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ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM, BANGALORE – 560 003

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S. S. L. C. EXAMINATION, MARCH/APRIL, 2019

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 02. 04. 2019] ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)**

Date : 02. 04. 2019] **CODE NO. : 83-E (Phy)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ / **Physics**)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

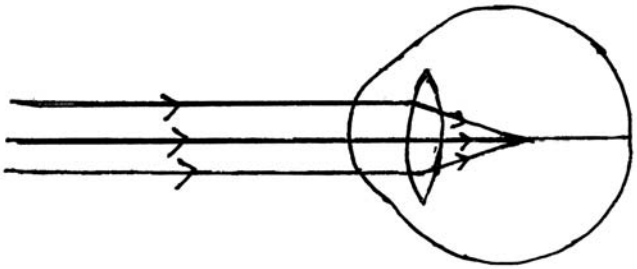
(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Fresh)

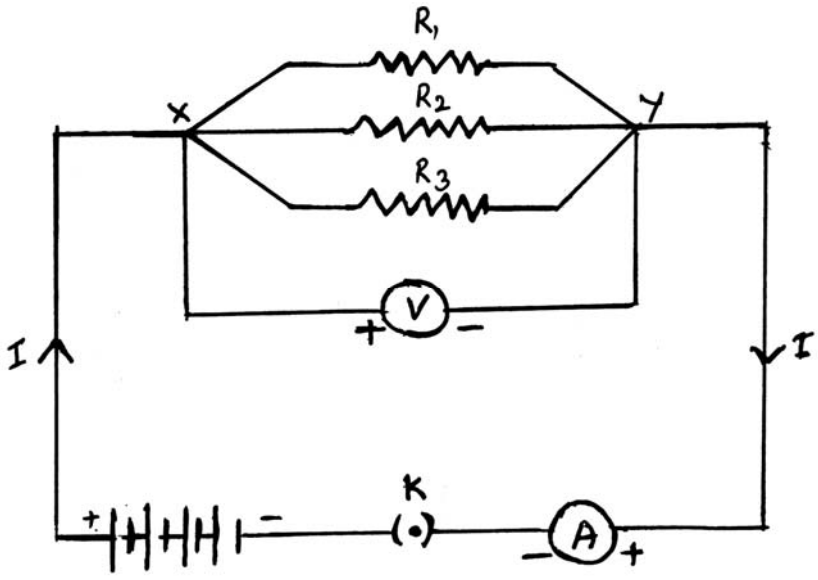
(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

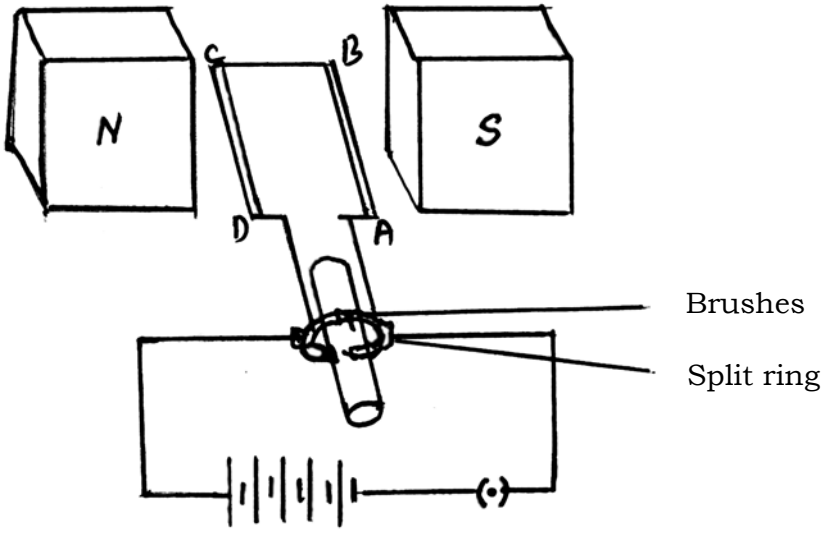
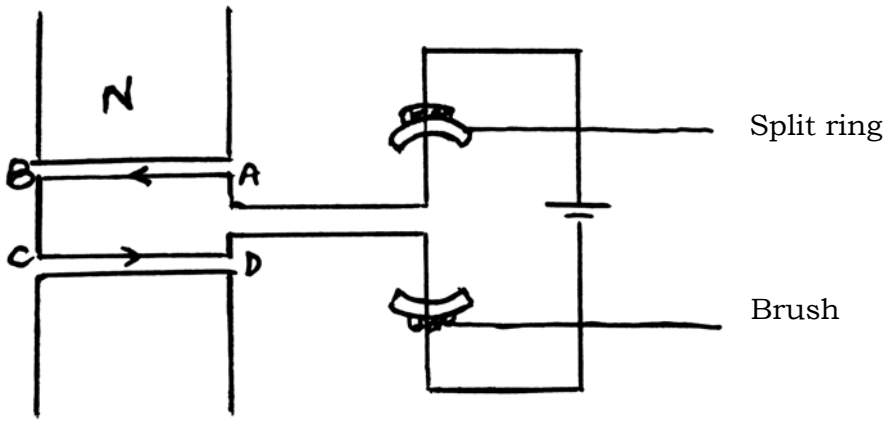
[ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

[Max. Marks : 80

Qn. Nos.	Value Points	Total
1.	The change that occurs in the eye to see the distant objects clearly is (A) focal length of the eye lens decreases (B) curvature of the eye lens increases (C) focal length of the eye lens increases (D) ciliary muscles of the eye contract *Ans.* : (C) — focal length of the eye lens increases	1

Qn. Nos.	Value Points	Total
4.	The resistance of a conductor is 27 Ω . If it is cut into three equal parts and connected in parallel, then its total resistance is (A) 6 Ω (B) 3 Ω (C) 9 Ω (D) 27 Ω *Ans.* : (B) — 3 Ω	1
7.	To obtain a diminished image of an object from a concave mirror, position of the object should be (F = principal focus, C = centre of curvature, P = pole) (A) between C and F (B) beyond C (C) between P and F (D) at F *Ans.* : (B) — beyond C	1
14.	Convex mirror is commonly used as rear-view mirror in vehicles. Why ? *Ans.* : ★ They always give an erect diminished image. $\frac{1}{2}$ ★ Also they have a wider field of view as they are curved outwards. $\frac{1}{2}$	1
16.	Observe the given figure. Name the eye defect indicated in the figure and also mention the lens used to correct this defect.  *Ans.* : ★ Myopia $\frac{1}{2}$ ★ Concave lens $\frac{1}{2}$	1

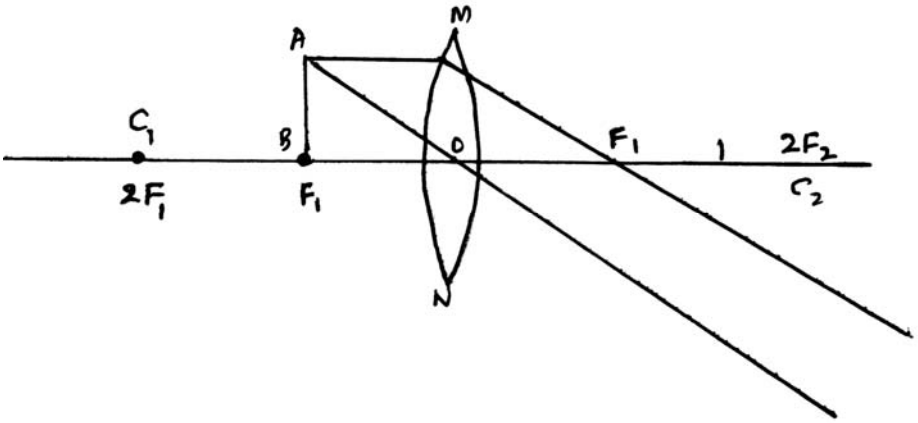
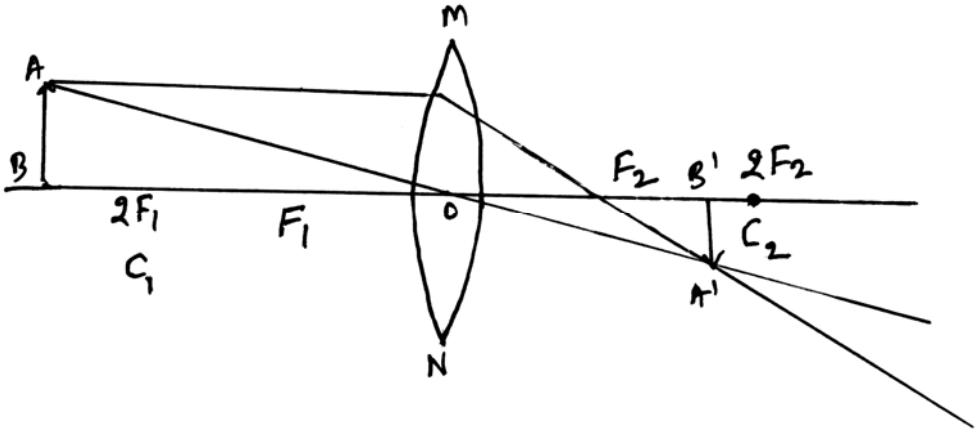
Qn. Nos.	Value Points	Total
17.	What is Tyndall effect ? *Ans.* : The phenomenon of scattering of light by the colloidal particles is called Tyndall effect.	1
19.	Draw the diagram of an electric circuit in which the resistors R_1, R_2 and R_3 are connected in parallel including an ammeter and a voltmeter and mark the direction of the current. *Ans.* : Electric circuit connected in parallel.  Direction of current Diagram — $1\frac{1}{2}$ Parts — $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
22.	Draw the diagram of a simple electric motor. Label the following parts : (i) Split rings (ii) Brushes. *Ans.* :  $1 + \frac{1}{2} + \frac{1}{2}$ OR  $1 + \frac{1}{2} + \frac{1}{2}$	2 2

Qn. Nos.	Value Points	Total
26.	It is advantageous to connect electric devices in parallel instead of connecting them in series. Why ? OR According to Joule's law of heating, mention the factors on which heat produced in a resistor depends. According to this law write the formula used to calculate the heat produced. *Ans.* : ★ The appliances connected in series need currents of widely different values to operate properly. $\frac{1}{2}$ ★ In a series circuit, if one component fails, the circuit is broken and none of the components work. $\frac{1}{2}$ ★ But in a parallel circuit current divides through the electrical gadgets. $\frac{1}{2}$ ★ This is helpful particularly when each gadget has different resistance and requires different current to operate properly / Each electrical appliance can be operated separately. $\frac{1}{2}$ OR Heat produced in a resistor is, (i) directly proportional to the square of current for a given resistance $\frac{1}{2}$ (ii) directly proportional to resistance for a given current, and $\frac{1}{2}$ (iii) directly proportional to the time for which the current flows through the resistor $\frac{1}{2}$ (iv) $H = I^2 Rt$ $\frac{1}{2}$	2 2

Qn. Nos.	Value Points	Total
28.	The focal length of a concave lens is 30 cm. At what distance should the object be placed from the lens so that it forms an image at 20 cm from the lens ? *Ans.* : $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ or, $\frac{1}{u} = \frac{1}{v} - \frac{1}{f}$ $\frac{1}{2}$ $\frac{1}{u} = \frac{1}{-20} - \frac{1}{(-30)} = -\frac{1}{20} + \frac{1}{30}$ $\frac{1}{2}$ $\frac{1}{u} = \frac{-3+2}{60}$ $\frac{1}{2}$ $\frac{1}{u} = \frac{1}{-60}$ or $u = -60$ cm $\frac{1}{2}$	2
31.	An electric refrigerator rated 400 W is used for 8 hours a day. An electric iron box rated 750 W is used for 2 hours a day. Calculate the cost of using these appliances for 30 days, if the cost of 1 kWh is Rs. 3/-. *Ans.* : The total energy consumed by the refrigerator in 30 days $= 400 \times 8 \times 30 = 96000$ Wh $= 96$ kWh $\frac{1}{2}$ The total energy consumed by the iron box in 30 days $= 750 \times 2 \times 30 = 45000$ Wh $= 45$ kWh $\frac{1}{2}$ The total energy consumed by the refrigerator and iron box is = 96 kWh + 45 kWh = 141 kWh $\frac{1}{2}$ The sum of bill amount for 141 kWh at rate of Rs. 3 per 1 kWh is $= 141 \times 3$ = Rs. 423. $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
34.	What is dispersion of light ? Mention the colour that bends the least and the colour that bends the most when light undergoes dispersion through a prism. OR Mention any four phenomena that can be observed due to atmospheric refraction of light on the earth. *Ans.* : The splitting of light into its component colours is called dispersion 1 ★ The red colour bends the least $\frac{1}{2}$ ★ The violet colour bends the most. $\frac{1}{2}$ OR ★ The sun is visible to us two minutes before the actual sunrise. ★ The sun is visible to us two minutes after the actual sunset also. ★ The apparent position of the star is slightly different from its actual position. ★ Twinkling of star ★ Formation of rainbow ★ The apparent random wavering or flickering of objects seen through a turbulent stream of hot air rising above a fire or a radiator. (Any *four*) $4 \times \frac{1}{2}$	2 2

Qn. Nos.	Value Points	Total
35.	Draw the ray diagrams for the image formation in a convex lens when an object is placed (i) at focus F_1 (ii) beyond $2F_1$. *Ans.* : (i)  (ii)  $1\frac{1}{2} + 1\frac{1}{2}$	3
38.	(i) Name the major constituent of biogas. Write the properties of biogas which make it a good fuel. (ii) Name the two devices that work using heat energy of the sun. OR	

Qn. Nos.	Value Points	Total
	(i) Write the advantages of solar cells. (ii) Write any two hazards of nuclear power generation. *Ans.* : (i) ★ Methane / CH_4 . $\frac{1}{2}$ ★ Leaves no residue like ash. $\frac{1}{2}$ ★ It burns without smoke / ecofriendly. $\frac{1}{2}$ ★ Its heating capacity is high. $\frac{1}{2}$ (ii) ★ Solar water heater $\frac{1}{2}$ ★ Solar cooker. $\frac{1}{2}$ OR (i) ★ They have no moving parts. $\frac{1}{2}$ ★ Require little maintenance and work quite satisfactorily without the use of any focusing device. $\frac{1}{2}$ ★ They can be set up in remote and inaccessible hamlets or $\frac{1}{2}$ ★ Very sparsely inhabited areas in which laying of a power transmission line may be expensive and not commercially viable. $\frac{1}{2}$ (ii) ★ Improper nuclear waste storage and disposal result in environmental contamination $\frac{1}{2}$ ★ There is a risk of accidental leakage of nuclear radiation. $\frac{1}{2}$	3 3

Qn. Nos.	Value Points	Total
40.	(i) How does overload and short-circuit occur in an electric circuit ? Explain. What is the function of fuse during this situation ? (ii) Mention two properties of magnetic field lines. *Ans.* : (i) ★ Overloading can occur when the live wire and the neutral wire come into direct contact. ★ This occurs when the insulation of wires is damaged or there is a fault in the appliance / When many electrical appliances are connected to one circuit simultaneously. $\frac{1}{2}$ ★ In such a situation, the current in the circuit abruptly increases and short circuit occurs. $\frac{1}{2}$ ★ The joule heating that takes place in the fuse melts it to break the electric circuit, and prevents the electric appliances from possible damage. $\frac{1}{2} + \frac{1}{2}$ (ii) ★ No two field lines are found to cross each other. $\frac{1}{2}$ ★ The density of the magnetic field lines are more in their poles. $\frac{1}{2}$ ★ The magnetic field lines emerge from north pole and merge at south pole. $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	⋆ Inside the magnet, the direction of field lines is from its south pole to its north pole. $\frac{1}{2}$ ⋆ Thus the magnetic field lines are closed curves. (Any *two*) $2 \times \frac{1}{2} = 1$	4