

Model Question of SSC Examination 2020 for All Board

Physics

Subject Code

1	3	6
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Time — 2 hours 35 minutes

Creative Essay Type

Full marks — 50

[N.B. -The figures in the right margin indicate full marks. Answer any five Questions.]

1. ★ Two cars each of similar mass M start their journey with a velocity at 6ms^{-1} and 9ms^{-1} and reach their destination at the same time, the acceleration of both cars is 5ms^{-2} and 3ms^{-2} respectively.

- a. What is electromagnetic force? 1
- b. Explain why the velocity of an object changes as it falls downward from the state of rest. 2
- c. At what time the two cars reach their destination. 3
- d. Explain in terms of mathematical explanation, the change in kinetic energy of the two cars. 4

2. ► A cricket ball is thrown vertically up ward by a batsman with an initial velocity 3ms^{-1} . At the same time a fielder tried to catch the ball coming with a rest position of acceleration 2ms^{-2} from 40m away.

- a. What is least count? 1
- b. Write down two differences between balanced and unbalanced force. 2
- c. Find out the maximum height of the ball. 3
- d. Is it possible for fielder to catch the ball before dropped on earth? Give mathematical analysis. 4

3. ► A body of mass 500 gm is allowed to fall freely from a height 1 km. The body falls toward the ground

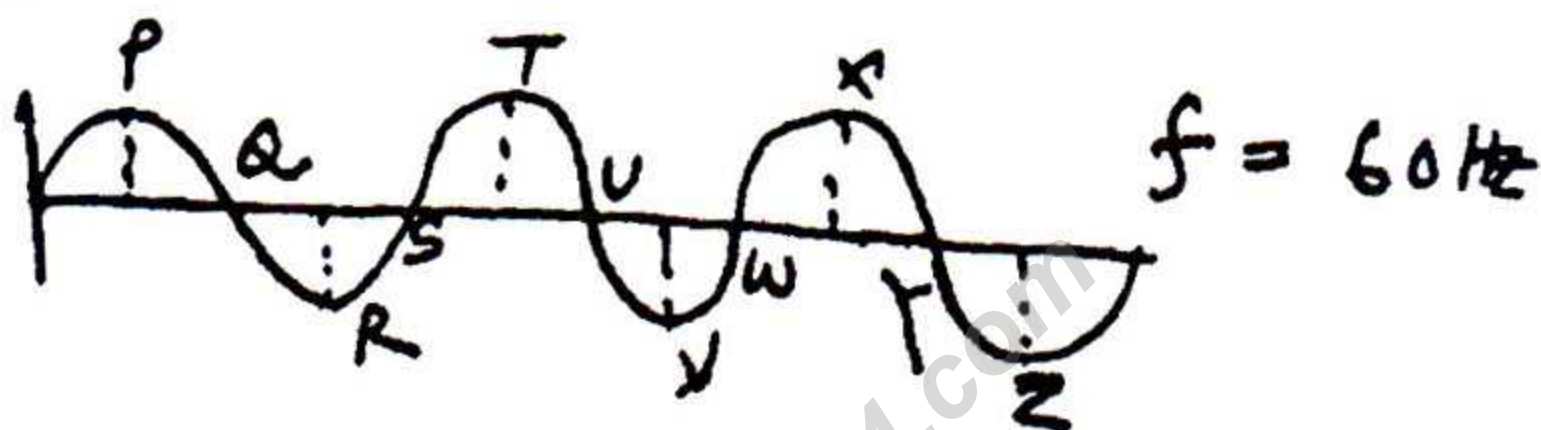
- a. What is radio therapy? 1
- b. If there is displacement by application of force on a body but work may be zero— Explain. 2
- c. How much potential energy of the falling body will be decreased offer 5 sec? 3
- d. Will the total energy remained conserved at maximum height and at a height after 8 sec during its motion? Explain mathematically. 4

4. ► 200 ml water of temperature 75°C is putted in a container of copper of mass 500g of temperature 25°C . The temperature of the mixture become 65°C . As a result the apparent

expansion of water become 1.5 ml. Consider coefficient of volume expansion of copper $5.01 \times 10^{-5} \text{ K}^{-1}$ and density of water 1000 kgm^{-3} .

- Write Hooke's law. 1
- Explain the change in resistance of a copper wire when its length is increased by tension keeping its volume same. 2
- Determine the real expansion of water of the stem. 3
- How much excess water is require to increase the final temperature by 8°C more? Explain mathematically. 4

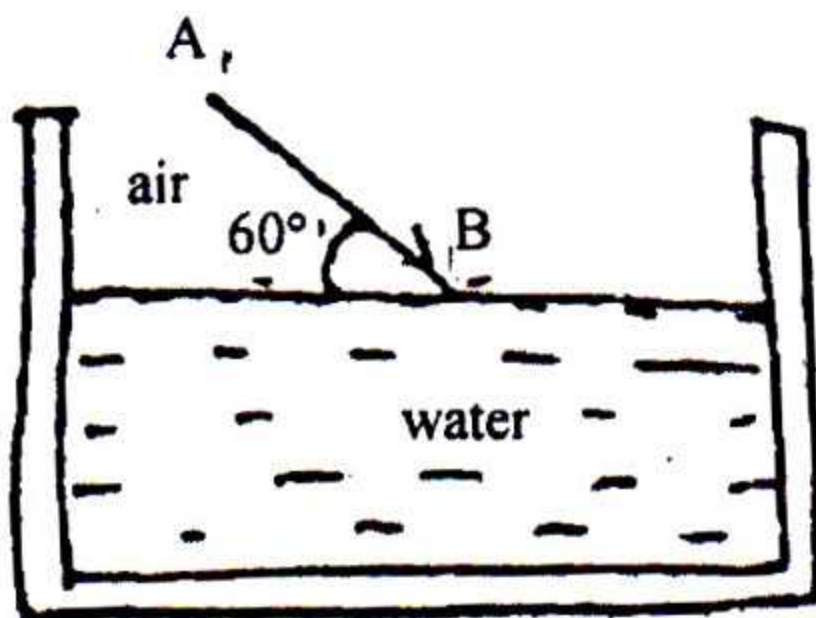
5. ★



In the picture a wave created in water is shown. The speed of sound wave in air and water is 332 ms^{-1} and 1452.5 ms^{-1} .

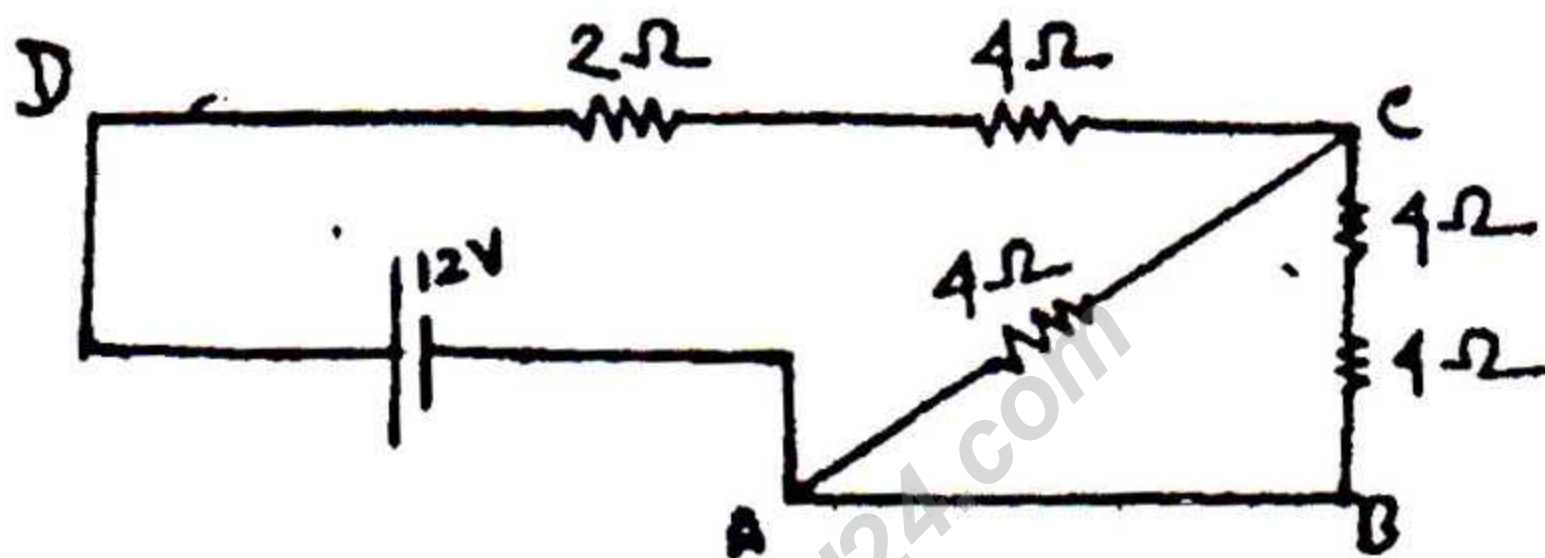
- What is harmonic motion? 1
- Explain why females have higher voice pitch than males. 2
- Form the given diagram determine the wavelength of the wave in air. 3
- Is it possible to listen the echo in the well is equal to the wavelength of the sound wave in air? Explain mathematically. 4

6. ★



- a. What is critical angle? 1
- b. Why die is used during angiogram? 2
- c. IF AB light ray changes its direction by 11° entering through water then find refractive index of water in respect of air from the stem. 3
- d. When the above pot is filled up with sea water having refractive index 1.4 then how much refracted ray will deviate from incident ray? Explain with mathematical analysis. 4

7. ►



- a. What is specific resistance. 1
- b. Why ice of 0°C is colder than water of 0°C ? Explain. 2
- c. Find equivalent resistance of the circuit. 3
- d. Compare the total current of the circuit and the current I_{CA} . Which one is greater? Explain mathematically. 4

8. ► Radioactivity is a spontaneous incident. As radioactive rays has many benefits in our lives but it also has many disadvantages.

- a. What is an isotope? 1
- b. Radioactivity is nuclear event– Explain. 2
- c. Describe the significant effects of radioactive ray in our life. 3
- d. What effects does radioactive rays have on animal kingdom? Explain the results. 4

[Fill the circle completely (●) with the correct or most appropriate answer, corresponding to the question number. Make sure to use a ball point pen. Each question carries 1 mark.]

1. What is the name of the device to measure the pressure of the atmosphere?

- (a) Thermometer
- (b) Manometers
- (c) Seisomometer
- (d) Barometer

2. Electromotive force is produced—

- i. if a magnet is kept static in a coil
- ii. if a coil is moved in a magnetic field
- iii. if a static coil is moved around a magnet

Which one is correct?

- (a) i & ii
- (b) i & iii
- (c) ii & iii
- (d) i, ii & iii

3. ★ Which relation is correct?

- (a) $EF = q$
- (b) $Eq = E$
- (c) $F = Eq$
- (d) $F = Eq^2$

4. What is meant by α -particle emitted from the radioactive substance?

- (a) A negative particle
- (b) A helium nucleus
- (c) A neutral particle
- (d) A hydrogen particle

5. Which radioactive isotope is used in Leukemia treatment?

- (a) P-32
- (b) Co-60
- (c) P-99
- (d) Tc-99

In a transformer the electric current of primary coil is 3A, voltage 20V, number of turns 200; the number of turn of secondary coil is 400.

Answer questions no. 6 & 7 :

6. What is the electric current of the secondary coil?

- (a) 1A
- (b) 1.5A
- (c) 2A
- (d) 10A

7. What is the voltage of the secondary coil?

- (a) 10V
- (b) 20V
- (c) 40V
- (d) 80V

8. What is the unit of pressure?

- (a) Pascal
- (b) Newton
- (c) Joule
- (d) Watt

9. ★ The mass of Easa is 50kg. She went to her classroom crossing 50 stairs of 20cm each with a bag having a mass of 10kg. She spent 1 minutes for it. What is her power?

- (a) 9.8W
- (b) 98W
- (c) 1960W
- (d) 11760W

10. Thamid threw an arrow at a velocity of 30ms^{-1} vertically upwards. What is the maximum height that the arrow will reach?

- (a) 45.9m
- (b) 91.8m
- (c) 6.12m
- (d) 3.06m

11. ★ How many metre is equal to 1 fm?

- (a) 10^{-13}m
- (b) 10^{-14}m
- (c) 10^{-15}m
- (d) 10^{-16}m

12. The velocity of a car decreases in a uniform way to 36kmh^{-1} from 54kmh^{-1} in 5 seconds. What is the acceleration of the car?

- (a) -5ms^{-1}
- (b) -1ms^{-2}
- (c) 1ms^{-2}
- (d) 5ms^{-2}

2ms^{-2} acceleration is applied to a car moving at a velocity of 36kmh^{-1} for 5 second.

Answer question no. 13 & 14 using the above data.

13. What is the final velocity of the car?

- (a) 0ms^{-1}
- (b) 10ms^{-1}
- (c) 20ms^{-1}
- (d) 75ms^{-1}

14. What is the distance covered by the car at the time of acceleration?

- (a) 20m
- (b) 25m
- (c) 76m
- (d) 75m

15. ★ What is the unit of intensity of sound according to SI?

- (a) wm^{-1} (b) wm^{-2}
(c) wm^1 (d) wm^{-3}

16. What is the kinetic energy of a person moving at 6ms^{-1} having a mass of 70kg ?

- (a) 720 J
(b) 12060 J
(c) 4900J
(d) 14700J

17. How many times will the velocity of an object increase if the kinetic energy of the object is increased 9 times?

- (a) 3 (b) 4.5
(c) 8.1 (d) 81

18. The pressure of liquid is—

- (a) proportional to the depth of the liquid
(b) Inversely proportional to the density of the liquid
(c) equal to the acceleration due to gravity
(d) equal to the area of the container

19. Which one is connected parallel in an electric circuit?

- (a) Cell
(b) Ammeter
(c) Galvanometer
(d) Volt-meter

20. ★ Endoscopy—

- i. is used to see the interior of any hollow organ
ii. has two tubes
iii. can examine the internal sore of human body

Which one is correct?

- (a) i and ii (b) i and iii
(c) ii and iii (d) i, ii and iii

21. Which one is happened in fibre optics?

- (a) reflection
(b) total internal reflection
(c) diffraction
(d) refraction

22. A virtual image from a concave mirror is obtained when the object is placed—

- (a) at the centre of the curvature
(b) at the middle of principal focus and centre of curvature
(c) Outside of the centre of curvature
(d) at the middle of the principal focus and pole

23. ★ What will be the refractive index be if the critical angle of the medium is 45° in respect of air?

- (a) $\frac{1}{\sqrt{3}}$
(b) $\frac{1}{\sqrt{2}}$
(c) $\sqrt{2}$
(d) $\sqrt{3}$

An image of 8cm is produced if an object having length of 5cm is kept at a distance of 15cm from a concave mirror of which the focal length is 10cm .

Answer the questions no. 24 & 25 using the data.

24. What will be the linear magnification?

- (a) $\frac{1}{2}$ (b) 1.6
(c) 0.625 (d) 2

25. What will the distance of the image be?

- (a) 6cm (b) 25cm
(c) 30cm (d) 150cm

Ans.	1	(d)	2	(c)	3	(c)	4	(b)	5	(a)	6	(b)	7	(c)	8	(a)	9	(b)	10	(a)	11	(c)	12	(b)	13	(c)
	14	(d)	15	(b)	16	(b)	17	(a)	18	(a)	19	(d)	20	(d)	21	(b)	22	(d)	23	(b)	24	(b)	25	(c)		