

MODEL EXAMINATION: 2024
PHYSICS

Max. Score:40

Time: 1½ hrs

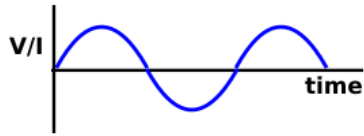
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1. Magnetic effect 1
2. slip rings 1
3. 50° 1
4. Mechanical energy to electrical energy 1
5. 2 hours 1
6.i. Use energy judiciously 2
 ii. Use renewable sources of energy like solar energy maximum as possible.
 iii. Construct houses so as to get sufficient sun light and air circulation.
 iv. Use machines having high efficiency.
7.a. $R = 1250 \Omega$, $V = 200 \text{ V}$ 2
 $P = V^2/R = 200^2/1250 = 32 \text{ W}$
 b. $H = Pt = 32 \times 10 = 320 \text{ J}$
8. Green: solar power plant, hydroelectric power station. 2
 Brown: Atomic reactor, Diesel Engine
9.a. water 2
 b. $v = c/n = 3 \times 10^8 / 1.33 = 2.26 \times 10^8 \text{ m/s}$
10.a. False. According to New Cartesian Sign convention, the distance of the object from a mirror is always negative. 2
 b. False. Right hand thumb rule is used to identify the direction of magnetic field around a current carrying conductor.
 OR Fleming's left hand rule is used to identify the direction of magnetic force on a current carrying conductor placed in a magnetic field.
11.a. Circuit.A 3
 b. Circuit.A
 c. In parallel connection, source voltage is fully available at both lamps. But in series connection, the applied voltage is split between the lamps.
12. Plane mirror – periscope – The size of the image is same as that of the object. 3
 Convex mirror – rear view mirror – Larger field of view
 Concave mirror – shaving mirror – magnification is more
13.a.B 3
 b.i. Eye ball is larger than normal size.
 ii. Focal length of eye lens is shorter than required focal length.
 c. use a concave lens of suitable power
14.a. From A to B 3
 b. Fleming's left hand rule.
 c. Electric motor, moving coil loud speaker.
15.a. 90° 3
 b. 50° (Any angle larger than 42°)
 c. Optic fibre, Endoscope
16.a. tungsten 4
 b. infinity. [There is a mistake in the question. The question is to be "Calculate the current through the circuit when S_2 & S_3 are put on"
 c. Fuse will be burnt out and circuit broken. [Short circuit]
17.a. $P_s = V_s \times I_s$ 4
 $50 = V_s \times 1$ Or $V_s = 50 \text{ V}$
 Since V_s is less than V_p , it is a step down transformer.
 b. mutual induction.
 c. $V_s/V_p = I_p/I_s$
 OR $I_p = V_s \times I_s / V_p = 50 \times 1 / 250 = 0.2 \text{ A}$

18.a. DC Generator.

4

b. Armature, field magnet and split ring commutator.

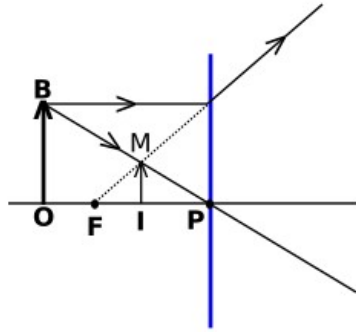
c.



19.a. concave lens

4

b.



c. erect, virtual, smaller than the object.

20.a. Violet, Indigo, Blue, green, yellow, orange and red. [All visible colours]

4

b. Red

c. dispersion,

d. There is no dispersion. (splitting). That is, only red colour is obtained on the screen.