east, then the hour hand will point towards which direction?
(a) South (b) South-West
(c) North-West (d) South-East

Q.57 3,7,13,21,31,.....
(a) 40 (b) 41
(c) 42 (d) 43

Q.58 In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 75 questions and secures 125 marks, the number of question he attempted correctly, is
(a) 35 (b) 40
(c) 42 (d) 46

Q.59 Pointing to a man in the photograph, ashmita said, "His mother 's only daughter is my mother". How is Ashmita related to that man?
(a) Nephew (b) Sister
(c) Wife (d) Niece

Q.60 You find that a person whom you call your friend has been cheating you. What would you do?
(a) Break relations with him/her
(b) Give him/her tit for tat
(c) Make him/her realise his/her mistake.
(d) Tell other friends about him/her.

(Space For Rough Work)

(Space For Rough Work)

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IFT

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Do not open this test Booklet until you are asked to do so.

Important Instructions :

1. The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with **blue/black** ball point pen only.
2. The test is of 2 hours duration and Test Booklet contains **60** questions. Each question carries **4** marks**.** For each correct response, the candidate will get **4** marks. For each incorrect response, **one mark** will be deducted from the total score. The maximum marks are **240**.
3. Use **Blue/Black Ball Point Pen only** for writing particulars on this page/marking responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. **On completion of the test, the candidate must handover the Answer Sheet & Test Booklet to the invigilator before leaving the Room/Hall.**
6. The CODE for this Booklet is **R**. Make sure that the CODE printed on the Answer Sheet is the same as that on this Booklet.In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your roll no. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
8. Use of white fluid for correcection is **NOT** permissible on the Answer Sheet.
9. Each candidate must show on demand his/her Admission Card to the Invigilator.
10. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
11. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigiltor on duty and sign the Attendance Sheet twice. Cases where a candidate has not signed the Attendance Sheet second time will be deemed not to have handed over Answer Sheet and dealt with as an unfair means case.
12. Use of Electronic/Manual Calculator is prohibited.
13. The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
14. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
15. The candidates will write the correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.