

FIITJEE Talent Reward Exam-2014

for student presently in
Class 8

PAPER-2

Time: 3 Hours

Maximum Marks: 207

Instructions:

Caution: Question Paper CODE as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong CODE or no CODE will give wrong results.

1. This Question paper consists of 2 sections. All questions will be multiple choice single correct out of four choices with marking scheme in table below:

Section	Subject	Question no.	Marking Scheme for each question	
			correct answer	wrong answer
SECTION – I	Physics	Q. 1 to 8	+3	-1
	Chemistry	Q. 9 to 16	+3	-1
	Mathematics	Q. 17 to 24	+3	-1
SECTION – II	Physics	Q. 25 to 34	+3	-1
		Q. 35 to 37	+5	-2
	Chemistry	Q. 38 to 47	+3	-1
		Q. 48 to 50	+5	-2
	Mathematics	Q. 51 to 60	+3	-1
		Q. 61 to 63	+5	-2

2. Answers have to be marked on the OMR sheet.
3. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
4. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
5. **Before attempting paper write your Registration Number, Name, Answer Sheet No. and Test Centre in the space provided at the bottom of this sheet.**

Note: Please check this Question Paper contains all **63** questions in serial order. If not so, exchange with the correct Question Paper.

Registration Number : _____

Name of the Candidate : _____

Answer Sheet No. : _____

Test Centre : _____

Section-I**Physics****Comprehension Passage Comprising of 3 Questions (1 – 3)****Straight Objective Type**

The substances which furnish ions in a solution are known as electrolytes. The solution of all electrolytes are good conductors of electricity. they conduct electricity due to the movement of ions through them.

The process of decomposition of an electrolyte with the help of electricity is known as electrolysis.

1. When calcium chloride is melted, it dissociates into free
(A) Ca^{+2} only (B) Cl^- only
(C) Ca^{+2} and Cl^- (D) Either Ca^{+2} or Cl^-
2. The process of depositing a layer of any desired metal on another material by means of electricity is called
(A) Electroplating (B) Electrolysis
(C) Electrorefining (D) None of these
3. In an electrolyte solution, current is maintained by the flow of
(A) Electrons only (B) Negative ions only
(C) Positive ions only (D) Negative and positive ions both

Space for rough work

Comprehension Passage Comprising of 5 Questions (4 – 8)**Straight Objective Type**

Momentum is a measure of the quantity of motion of a body.

Momentum = mass x velocity

$\vec{P} = m\vec{v}$, where \vec{P} = momentum, m = mass of the body and \vec{v} = velocity of the body.

If the net force on the system is zero, then the momentum of the system will not be changed. i.e., Total momentum of the system before collision = total momentum of the system after collision.

This is the law of conservation of linear momentum.

After reading the above, answer the following questions:

4. A bullet of mass 30 g is horizontally fired with a velocity 100 m/s from a pistol of mass 1.5 kg. What is the recoil velocity of the pistol?
(A) 1 m/s (B) 3 m/s
(C) 8 m/s (D) 2 m/s
5. A bullet leaves a rifle with a velocity of 100 m/s and the rifle of mass 2.5 kg recoils with a velocity of 1 m/s. Find the mass of the bullet.
(A) 25 g (B) 50 g
(C) 130 g (D) 200 g
6. A block of mass 120 g moves with a speed of 6.0 m/s on a frictionless horizontal surface towards another block of mass 180 g kept at rest. They collide and the first block stops. Find the speed of the other block after the collision.
(A) 8 m/s (B) 4 m/s
(C) 12 m/s (D) 20 m/s
7. A ball of mass 100 g and another ball of 120 g moves towards each other with speeds 6 m/s and 5 m/s respectively. If they stick to each other colliding, what would be the velocity of the combined mass after the collision?
(A) 0 m/s (B) 8 m/s
(C) 20 m/s (D) 40 m/s
8. A cart of mass 50 kg is moving on a straight track with a speed of 12 m/s. A mass of 10 kg is gently put into the cart. What will be the velocity of the cart after this?
(A) 50 m/s (B) 25 m/s
(C) 30 m/s (D) 10 m/s

Space for rough work

Chemistry

Comprehension Passage comprising of 3 Questions (9 – 11)

Straight Objective Type

Polymers are made up of small molecules called monomers. Polymer which are formed by one type of monomer if called homopolymer and which are formed by more than one type of monomers are called copolymers. Natural polymers are biodegradable whereas synthetic polymers may or may not be. Addition or chain growth polymerization involves the repeated addition of monomers to the polymer chain. The monomers are unsaturated compounds and this type of polymerization takes place by ionic (cationic or anionic) as well as free radical mechanism. Condensation or step growth polymerization involves a series of condensation reactions between two monomers, Each monomer normally contains two functional groups. Branch chain polymers may be condensation or addition but cross linked polymers are always condensation polymers.

9. Which of the these are natural polymers?
(A) Proteins (B) Starch
(C) Nucleic acid (D) All of these
10. Which one of the following polymer is prepared by condensation polymerization?
(A) Dacron (B) Teflon
(C) Styrene (D) Rubber
11. Orlon is a polymer of
(A) Styrene (B) Tetra fluoro ethylene
(C) Vinyl chloride (D) Acrylonitrile
-

Space for rough work

Comprehension Passage comprising of 5 Questions (12 – 16)

Straight Objective Type

The ores usually are obtained after mining in the form of big lumps. These are broken into small pieces with the help of crushers or grinders. This process is called crushing. These pieces are then converted into a fine powder with the help of either a ball mill or stamp mill. Ores usually contain soil, sand and other useless impurities. The removal of these impurities from ore is known as benefaction of ore.

12. The undesired impurities present in ores are
(A) Matrix (B) Flux
(C) Alloy (D) Slag
13. Sulphide ores are generally concentrated by
(A) Froth floatation (B) Calcination
(C) Gravity (D) Reduction by carbon
14. Calcination is used for
(A) Carbonate ore (B) Halide ore
(C) Sulphide ore (D) Nitrate ore
15. Which metal is generally found in native state?
(A) Cu (B) Au
(C) Al (D) Fe
16. Leaching is a process of
(A) Reduction (B) Concentration
(C) Refining (D) Oxidation

Space for rough work

Mathematics

Comprehension Passage comprising of 3 Questions (17 – 19)

Straight Objective Type

If $x^2 + \frac{1}{x^2} = 83$, then

17. $\left(x - \frac{1}{x}\right)$ is equal to

- (A) 81
(C) 80

- (B) -9
(D) 9

18. $\left(x + \frac{1}{x}\right)$ is equal to

- (A) 9
(C) 83

- (B) $\sqrt{85}$
(D) 81

19. $\left(x^3 - \frac{1}{x^3}\right)$ is equal to

- (A) 756
(C) 702

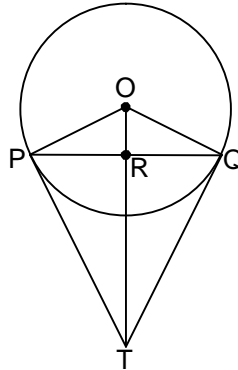
- (B) 729
(D) 27

Space for rough work

Comprehension Passage comprising of 5 Questions (20 – 24)

Straight Objective Type

In the given fig. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at point T.



20. The length of TP is
 (A) $\frac{10}{3}$ cm (B) 6.9 cm
 (C) $\frac{20}{3}$ cm (D) $\frac{16}{3}$ cm
21. The length of TR is
 (A) $\frac{16}{3}$ cm (B) $\frac{20}{3}$ cm
 (C) $\frac{10}{6}$ cm (D) 3 cm
22. The length OR is
 (A) 5 cm (B) 3 cm
 (C) 4 cm (D) 2 cm
23. $\angle QTP$ is
 (A) $\angle OQP$ (B) $\frac{1}{2} \angle OQP$
 (C) $2 \angle OQP$ (D) $\angle POQ$
24. The length OT is
 (A) $\frac{28}{3}$ cm (B) 7 cm
 (C) 8 cm (D) $\frac{25}{3}$ cm

Space for rough work

Section-II

Physics

Straight Objective Type

Physics contains 13 multiple choice questions numbered 25 to 37. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

25. A car is moving at a constant speed 30 m/sec. Suddenly the driver sees an obstacle at a distance 100 m and immediately applies brakes which give constant retardation 6 m/s^2 . What will be distance of car from wall after 12 sec from the application of brakes?
(A) 75 m (B) 100 m
(C) 125 m (D) 25 m
26. A car is moving at 45 km/hr. A constant force acts on the car for 10 sec so that its velocity becomes 63 km/hr. The distance travelled by car during this interval of 10 sec is
(A) 100 m (B) 150 m
(C) 200 m (D) 50 m
27. Two bodies of mass 3 kg and 4 kg are suspended at the ends of massless string passing over a frictionless pulley. The acceleration of the system is (Take $g = 9.8 \text{ m/s}^2$)
(A) 4.9 m/s^2 (B) 2.45 m/s^2
(C) 1.4 m/s^2 (D) 9.5 m/s^2
28. A body is pushed to slide up a rough inclined plane. The direction of friction force acting on it is
(A) Vertically down (B) Up the plane
(C) Down the plane (D) None of these
29. Two forces of magnitude F have a resultant of the same magnitude F. The angle between the two forces is
(A) 45° (B) 120°
(C) 150° (D) 60°
30. In which of the following velocity of sound is maximum?
(A) water (B) air
(C) vacuum (D) steel
-

Space for rough work

31. When a wave goes from one medium to another medium. Which quantity does not change?
(A) frequency (B) wavelength
(C) velocity (D) wavelength & velocity both
32. If the metal bob of a simple pendulum is replaced by a wooden bob, then its time period will
(A) increase (B) decrease
(C) remain the same (D) may be increase or decrease
33. If the density of air at a point through which a sound wave is passing is maximum at an instant, the pressure at that point will be
(A) minimum (B) same as the density of air
(C) equal to the atmosphere (D) maximum
34. If the distance between successive compressions and rarefactions is 2 m and velocity of sound is 360 m/s, then the frequency is
(A) 90 Hz (B) 100 Hz
(C) 120 Hz (D) 200 Hz
35. The distance covered by the car moving at a speed of 36 km/h in 15 minutes is :
(A) 0.9 km (B) 9 km
(C) 90 km (D) 900 km
36. An atmosphere :
(A) is a unit of pressure (B) is a unit of force
(C) gives us composition of air (D) height above which there is no air
37. When we walk on the ground
(A) Friction opposes our motion and is responsible for our movement forward
(B) Friction supports our motion and is responsible for our movement forward
(C) Friction has nothing to do with our movement
(D) Our movement only is responsible for our motion

Space for rough work

Chemistry

Straight Objective Type

Chemistry contains 13 multiple choice questions numbered 38 to 50. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

38. Which is not a macromolecule?
(A) DNA (B) Starch
(C) Palmitate (D) Insulin
39. Monomeric unit of starch is :
(A) Glucose (B) Fructose
(C) Maltose (D) Amino acids
40. Which one of the following is not a synthetic polymer?
(A) Polythene (B) Polypropylene
(C) Isoprene (D) Neoprene
41. Which one of the following is called synthetic fibre?
(A) Cotton (B) Wool
(C) Silk (D) Rayon
42. Bituminous is a :
(A) Soft coal (B) Hose hold coal
(C) Hard coal (D) Pure coke
43. The Constituent of CNG (Compressed natural gas) is related to the
(A) Alkane series (B) Alkene series
(C) Alkyne series (D) Aromatic hydrocarbon
44. Which of the following compound is used for detection of leakage of LPG gas?
(A) C_2H_5OH (B) C_2H_5SH
(C) $C_2H_5 - S - C_2H_5$ (D) $C_2H_5 - O - C_2H_5$
45. Tetrafluoroethylene is the monomer of
(A) Nylon - 6, 6 (B) Teflon
(C) Polythene (D) PVC

Space for rough work

46. Lignite is a
(A) Soft coal (B) House hold coal
(C) Hard coal (D) Pure coke
47. The gases which are responsible for acid rain
(A) Oxides of nitrogen (B) Oxides of halogen
(C) Hydrocarbon (D) CO₂
48. Which gas causes global warming?
(A) Nitrogen (B) Methane
(C) Carbon dioxide (D) Hydrogen
49. Which of the following affects the ozone layer?
(A) CO₂ (B) CFCs
(C) Soot (D) Dust
50. Eutrophication is caused due to excessive use of
(A) Fertilizers (B) Pesticides
(C) Weedicides (D) Antibiotics
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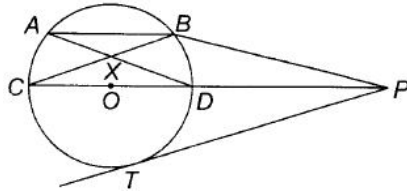
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Mathematics

Straight Objective Type

Mathematics contains 13 multiple choice questions numbered 51 to 63. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

51. In given figure, if $AX=5$ cm, $XD=7$ cm, $CX =10$ cm, find BX .



- (A) 3 cm
(C) 4 cm
- (B) 3.5 cm
(D) 4.5 cm

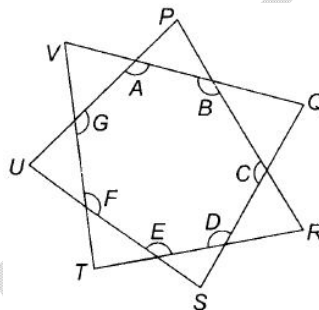
52. In $\triangle ABC$, the medians BE and CF intersect at G . AGD is a line meeting BC at D . If $GD= 1.5$ cm, then AD is equal to

- (A) 2.5 cm
(C) 4 cm
- (B) 3 cm
(D) 4.5 cm

53. Base and altitude of a parallelogram are reduced by 50% each, then the area reduces by

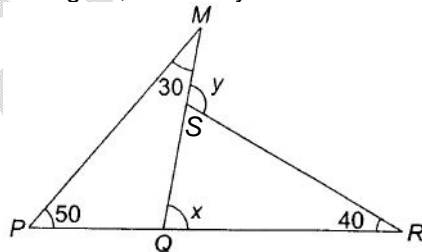
- (A) 75%
(C) 50%
- (B) 25%
(D) 12.5%

54. In the following figure, if $ABCDEF$ is a regular polygon, then the sum of angles at the vertices ($\angle P + \angle Q + \angle R + \angle S + \angle T + \angle U + \angle V$) is equal to



- (A) 1800°
(C) 900°
- (B) 540°
(D) 720°

55. In the given figure, value of y is



- (A) 100°
(C) 115°
- (B) 110°
(D) 120°

Space for rough work

56. 9% of the peoples are eligible in a town to vote. Out of which only 80% voted. What percent of people actually voted?
(A) 7.6% (B) 6.3%
(C) 6.8% (D) 7.2%
57. If $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = 1$, the value of $\frac{x-y}{x-3y}$ is
(A) $\frac{\sqrt{6} + 4}{5}$ (B) $\frac{5}{\sqrt{6} - 4}$
(C) $\frac{5}{\sqrt{6} + 4}$ (D) $\frac{\sqrt{6} - 4}{5}$
58. The value of $\frac{\left(\frac{x-y}{y-x}\right)\left(\frac{y-z}{z-y}\right)\left(\frac{z-x}{x-z}\right)}{\left(\frac{1}{x^2} - \frac{1}{y^2}\right)\left(\frac{1}{y^2} - \frac{1}{z^2}\right)\left(\frac{1}{z^2} - \frac{1}{x^2}\right)}$ is
(A) $-x^2y^2z^2$ (B) $x^2y^2z^2$
(C) 1 (D) xyz
59. What is the smallest four digit number which when decreased by the largest two digit number is exactly divisible by 15, 20 and 25?
(A) 1297 (B) 1199
(C) 1299 (D) 1399
60. The difference between two numbers is 1365. When the larger number is divided by the smaller one, the quotient is 6 and the remainder is 15. The smaller number is
(A) 240 (B) 270
(C) 295 (D) 360

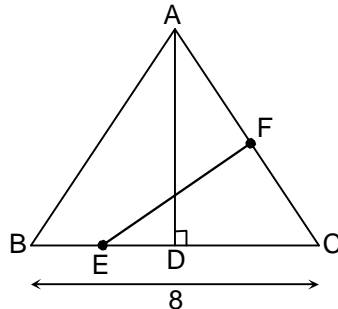
Space for rough work

61. If $x + \frac{1}{y} = 1$ and $y - \frac{1}{z} = 1$, then the value of xyz is

- (A) 1
(C) 0

- (B) -1
(D) -2

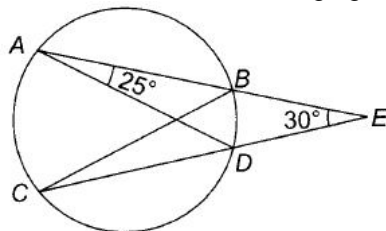
62. In the given figure, AD is altitude on BC and $AD = 6$ cm, E and F are midpoint of BD and AC respectively. If length of BC is 8 cm, then length of EF is



- (A) 6
(C) 4

- (B) 5
(D) 3

63. The value of $\angle CBE$ in the following figure is



- (A) 120°
(C) 130°

- (B) 125°
(D) None of these

Space for rough work

FIITJEE Talent Reward Exam-2014

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Class 8

PAPER-2

ANSWER KEYS

SECTION – I (PCM) (COMPREHENSION PASSAGE)		SECTION – II (PCM)			
Q. No	Answer	Q. No	Answer	Q. No	Answer
1.	C	25.	D	49.	B
2.	A	26.	B	50.	A
3.	D	27.	C	51.	B
4.	D	28.	C	52.	D
5.	A	29.	B	53.	A
6.	B	30.	D	54.	A
7.	A	31.	A	55.	D
8.	D	32.	C	56.	D
9.	D	33.	D	57.	A
10.	A	34.	A	58.	A
11.	D	35.	B	59.	C
12.	A	36.	A	60.	B
13.	A	37.	B	61.	A
14.	A	38.	C	62.	B
15.	B	39.	A	63.	B
16.	B	40.	C		
17.	D	41.	D		
18.	B	42.	B		
19.	A	43.	A		
20.	C	44.	B		
21.	A	45.	B		
22.	B	46.	A		
23.	C	47.	A		
24.	D	48.	C		