

# ଧରିତ୍ରୀ

DHARITRI



ବ୍ରଜପୁର, ମଙ୍ଗଳବାର, ଡିସେମ୍ବର ୧୧/୨୦୧୮ (୧୭ ପୃଷ୍ଠା)

୧୪ ଶ ଭାଗ ୩୯ ୨ ସଂଖ୍ୟା

[www.orissakhabar.com](http://www.orissakhabar.com) | [www.dharitri.com](http://www.dharitri.com)

Berhampur, Tuesday, December 11/2018

| ★★

ମୂଲ୍ୟ ୫୫/-

'ମର୍ଦ୍ଦନୀ-୨'ରେ ଅଭିନୟ କରିବେ ରାଣୀ ମୁଖାର୍ଜୀ

ବଲିଉଡ ଅଭିନୟରେ ରାଣୀ ମୁଖାର୍ଜୀ ଖୁବ ଶାସ୍ତ୍ର 'ମର୍ଦ୍ଦନୀ'ର ବିଭାଗ  
ସଂଖ୍ୟା 'ମର୍ଦ୍ଦନୀ-୨'ରେ ଅଭିନୟ କରିବାକୁ ଯାଉଛନ୍ତି।

୧୦ ୦୯

ପାକିସ୍ତାନକୁ ସହାୟତା ଦିଆନ ଯାଉ

ଆଜିବାଦାଙ୍କ ବିରୋଧରେ କାର୍ଯ୍ୟାନୁଷ୍ଠାନ ନ ନେବାଯାଏ ପାକିସ୍ତାନକୁ ଆମେରିକା ସହାୟତା  
ଦେବା ଅନୁଚ୍ଛିତ ବୋଲି ଜାତିଏଂଗରେ ଆମେରିକାର ରାଷ୍ଟ୍ରପୁତ୍ର ନିକି ହାଲି କହିଛନ୍ତି।



@CMO\_Odisha

f CMO.Odisha

@Naveen\_Odisha



ଓଡ଼ିଶା କୋଠାବାତି ଏବଂ ଅନ୍ୟାନ୍ୟ ନିର୍ମାଣ ଶ୍ରମିକ କଲ୍ୟାଣ ବୋର୍ଡ

ସବୁଦିନେ ନିର୍ମାଣ ଶ୍ରମିକଙ୍କ ସାଥରେ



ସୂଚନା ଓ  
ଲୋକସଂପର୍କ ବିଭାଗ  
ଓଡ଼ିଶା ସରକାର

DADLS-215

ଆମ ପ୍ରିୟ ମୁଖ୍ୟମନ୍ତ୍ରୀଙ୍କ ଯୋଗୁଁ ମୋ ଝିଅର  
ବିବାହ ପାଇଁ ମତେ ମିଳିଲା ୨୫ ହଜାର ଟଙ୍କାର  
ବିବାହକାଳୀନ ସହାୟତା । ମୁଁ ଓ ମୋ ପରିବାର  
ତାଙ୍କ ନିକଟରେ କୃତଞ୍ଜୀବିତ ।

- ବ୍ରଜ କିଶୋର ପାତ୍ର, ବାଲେଶ୍ୱର ଜିଲ୍ଲା

॥ ୨୭ ହଜାରରୁ ରର୍ତ୍ତ ଦିତାଧୂକାରୀ ॥

॥ ୮୦ କୋଟିରୁ ଅଧୂଳ ସହାୟତା ॥

ଓଡ଼ିଶା କୋଠାବାତି ଏବଂ ଅନ୍ୟାନ୍ୟ ନିର୍ମାଣ ଶ୍ରମିକ କଲ୍ୟାଣ ବୋର୍ଡ

ସବୁଦିନେ ନିର୍ମାଣ ଶ୍ରମିକଙ୍କ ସାଥରେ

ଆରବିଆଇ ଗଭର୍ନର ଉର୍ଜତ  
ପଟ୍ଟନାମ୍ବିଳ୍ଲ ଜୟପୁଣ୍ୟ

ସୁମଧୁର, ୧୦୧୯

ସାମରତାକୁ ଲେବ କେତ୍ର ସରକାରଙ୍କ ସହ  
ମତରେ ଦାଖିଲା ବେଳେ ଭାରତୀୟ  
ରିଜଟ ବ୍ୟାକ (ଆବିରିଆଇ) ଗଭର୍ନର  
ଉର୍ଜତ ପଟ୍ଟନ ବୋଲେ ବୋଲି ଉର୍ଜତ  
ଲ୍ୟୁପ୍ରାପତ୍ରରେ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ଯେ, ବହୁ ବର୍ଷ ଧରି ଉର୍ଜତ  
ବ୍ୟାକର ବିଭିନ୍ନ ପଦଦର୍ଶକରେ ରହିଥାଏ  
କରିବାର ସ୍ଵାଧୀନ ପାଇଥାରୁ ସିଦ୍ଧାନ୍ତ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ହେବକେତ୍ରାୟ ବ୍ୟାକ ଓ କେନ୍ଦ୍ର ସରକାରଙ୍କ  
ମଧ୍ୟ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ସମର୍ଥନ ଦିଅ ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ  
କେନ୍ଦ୍ରାୟ ବ୍ୟାକ ଗତ କିମ୍ବା ବ୍ୟାକ  
ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି ।

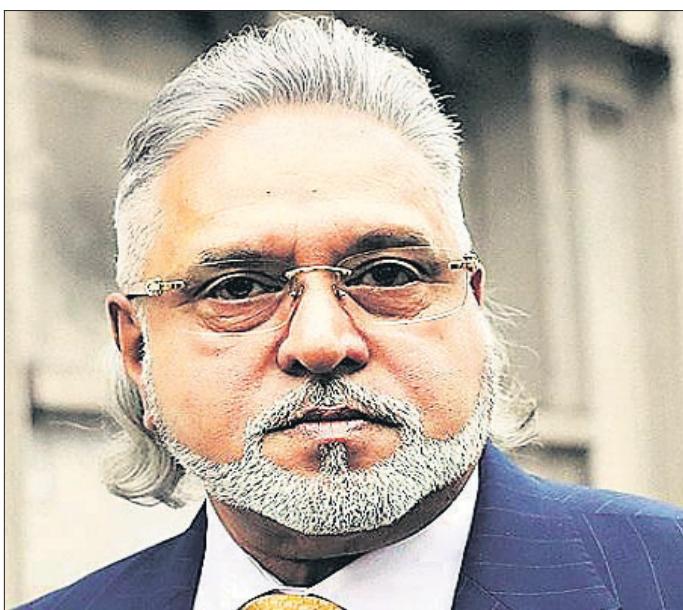


ବ୍ୟାକର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ହେବକେତ୍ରାୟ ବ୍ୟାକ ଓ କେନ୍ଦ୍ର ସରକାରଙ୍କ  
ମଧ୍ୟ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ସମର୍ଥନ ଦିଅ ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ  
କେନ୍ଦ୍ରାୟ ବ୍ୟାକ ଗତ କିମ୍ବା ବ୍ୟାକ  
ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି ।

ମାଲ୍ୟାଙ୍କୁ ଫେଟାକା ।  
ପ୍ରତ୍ୟର୍ପଣ ନେଇ ବ୍ରିଟେନ୍ କୋର୍ଟର ଅନୁମତି

ଲେଖନ୍ତ, ୧୦୧୯ (ପି.ଟି.)

ବହୁରୁଚିତ ମଦ ବ୍ୟବସାୟ ବିଭିନ୍ନ  
ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ  
କରିଛନ୍ତି । ବ୍ରିଟେନ୍ ଏକ ଶେଷ ବ୍ୟାକ  
ହେବକେତ୍ରାୟ ବ୍ୟାକ ଓ କେନ୍ଦ୍ର ସରକାରଙ୍କ  
ମଧ୍ୟ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ସମର୍ଥନ ଦିଅ ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ  
କେନ୍ଦ୍ରାୟ ବ୍ୟାକ ଗତ କିମ୍ବା ବ୍ୟାକ  
ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି ।



ସମର୍ତ୍ତର ମୁଖ୍ୟ ଅଧ୍ୟାତ୍ମା ରଣତାରୁ  
ଯେ ତାହାର ସମ୍ମର୍ତ୍ତର ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ହେବକେତ୍ରାୟ ବ୍ୟାକ ଓ କେନ୍ଦ୍ର ସରକାରଙ୍କ  
ମଧ୍ୟ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ସମର୍ଥନ ଦିଅ ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ  
କେନ୍ଦ୍ରାୟ ବ୍ୟାକ ଗତ କିମ୍ବା ବ୍ୟାକ  
ଅଧିକାରୀ ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି । ସେ  
ଲେଖନ୍ତର ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ନିର୍ମାଣ କାର୍ଯ୍ୟର ପରିଶ୍ରମ ଯୋଗୁ କରିଛନ୍ତି ।

ଅଗ୍ରି-୪ ଶୈପଣାସ୍ତ୍ର ପରୀକ୍ଷଣ

ବାଲେଶ୍ୱର ଅଧ୍ୟେ, ୧୦୧୯

ସାମରତାକୁ ନେଇ ଗତ କିମ୍ବା ବ୍ୟାକ  
ପରିଶ୍ରମ ଯୋଗୁ କରିବାର କାର୍ଯ୍ୟର ଅନ୍ତର୍ଭାବରେ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ଅନ୍ତର୍ଭାବରେ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ଅନ୍ତର୍ଭାବରେ ଅଧିକାରୀ ଓ ମଧ୍ୟକାଳୀନ କାର୍ଯ୍ୟର  
ଅନ୍ତର୍ଭାବର





















# Exam Mate



Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main &amp; Advanced.

FOR ANSWERS VISIT : [www.dharitri.com](http://www.dharitri.com)

## MOCK TEST PAPER # 1

### CLASS-XII (PHYSICS)

**Time Allowed : 3 hours****Maximum Marks: 70****GENERAL INSTRUCTIONS**

- All questions are compulsory. There are 27 questions in all.
- This question paper has five sections : Section A, Section B, Section C and Section D.
- Section A contains five questions of one mark each, Section B contains seven questions of two marks each, Section C contains twelve questions of three marks each, Section D contains three questions of five marks each.
- There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all the three questions of five marks weightage. You have to attempt only one of the choices in such questions.

**SECTION-A**

- What is the direction of the force acting on a charged particle q, moving with a velocity  $\vec{v}$  in a uniform magnetic field  $\vec{B}$  ?
- The instantaneous current from an ac source is  $I = 5\sin 314t$  ampere. What is the rms value of the current ?
- What is the value of refractive index of a medium of polarizing angle  $60^\circ$  ?
- Name the part of electromagnetic spectrum which is suitable for
  - radar systems used in aircraft navigation.
  - treatment of cancer tumours.
- Two nuclei have mass numbers in the ratio 2 : 5. What is the ratio of their nuclear densities ?

**SECTION-B**

- Two point charges,  $q_1 = 10 \times 10^{-8}$  C and  $q_2 = -2 \times 10^{-8}$  C are separated by a distance of 60 cm in air.
  - Find at what distance from the 1st charge,  $q_1$ , would the electric potential be zero.
  - Also calculate the electrostatic potential energy of the system.

**OR**

- Two point charges  $4Q$ ,  $Q$  are separated by 1 m in air.
- At what point on the line joining the charges is the electric field intensity zero ?
  - Also calculate the electrostatic potential energy of the system of charges, taking the value of charge  $Q = 2 \times 10^{-7}$  C.
- The oscillating magnetic field in a plane electromagnetic wave is given by  $B_y = (8 \times 10^{-6}) \sin[2 \times 10^{11} t + 320\pi x] T$ 
    - Calculate the wavelength of the electromagnetic wave.
    - Write down the expression for the oscillating electric field.
  - List any four applications of intersect.
  - What conclusion can you draw from the following observations on a resistor made of alloy manganin ?

Current A	Voltage V	Current A	Voltage V
0.2	3.94	3.0	59.2
0.4	7.87	4.0	78.8
0.6	11.8	5.0	98.6
0.8	15.7	6.0	118.5
1.0	19.7	7.0	138.2
2.0	39.4	8.0	158.0

- Calculate the energy in fusion reaction:

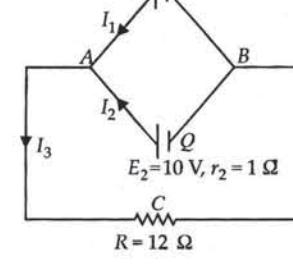
${}_1^2H + {}_1^2H \rightarrow {}_2^3He + n$ , where B.E. of  ${}_1^2H = 2.23$  MeV and of  ${}_1^3He = 7.73$  MeV

- Answer the following questions:

- A virtual image, we always say, cannot be caught on a screen. Yet when we 'see' a virtual image, we are obviously bringing it on to the 'screen' (i.e., the retina) of our eye. Is there a contradiction?
- The refractive index of diamond is much greater than that of ordinary glass. Is this fact of some use to a diamond cutter ?
- Why is the diffraction of sound wave more evident in daily experience than that of light wave ?

**SECTION-C**

- State Kirchhoff's rules. Apply Kirchhoff's rules to the loops ACBPA and ACBQA to write the expression for the current  $I_1$ ,  $I_2$  and  $I_3$  in the network.



- If a light beam shows no intensity variation when transmitted through a polaroid which is rotated, does it mean that the light is unpolarized ? Explain briefly.
- i. Define activity of a radioactive material and write its SI unit.  
ii. Plot a graph showing variation of activity of a given radioactive sample with time.  
iii. The sequence of stepwise decay of a radioactive nucleus is  $D \xrightarrow{\alpha} D_1 \xrightarrow{\beta^-} D_2$ . If the atomic number and mass number of  $D_2$  are 71 and 176 respectively, what are their corresponding values for  $D$  ?
- A  $10\mu F$  capacitor is charged by a 30 V dc supply and then connected across an uncharged  $50\mu F$  capacitor. Calculate (i) the final potential difference across the combination, and (ii) the initial and final energies. How will you account for the difference in energy ?
- (a) Draw a ray diagram showing the formation of image by a reflecting telescope.  
(b) Write two advantages of a reflecting telescope over a refracting telescope.
- An electron and a proton are accelerated through the same potential. Which one of the two has (i) greater value of de Broglie wavelength associated with it and (ii) less momentum ? Justify your answer.
- Write two basic modes of communication. Explain the process of amplitude modulation. Draw a schematic sketch showing how amplitude modulated signal is obtained by superposing a modulating signal over a sinusoidal carrier wave.
- An illuminated object and a screen are placed 90 cm apart. Determine the focal length and nature of the lens required to produce a clear image on the screen, twice the size of the object.

**OR**

The image obtained with a convex lens is erect and its length is four times the length of the object. If the focal length of the lens is 20 cm, calculate the object and image distance.

- i. Draw a neat labelled ray diagram of an astronomical telescope in normal adjustment. Explain briefly its working.  
ii. An astronomical telescope uses two lenses of powers 10D and 1D. What is its magnifying power in normal adjustment ?
- The deuteron is bound by nuclear forces just as H-atom is made up of p and e bound by electrostatic forces. If we consider the force between neutron and proton in deuteron as given in the form of a Coulomb potential but with an effective charge  $e'$ :

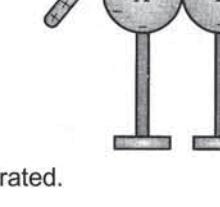
$$F = \frac{1}{4\pi\epsilon_0} \frac{e'^2}{r} . \text{Estimate the value of } (e'/e) \text{ given that the binding energy of a deuteron is 2.2 MeV.}$$

- White light reflected at perpendicular incidence from a soap film has, in the visible spectrum, an interference maximum at  $6000 \text{ Å}^0$  and a minimum at  $4500 \text{ Å}^0$  with no minimum in between. If  $\mu = 4/3$  for the film, what is the thickness of the film ?

**OR**

A convex lens of focal length 20 cm is placed coaxially with a convex mirror of radius of curvature 20 cm. The two are kept at 15 cm from each other. A point object lies 60 cm in front of the convex lens. Draw a ray diagram to show the formation of the image by the combination. Determine the nature and position of the image formed.

- A glass rod rubbed with silk is brought close to two uncharged metallic spheres in contact with each other, inducing charges on them as shown in the following figure. Describe what happens, when



- the spheres are slightly separated.  
b. the glass rod is subsequently removed, and  
c. the spheres are separated far apart.

**SECTION-D**

- Give the principle, construction, theory and working of an ac generator.

**OR**

Draw a labelled circuit arrangement showing the winding of primary and secondary coils in a transformer. Explain the underlying principle and working of a transformer. Write any two major sources of energy loss in this device.

- A long straight wire of uniform cross section of radius  $a$  is carrying a steady current  $I$ . Use Ampere's circuital law to obtain a relation showing the variation of the magnetic field ( $B$ ) inside and outside the wire with distance  $r$ , ( $r < a$ ) and ( $r > a$ ) at the field point from the centre of its cross section. Plot of graph showing the nature of this variation.

**OR**

State Biot-Savart's law. Using this law derive an expression for the magnetic field at a point situated at a distance of  $x$  metre from the centre of a circular coil of  $N$  turns and radius  $r$  carrying a current of  $IA$ .

- Explain briefly, with the help of circuit diagram, how V-I characteristic of a p-n junction diode are obtained in (i) forward bias, and (ii) reverse bias. Draw the shape of the curve obtained.

**OR**

Discuss common emitter amplifier, using n-p-n transistor. Find its current gain, voltage gain and power gain.

For Answers visit: [www.dharitri.com](http://www.dharitri.com)
**NATIONAL ADMISSION cum SCHOLARSHIP TEST ON 30th DECEMBER 2018**

(FOR CLASS VII, VIII, IX, X, XI &amp; XII STUDENTS) Ph. No. 0674 - 2421400, 2421800, 85990 87100 / 85990 87200

Preparation For:-IITJEE Main &amp; Advanced, Medical (NEET / AIIMS), KVPY, Olympiad, NTSE &amp; Board.

Jaydev Vihar Centre : 1st Floor Above HDFC Bank, Madhusudan Nagar, Kalinga Stadium Square, Damana Centre: Plot No. 248, 1st Floor, Near Damana Square, Sailashree Vihar Road, Chandrasekharpur, Bhubaneswar

Corporate Office: Vidyamandir Classes, Aggrawal Corporate Heights, 3rd Floor, Plot No. A-7 Netaji Subhash Place, Opposite Wazirpur Depot, Pitampura, Delhi, [www.vidyamandir.com](http://www.vidyamandir.com)









