

# Model Question of SSC Examination 2021 for All Board

Physics

Subject Code 

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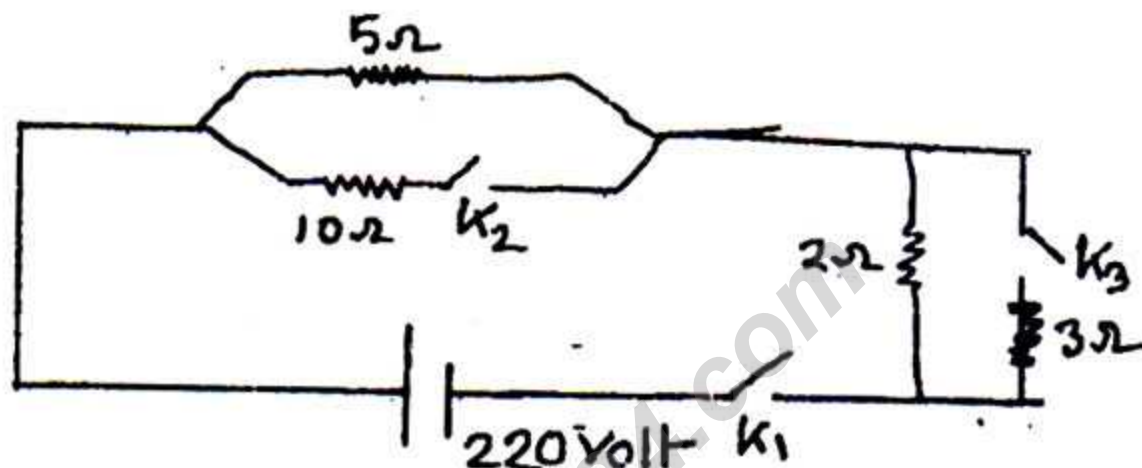
Time — 2 hours 35 minutes

Creative Essay Type

Full marks — 50

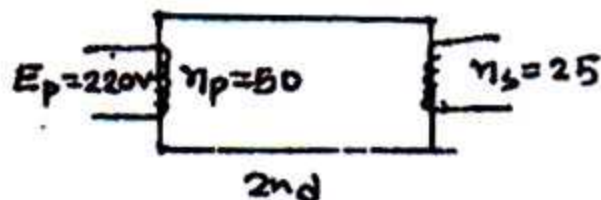
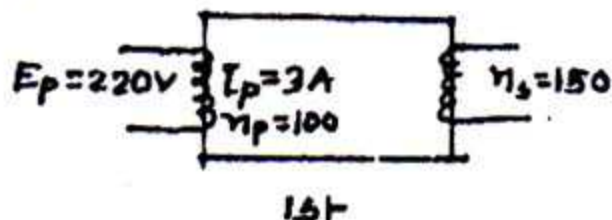
[N.B. -The figures in the right margin indicate full marks. Answer any five Questions.]

1. ►



- What is called electric field? 1
- 220 V-60W is written in an electric bulb. Explain the meaning. 2
- If the keys  $k_1$  and  $k_3$  are closed and  $k_2$  is opened, what will be the flow of current? 3
- If the keys  $k_1$  and  $k_2$  are closed and  $k_3$  is opened, how many times flow of current will be which was mentioned before? Explain mathematically. 4

2. ►



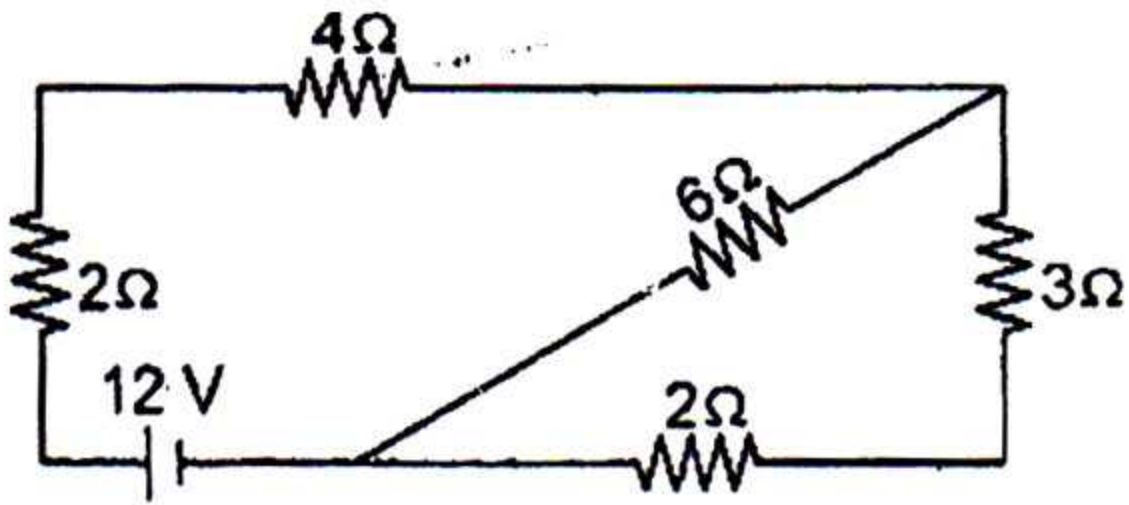
- a. What is solenoid? 1
- b. Why AC is used rather than DC? Explain. 2
- c. Calculate the current of secondary coil of 1st Transformer. 3
- d. Show that which transformer is convenient to use near our house? Explain mathematically. 4
3. ► Two cars start from same position. 1st car start from rest with uniform acceleration  $10\text{ms}^{-2}$  and at the same time 2nd car start with uniform velocity  $100\text{ms}^{-1}$ .
- a. What is displacement? 1
- b. Force is derived quantity– explain. 2
- c. Calculate the required time for travelling 100m by 1st car. 3
- d. Will the 1st car overtake the 2nd car? Explain mathematically. 4
4. ► A pump lift 180 kg water per minute at the roof top of a building of height 10 meter. The efficiency of the pump is 70%.
- a. What is kinetic energy? 1
- b. Write down the condition of floatation and immersion of a body. 2
- c. Calculate the input power of the body. 3
- d. If the efficiency of the pump is increased 10%, how much time will it take to lift the same amount of water to the same height? Explain mathematically. 4
5. ► In an area the temperature of air is  $30^{\circ}\text{C}$ . In that place the velocity of sound in water is four times of air. There if an iron

pipe in water is hit, two sounds are heard in 0.2s time interval at the other end of the pipe velocity of sound in iron is  $5130 \text{ ms}^{-1}$ .

- a. What is called musical sound? 1
  - b. Explain velocity of sound depends on what factors? 2
  - c. What is the length of iron pipe? 3
  - d. Is two sounds heard from the other end of the pipe if sound is made in one end of the pipe by keeping it in air? Give logic in favour of your answer. 4
6. ► The near points and far points of the defective eyes of two persons 'A' and 'B' are shown in the table below-

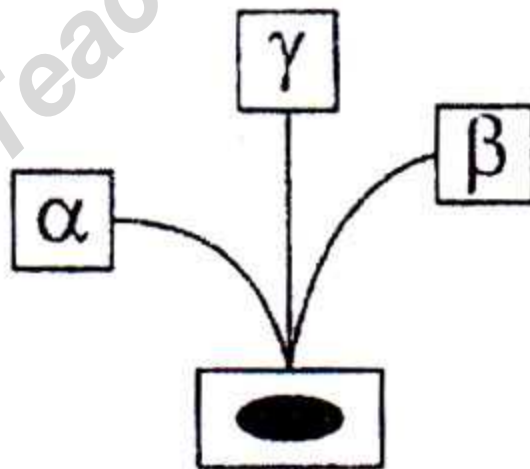
Person	Near Point	Far Point
A	15 cm	100 m
B	35 cm	Infinity

- a. What is optical centre? 1
  - b. Explain diffused reflection. 2
  - c. Calculate the power of lens of the spectacles of the person 'A'? 3
  - d. Explain with ray diagram how the lens of the spectacles of person 'B' forms image. 4
7. ► Observe the following figure and answer to the given questions:



- a. What is electromotive force? 1
- b. Explain why more current flows through the wider wire in compare to narrow wire. 2
- c. Calculate the equivalent resistance and potential difference of the two end of  $4\Omega$ . 3
- d. What amount of money is to pay as electric bill for one month if the given circuit run 6 hours per day? (Price per unit Tk. 6, 1 moth = 30 days.) 4

8. ►



- a. What is half life? 1
- b. How is internal radiotherapy given? 2
- c. Do comparative discussion of the above rays. 3
- d. Discuss the above three rays in case of human welfare. 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.]

Read the stem and answer the following questions no 1 and 2.



1. What is the velocity of the wave?

- (a)  $200\text{ms}^{-1}$
- (b)  $300\text{ms}^{-1}$
- (c)  $400\text{ms}^{-1}$
- (d)  $100\text{ms}^{-1}$

2. According to the figure.

- i. The wave direction and vibrate direction are right angle
- ii. For crest and Trough length is one meter
- iii. The wave is longitudinal wave

Which one is correct?

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

3. Inertia measured by —

- (a) Mass
- (b) Force
- (c) Length
- (d) Work

4. If a body is dropped from the roof of a building which is 50m high. With what velocity will it strike the ground?

- (a)  $3.3\text{ms}^{-1}$
- (b)  $31.2\text{ms}^{-1}$
- (c)  $32.3\text{ms}^{-1}$
- (d)  $33.3\text{ms}^{-1}$

5. The refractive index of water with respect to air is 1.33. What is the refractive index of air with respect to water?

- (a) 0.75
- (b) 1.5
- (c) 1
- (d) 2.5

6. Step up transformer used for —

- (a) Transmission of electric power over long distance
- (b) Transmission of electric power over short distance

(c) Domestic power supply

(d) VCR, VCP etc.

7. What is the refractive index of the material of fiber?

- (a) 1.5
- (b) 1.7
- (c) 1.33
- (d) 1.44

8. In which device used as a rectifier?

- (a) Transistor
- (b) Semiconductor diode
- (c) Television
- (d) Radio

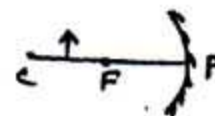
9. Eggs sink in water, but rotten eggs remain floating because —

- i. The density of rotten eggs is increase
- ii. The density of rotten eggs is decrease
- iii. Remain same

Which one is correct?

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

Read the stem and answer the following questions no 10 and 11



10. What is the size of image?

- (a) Smaller than object
- (b) Greater than object
- (c) Equal to object
- (d) Extremely magnified

11. If the object placed at centre of curvature then the image —

- i. Real image
- ii. The object and image distance form the mirror is equal
- iii. The size of image is not equal to the size of object

Which one is correct?

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

12. One femto meter = ?  
 (a)  $10^{-12}m$  (b)  $10^{-15}m$   
 (c)  $10^{-16}m$  (d)  $10^{-3}m$
13. The smallest division of the main scale is 1mm and the number of vernier division is 10. What is the vernier constant?  
 (a) 0.01 cm (b) 0.1 cm  
 (c) 01 cm (d) 0.001cm
14. Petroleum means —  
 (a) Stone (b) Oil  
 (c) Oil of stones (d) Methane
15. For freely falling body —  
 i. Total energy is conserved in all point.  
 ii. Potential energy converted to kinetic energy  
 iii. Kinetic energy converted to potential energy  
 Which one is correct?  
 (a) i (b) i & ii  
 (c) ii & iii (d) i, ii & iii
16. How much heat is required to increase 1 K temperature of 1 kg ice?  
 (a) 4200 J (b) 2100 J  
 (c) 2000 J (d) 4.2 J
17. What will exist in vacuum of Torricelli?  
 (a) Small amount of mercury  
 (b) Mercury vapour  
 (c) Large amount of mercury  
 (d) Vacuum space
18. A man uses a concave lens as a spectacles whose focal length is 20 cm. What is the power of lens in dioptrre?  
 (a) - 5 (b) - 0.5  
 (c) + 0.5 (d) + 5
19. What is the wavelength of X - ray in m?  
 (a)  $10^{-8}$  (b)  $10^{-10}$   
 (c)  $10^{-12}$  (d)  $10^{-16}$
20. Which one is added with silicon in P-type semiconductor?  
 (a) Boron  
 (b) Phosphorus  
 (c) Antimony  
 (d) Arsenic
21. Which is used to detect the presence of current flow?  
 (a) Voltmeter  
 (b) Electroscope  
 (c) Ammeter  
 (d) Galvanometer
22. Which is unit of coulombs' Constant?  
 (a)  $N^{-1}m^2c^2$  (b)  $Nm^{-2}c^2$   
 (c)  $Nm^2c^{-2}$  (d)  $N^{-1}m^{-2}c^{-2}$
23. What is the dimension of momentum?  
 (a)  $MLT^{-1}$  (b)  $ML^2T^{-1}$   
 (c)  $MLT^{-2}$  (d)  $ML^{-1}T^{-1}$
24. What is called the ratio of stress and strain?  
 (a) Hook's law  
 (b) Surface tension  
 (c) Elasticity  
 (d) Modulus of elasticity
25. Which ray is used to detect lung cancer?  
 (a) X-ray  
 (b) Gamma ray  
 (c) Beta ray  
 (d) Alpha ray

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