Class XI Mathematics Autumn Break Home Work

All NCERT EXAMPLE QUESTIONS OF THE FOLLOWING TOPICS

BINOMIAL THEOREM

PERMUTATIONS AND COMBINATIOMS

SEQUENCES AND SERIES

STRAIGHTBLINES

Chemistry Holiday H.W Class 11th

1. Investigatory Project
2. Exercise questions of Chapter – Equilibrium
3. Half Yearly sample paper

Class :XI Subject : COMPUTER SCIENCE (083) Holiday Homework - Autumn break

Q1.	________is known as a volatile memory a) RAM b) ROM c) EPROM d) Flash	1
Q2.	Identify the input device(s): a) Speaker b) Printer c) Key board d) Scanner	1
Q3.	Which of the following is referred to the brain of computer? a) Processor b) RAM c) Hard Drive d) ROM	1
Q4.	ASCII stand for ______ a) American Standard Computer for Information Interchange b) American Status Code for Information Interchange c) All India Standard Code for Information Interchange d) American Standard Code for Information Interchange	1
Q5.	Python is the fastest language. a) False b) True	1

Q6.	The fetch -Decode -execute cycle is also known as______cycle a) Process Cycle b) Instruction Cycle c) Execute Cycle d) All above	1
Q7.	Which of the following is not a Python IDE? a) IDLE b) Sublime Text c) Jupyter Notes d) Spyder	1
Q8.	Which one of the following is NOT a computational thinking technique? a) Pattern recognition b) Decomposition c) Coding d) None of above	1
Q9.	Antivirus software is an example of _______ a) System software b) Application software c) Utility Software d) Business Software	1
Q10.	Who developed Python Programming Language a) Konrad Zuse b) Guido Van Rossum c) John Von Neumann d) Backus-Naar	1

Q11.	Write any two examples of Application Software.	1
Q12.	24 GB = __________MB =___________KB	1
Q13.	Why is Python termed as 'Free and Open Source' Software?	1
Q14.	Python Programming language got its name from which show?	1
Q15.	How the specific purpose software useful in our life? Explain with example	2

Q16.	What is computer hardware? Give any two examples.	2
Q17.	What is the function of the CPU in a computer? What are its subunits?	2
Q18.	Briefly explain utility Software and its type	2
Q19.	Briefly explain the basic architecture of a computer.	2
Q20.	What is the function of memory? What are its measuring units?	2
Q21.	What is the work of system software? Explain function of its type	2
Q22.	What is the meaning of the term volatile primary memory? Explain briefly.	2
Q23.	What do you understand by flash memory?	2
Q24.	What is cache memory? How it is useful?	2
Q25.	Write full form of IDLE and write the shortcut key to run a Python program.	2
Q26.	What does a cross platform language mean?	2
Q27.	Differentiate between following: a) RAM and ROM b) Interpreter and compiler c) CPU and ALU	3
Q28.	Draw a block diagram depicting organization of a mobile system? What is the role of communication processing unit and application processing unit in a mobile system	3
Q29.	What is the role of operating system in computer system? Write its differenttypes and example.	3

Automn Break Home Work-2023, Subject-Physics

CLASS: XI MAX-MARKS:70

TIME: 3 HOURS

GENERAL INSTRUCTIONS

(1) There are 33 questions in all. All questions are compulsory.

(2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.

(3) All the sections are compulsory.

(4) Section A contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.

(5) There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each CBQ in Section D and all three questions in Section E. You have to attempt only one of the choices in such questions.

(6) Use of calculators is not allowed.

(7) You may use the following values of physical constants wherever necessary

$c = 3 \times 10^{8}$ m/s

$m_e = 9.1 \times 10^{-31}$ kg

$e = 1.6 \times 10^{-19}$ C

$\mu_0 = 4\pi \times 10^{-7}$ Tm$\boldsymbol{A^{-1}}$

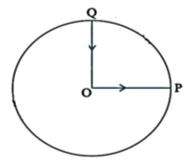
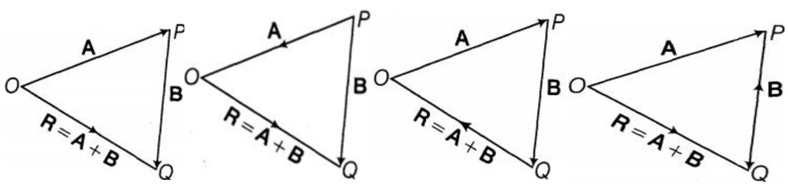
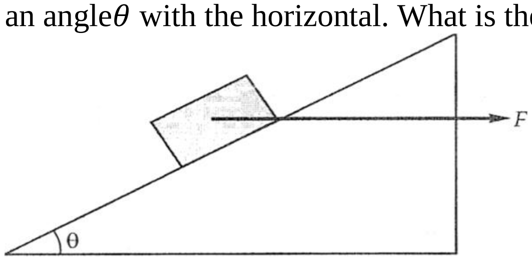
$h = 6.63 \times 10^{-34}$Js

$\varepsilon_0 = 8.854 \times 10^{-12} \boldsymbol{C^2 N^{-1} m^{-2}}$

Avogadro’s number = 6.023 X $\mathbf{10^{23}}$per gram mole

SECTION-A

Q.NO	QUESTION	MARKS
1	The number of significant digits in 0.00060320m^2 is (a) 4 (b) 6 (c) 5 (d) 3	1
2	The dimensional formula of physical quantity whose unit is electron volt (ev) (a) $[M LT^{-2}]$ (b) $[M L^{2} T^{-2}]$ (c) $[M L^{-2} T^{-2}]$ (d) $[M L^{3} T^{-2}]$	1
3	A stone is projected from a horizontal ground. It attains maximum height **H** on its projectile path and there after strikes a stationary smooth vertical wall and falls on the ground vertically below the maximum height. Assume the collision with wall to be perfectly elastic, the height of the point on the wall where ball strikes is (a) $\frac{3H}{4}$(b) $\frac{2H}{3}$(c) $\frac{H}{2}$(d) $\frac{4H}{5}$	1

4	A cyclist starts from the centre O of a circular park of radius 1 km, reaches the edge P of the park, then cycles along the circumference anticlockwise from P to Q, and returns to the centre along QO as shown in figure. If the round trip takes 10 min, the netdisplacement, average velocity and average speed of cyclist are ___________ (a) 0, 0, 11.4 km/hr (b) 0, 0, 15.4 km/hr (c) 0, 0, 27.4 km/hr (d) 0, 0, 21.4 km/hr  	1
5	A and B are two inclined vectors. R is their sum. Choose the correct figure for the given description.  (a)(b) (c)(d)	1
6	If the equation for the displacement of a particle moving on a circular path is given by θ = 2t ^{3} + 0.5, where θ is in radians and t in seconds, then, the angular velocity of the particle at t= 2 s is (a) 8 rad s^{-1}(b) 12 rad s^{-1}(c) 36 rad s^{-1} (d) 24 rad s^{-1}	1
7	The force on a rocket moving with a velocity of 300 m/s is 210 N. Then the rate of combustion of the fuel will be (a) 3.5 kg/s (b) 2.1 kg/s (c) 0.7 kg/s (d) 1.4 kg/s	1
8	The figure shows a horizontal force acting on a block of mass m on an inclined plane making an angleθ with the horizontal. What is the normal reaction N on the block?  (a) mgcosθ - Fsin θ(b) mgsinθ - Fcos θ (c) mgsinθ + Fcos θ (d) mgcosθ + Fsin θ	1
9	How much water a pump of 2 kW can raise in one minute to a height of 10 m? (Take g = 10ms^{-2}) (a) 1200 litres (b) 2000 litres (c) 500 litres (d) 10 litres	1
10.	If **A** = $2\hat{\imath}+\hat{\jmath}+3\hat{k}$.**B** = $\hat{\imath}+\hat{\jmath}-2\hat{k}$ and **C** = $2\hat{\imath}+3\hat{k}$ are three vectors such that **A**+λ**B** is perpendicular to **C** ,then the value of λ is (a) $\frac{13}{8}$ (b)$\frac{5}{4}$ (c) $\frac{13}{4}$ (d) $\frac{5}{8}$	1

11	Consider a system of two particles having masses m_1 and m_2 . If the particle of mass m_1 is pushed towards the centre of mass of particles through a distance d, by what distance would the particle of mass m_2, move so as to keep the centre of mass at the original position? (a) d (b) $\frac{m_1}{m_1+m_2}d$(c) $\frac{m_2}{m_1}d$ (d) $\frac{m_1}{m_2}d$	1
12	Three masses are placed on the x-axis: 300g at origin, 500g at x=40cm and 400g at x=70cm. The distance of the centre of mass from the origin is (a) 40 cm (b) 45 cm (c) 50 cm (d) 30 cm	1

For Questions 13 to 16, two statements are given –one labelled Assertion (A) and other labelled Reason (R). Select the correct answer to these questions from the options as given below.

a) If both Assertion and Reason are true and Reason is correct explanation of Assertion.
b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
c) If Assertion is true but Reason is false. d) If both Assertion and Reason are false.

13	**Assertion (A):** The equation y = x + t cannot be true, where x, yare distance and t is time. **Reason (R):** Quantities with different dimensions can be added.	1
14	**Assertion (A):** Position vector is defined with respect to origin **Reason (R):** Displacement vector is defined with respect to origin.	1
15	**Assertion(A):** Same force applied for the same time causes the same change in momentum for different bodies **Reason(R):** The total momentum of an isolated system of interacting bodies remains conserved.	1
16	**Assertion(A):** For a closed isolated system during a collision, the linear momentum of each colliding body may change but total linear momentum of the system cannot change whether the collision is elastic or inelastic **Reason(R):** Total mechanical energy of the system is conserved in the elastic collision	1

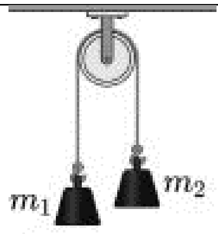
SECTION -B

17	The mass of a box measured by a grocer's balance is 2.300 kg. Two gold pieces of masses 20.15 g and 20.17 g are added to the box. What is (a) the total mass of the box, (b) the difference in the masses of the pieces to correct significant figures? **(OR)** Find out the dimensional formula of 'a' and 'b' in the equation P = $\frac{a-t^2}{bx}$ where P is pressure,x is distance and t is time.	2
18	A racecar is moving with uniform acceleration on a straight road from rest to a speed of 180 kmph in 25 s. Calculate the distance covered during this time interval.	2
19	A body of mass 10 kg revolves in a circle of diameter 0.4m making 1000 revolutions per minute. Calculate its linear velocity and centripetal acceleration.	2

20	State Newton's second law of motion and deduce the Newton's first law from it.	2
21	Two springs have force constants k_1 and k_2($k_1 > k_2$). On which spring is more work done, if a)They are stretched by the same force b)They are stretched by the same amount?	2

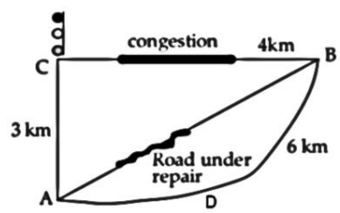
SECTION -C

22	An artificial satellite is revolving around a planet of mass M and radius R in a circular orbit of radius r. From Kepler's third law about the period of satellite around a common central body, square of the period of revolution T is proportional to the cube of the radius of the orbit r. Show using dimensional analysis, that:$T = \frac{K}{R}\sqrt{\frac{r^3}{g}}$ Where Kis a dimensionless constant and g is acceleration due to gravity.	3
23	A food packet is released from a helicopter which is rising steadily at 2 ms^{-1} .The food packet falls on the ground after 6 s. Find the height of the helicopter (a) When the food packet was released from it (b) When the food packet just reached the earth. **(OR)** Forabodythatstartswithaninitialvelocityof$'u'$andacceleratesatauniform rate of $'a'$ and attained velocity 'v' in 't' seconds with displacement 's' answer the following: (a) Draw a neat schematic velocity-time graph of its motion and label its axes and important points (b) Withtheaidofthegraphinthepreviousquestion,derivethevelocity-time relation, $\boldsymbol{v}$=$\boldsymbol{u}$+$\boldsymbol{at}$, wherethe symbols havetheirusual meaning. (c) Withtheaidofthegraphintheearlierquestion,derivethedisplacement-time relation**, s=** $\boldsymbol{u}t + \frac{1}{2}\mathbf{a}t^2$,wherethesymbolshavetheirusualmeaning	3
24	(a) Calculate the angle between two equal forces when resultant of these two forces is equal to either of the forces ? (b) Under what condition the sum and difference of two vectors will be equal in magnitude ?	3
25	A unit vector is represented by$a\hat{\imath} + b\hat{\jmath} + c\hat{k}$. If the values of a and b are 0.6 and 0.8 respectively, find the value of c. Mention the significance of unit vector.	3
26	A railway car of mass 20 ton moves with an initial speed of 54 kmh^{-1} . On applying brakes, a constant negative acceleration of 0.3 ms^{-2} is produced. a. What is the braking force acting on the railway car? b. In what time will it stop? c. What distance will be covered by railway car before it finally stops?	3
27	In the Atwood's machine, the system of two masses (m_1 = 10 kg, m_2 = 12 kg) starts from rest. What is the speed and distance moved by each mass in 3 seconds?	3

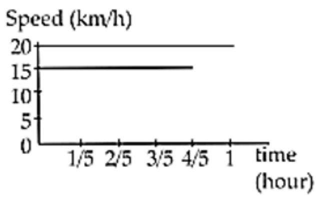
		
28	(a) State work-energy theorem and prove it for variable force. (b) Define SI unit of work	3

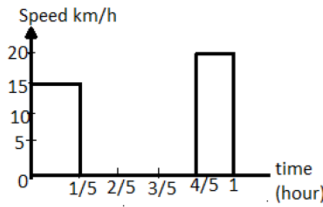
SECTION -D

Case Study Based Question

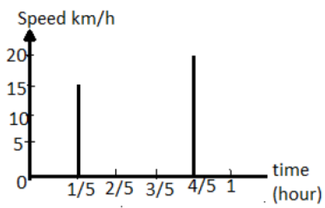
29	**Read the following paragraph and answer the questions that follow:** Tabu lives at A. He was supposed to do to his uncle's house at B. A and B is connected by a straight road 5 km long. But that day the road was under repair. So, all the buses were following a diversion via C. A to B via C is 7 km. Moreover, this route is congested There is a traffic signal at C also. Tabu got a seat just behind the driver He noticed that the minimum reading in the speedometer was 15km/h. But ultimately the bus took 1 hour to each B. He could not understand the fallacy  (i) What is the distance and displacement of Tabu? (a) 5 km, 5 km (b) 7 km, 5 km (c) 7 km, 7 km (d) 5 km, 7 km (ii) Why the speedometer reading was minimum 15 km/h, but actual time required to cover 7 km was 1 hour? (a) Speedometer was erratic. (b) Halt timing at the traffic signal, slow speed at the congested areas and halt - timing at the bus stops are also to be taken into account. (c) Both Speedometer was erratic and the actual distance was more than 7 km. (d) Actual distance was more than 7 km. (iii) Speedometer measures (a) Acceleration (b) Average speed (c) Instantaneous speed (d) Distance traversed (iv) If the bus followed ADB path and reached B in 1 hour, then the average speed of the bus would have been (a) 7 kmph(b) 6 kmph(c) 14 kmph(d) 5 kmph **(OR)** (v) Which of the following graphs represents the motion of the bus if it covers AC distance at a speed 15 km/h and CB distance at a speed 20 km/h and total distance is covered in 1 hour including halt at traffic signal?	4

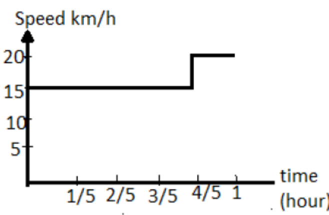
(a) (b)





(c) (d)





30 **Read the following paragraph and answer the questions that follow:**

The center of mass of a body is a point at which the entire mass of the body is supposed to be concentrated. The position vector $\vec{r}$ of C.O.M. of the system of two particles of masses m_1 and m_2 with position vectors $\vec{r_1}$ and $\vec{r_2}$ is given by $\vec{r} = \frac{m_1\vec{r_1} + m_2\vec{r_2}}{m_1 + m_2}$

For isolated system: V_{cm} = constant where no external force is acting. Under no circumstances, the velocity of the C.O.M. of an isolated system can undergo a change. 4

(i) Two bodies of masses 1 kg and 2 kg are lying in XY-plane at (-1, 2) and (2, 4) respectively. What are the coordinates of the center of mass?

(a) $(1, \frac{10}{3})$ (b) $(1, \frac{-10}{3})$ (c) (0, 1) (d) (1 , -2)

(ii) The centre of mass of a system of two particles divides, the distance between them

(a) in inverse ratio of square of masses of particles
(b) in direct ratio of square of masses of particles
(c) in inverse ratio of masses of particles
(d) in direct ratio of masses of particles

(iii) Two particles A and B initially at rest move towards each other under a mutual force of attraction. At the instant, when the speed of A is v and the speed of B is 2v, the speed of centre of mass of the system is

(a) zero (b) v (c) 1.5 v (d) 3v

(OR)

An electron and proton of an atom move towards each other with velocities v_1 and v_2 respectively. The velocity of their Centre of mass is

(a) zero (b) v_1 (c) v_2 (d) $\frac{V_1+V_2}{2}$

(iv) All the particles of a body are situated at a distance R from the origin. The distance of centre of mass of the body from the origin is

(a) = R (b) ≤ R (c) > R (d) ≥ R

SECTION -E

31 (a) Show that the trajectory of an object thrown at an angle θ with the horizontal near the surface of earth is a parabola.

	(b) At what angle should a body be projected with a velocity 24 ms^{-1} just to pass over the obstacle 14 m high at a horizontal distance of 32 m? Take g = 10 ms^{-2} . **(OR)** (a) State parallelogram law of vector addition. Show that resultant of two vectors $\vec{A}$ and $\vec{B}$ inclined at an angle θ is R = $\sqrt{A^2 + B^2 + 2AB\cos\theta}$ (b) Four forces act along the sides of a smooth square frame ABCD in the order A → B, B → C, C → D and D → A. If the magnitude of the forces are F_1, F_2, F_3 and F_4 respectively, find the resultant force acting on the frame. Assume F_1 = 1 N, F_2 = 2N, F_3 = 3N and F_4 = 4N.	5
32	(a) State law of conservation of momentum. Why does a gun recoil on firing a bullet? (b) A bomb at rest explodes into three fragments of equal masses. Two fragments fly off at right angles to each other with velocities 9 ms^{-1} and 12 ms^{-1} respectively. Calculate the speed of the third fragment. (c) A 30 g bullet leaves a rifle with a velocity of 300 ms^{-1} and the rifle recoils with a velocity of 0.60 ms^{-1} . Find the mass of the rifle. **(OR)** (a) Determine the expression for maximum speed with which the vehicle can go on circular rough banked road . (b) A circular racetrack of radius 300 m is banked at an angle of 15^0. If the coefficient of friction between the wheels of a race car and the road is 0.2.Find the optimum speed of the race car to avoid wear and tear on its tires? (Tan 15^0 = 0.27) (c) What happens to the coefficient of friction, when the mass of the body is doubled?	5
33	(a) Write the difference between elastic and inelastic collision. (b) Show that the relative velocity of separation after the collision is equal to relative velocity of approach before the collision in case of one-dimensional elastic collision (c) Two bodies of masses 5kg and 3 kg moving in the same direction along the same straight line with velocities 5 m/s and 3 m/s respectively suffer one-dimensional elastic collision. Calculate their velocities after the collision. **(OR)** (a) State law of conservation of mechanical energy. Show that total mechanical energy of freely falling body under gravity is conserved (b) A body constrained to move along the Z - axis of a coordinate system is subject to a constant force **F**=$(-\hat{\imath} + 2\hat{\jmath} + 3\hat{k})$N . What is the work done by this force in moving the body a distance of 4 m along the Z - axis?	5

II)Complete the Physics Record for following Experiments

1) To measure diameter of a given wire using screw gauge.
2) To measure thickness of a given sheet using screw gauge.
3) To find the Radius of Curvature of given Spherical Surface by using Spherometer.
4) To determine the Acceleration due to gravity at given place by drawing graph between l versus T^2 byUsing a Simple Pendulum.

CLASS: XI Biology

1. Complete INVESTIGATORY PROJECT as per instructions noted on given topic

2. Complete record –and diagrams as per split up given in class

3. Prepare for Half Yearly exam portion – 1 to 10, Practice writing using concept maps,Mind maps diagrams as per instructions. Submit practiced work

4.Write flow chart on Glycolysis and Krebs cycle

CLASS XII : BIOLOGY

1. Complete INVESTIGATORY PROJECT as per instructions noted on given topic

2. Complete record –and diagrams as per split up given in class