



DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

PRE- BOARD-I EXAMINATION (2017-18)

Class:-XII
Time- 3 Hrs.

Subject:- Physics
M.M-70

General Instructions:-

1. All questions are compulsory. There are 26 questions in all.
2. This question paper has five sections: Section -A, Section- B, Section-C, Section D and Section E.
3. Section- A contains five questions of one mark each, Section B- contains five questions of two marks each, Section- C contains twelve questions of three marks each, Section-D contains one value based question of four marks and section -E contains three questions of five marks each.
4. 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

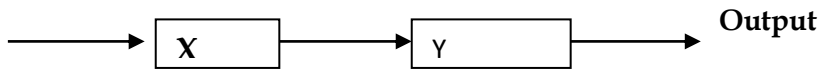
- Q.1 Define the current sensitivity of a galvanometer. Write its SI unit.
- Q.2 What is the ratio of radii of orbits corresponding to first excited state and ground state of hydrogen atom?
- Q.3 The binding energies of ^{16}O , ^{35}Cl , are 127.35 MeV and 289.3 MeV respectively. Find out which nucleus is more stable?
- Q.4 Why should a photodiode be operated at a reverse bias?
- Q.5 Define modulation index?

Section-B

- Q.6 Equal currents I and I are flowing through two infinitely long parallel wires. What will be the magnetic field at a point midway, when the current are flowing in the opposite direction? Give reason.
- Q.7 (i) Name the phenomenon on which the working of an optical fibre is based.
(ii) What are the necessary conditions for this phenomenon to occur?
- Q.8 A concave lens is placed in water. Will there be any change in focal length? Give reason.
- Q.9 State Brewster's law. The value of Brewster's angle for a transparent medium is different for light of different colours. Give reason.
- Q.10 (i) Which mode of propagation is used by shortwave broadcast service having frequency range from a few MHz upto 30 MHz ?
(ii) Explain diagrammatically how long distance communication can be achieved by this mode?
(iii) Why is there an upper limit to frequency of waves used in this mode?

OR

Figure shows a block diagram of a detector for amplitude modulated signal. Identify the boxes 'X' and 'Y' and write their functions.



Section-C

Q.11 Calculate the current shown by the ammeter in the circuit shown in figure.

Q.12 (i) Calculate the total charge enclosed by a closed surface if the number of electric lines of force entering it is 10,000 and leaving 20,000

(ii) An electric dipole is formed by $+5\mu\text{C}$ and $-5\mu\text{C}$ charges at 4 mm distance. Calculate the dipole moment and give its direction.

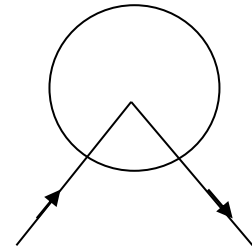
Q.13 (i) A galvanometer of resistance $15\ \Omega$ gives full scale deflection for a current of 2 mA. Calculate the shunt resistance needed to convert it into an ammeter of range 0.5 A.

(ii) Which has greater resistance a milli ammeter or an ammeter?

OR

(i) What are the values of B_H and δ at the magnetic north pole of the earth.

(ii) The wire shown in the figure given below carries a current of 10 A. Determine the magnitude of the magnetic field at the centre O. Given radius of the bent coil is 3 cm.



Q.14 An alternating current having a peak value of 14 A is used to heat a metal wire. What is the value of steady current which can produce the same heating effect as produced by this AC? Why?

Q.15 (i) What are eddy currents?

(ii) On what sense are they considered undesirable?

(iii) How are they reduced?

Q.16 Figure shows how the reactance of an inductance varies with frequency.

(i) Calculate the value of the inductance using the information given in the graph.

(ii) If the inductor is connected in series to a resistor of 8Ω . Find what would be the impedance at 300 HZ

- Q.17 Show that during the charging of a parallel plate capacitor, the rate of change of charge on each plate equal ϵ_0 times the rate of change of electric flux ϕ_0 linked with it. What is the name given to the term $\epsilon d \frac{Q_E}{dt}$?
- Q.18 Two polaroids P_1 and P_2 are placed with their pass axes perpendicular to each other. Unpolarised light of intensity I_0 is incident on P_1 . A third Polaroid P_3 is kept in between P_1 and P_2 such that its pass-axis makes an angle 60° with that of P_1 . Determine the intensity of light transmitted through P_1, P_2, P_3 .
- Q.19. (i) Are matter waves electromagnetic?
(ii) Show that de-Broglie wavelength λ of electron accelerated through a potential difference of V volts can be expressed as $\lambda = \frac{h}{\sqrt{2meV}} = \frac{12.3}{\sqrt{V}} \text{ \AA}$
- Q.20 A monochromatic light source of power 5 mW emits 8×10^{15} photons per second. This light ejects photo electrons from a metal surface. The stopping potential for this setup is 2V. Calculate the work function of the metal.
- Q.21 (i) Show mathematically how Bohr's postulate of quantisation of orbital angular momentum in hydrogen atom is explained by de-Broglie's hypothesis.
(ii) What is the angular momentum of an electron in the third orbit of an atom.
- Q.22 A zener of power rating 1W is to be used as a voltage regulator. If zener has a breakdown of 5V and it has to regulate voltage which fluctuated between 3V and 7V, what should be the value of R_s for safe operation (see figure)?

Section-D

Q.23 Sujata was watching her favourite TV Serial. Suddenly the picture started shaking on the TV screen. She asked her brother to check the dish antenna. Her brother found no problem in the antenna. Sujata noticed the same problem in TV picture again after some time. At the same time she heard the sound of a low flying aircraft passing over their house. She brought it to the notice of her brother. He explained the cause of shaking picture on TV screen when aircraft passing over head.

- (i) What kind of communication mode is used in TV transmission? How does a low flying Aircraft disturb a picture in a television.
- (ii) Which values are reflected in the approach of Sujata Brother?

Section-E

Q.24 State the principle of working of p-n diode as a rectifier. Explain with the help of a circuit diagram, the use of p-n diode as a full wave rectifier. Draw a sketch of the input and output waveforms.

OR

- (a) Draw a labelled circuit diagram of common-emitter amplifier. Explain its working? What is the phase difference between the input and output voltage signals?
- (b) Draw the output waveform at X using the given inputs A and B for the logic circuit shown below. Also, identify the logic operation performed by this circuit.

Q.25 (a) What is linearly polarized light?

(b) Unpolarised light is incident on a polaroid. How would the intensity of transmitted light change when the polaroid is rotated?

(c) In young's double slit experiment, derive the condition for constructive interference.

OR

(a) What is diffraction of light? Draw a graph showing the variation of intensity with angle in a single slit diffraction experiment. Write one feature which distinguishes the observed pattern from the double slit interference pattern.

(b) A parallel beam of light of wavelength 600 nm is incident normally on a slit of width 'a'. If the distance between the slit and the screen is 0.8 m and the distance of 2nd order maximum from the centre of the screen is 15 mm, calculate the width of the slit.

Q.26 Describe Davisson and Germer's experiment to establish the wave nature of electrons. Draw a labelled diagram of the apparatus used.

OR

(a) If the frequency of light falling on a metal is doubled what will be the effect on photoelectron and the maximum kinetic energy of emitted photoelectrons.

(b) Define the terms:

(i) Work function

(ii) Threshold frequency

(iii) Stopping potential



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PRE- BOARD-I EXAMINATION (2017-18)

Class:-XII
Time- 3 Hrs.

Subject:- Business Studies
M.M-80

General Instructions:-

1. Answer to questions carrying 1 mark may be from one word to one sentence.
2. Answer to questions carrying 3 marks may be from 50-75 words.
3. Answer to questions carrying 4-5 marks may be about 150 words.
4. Answer to questions carrying 6 marks may be about 200 words.
5. Attempt all parts of a question together.

- Q.1 Sonu purchased a medicine from Alpha Medical Stores for his wife, Who had stomach-ache. But even after the medicine, wife's condition did not improve and she had to be admitted to a near -by hospital for treatment. Sonu complained about this to " Alpha medical stores". As a result Alpha medical decided to file a complaint against the manufacturers in the consumer court. Can Alpha medical store lodge a complaint? Give reason. [1]
- Q.2 How does change in share prices of a company affect, the wealth of its share holders? [1]
- Q.3 What is meant by bridge financing? [1]
- Q.4 "The understanding of business environment helps the managers to identify threats". What is meant by "threats" here? [1]
- Q.5 Charu is CA in Prakash Ltd. During the course of meeting with directors she came to know that as against the previous years, this year the company is going to declare handsome dividend offer. It is observed that when such news becomes public then the share-market jumps up. Considering it , Charu purchased large number of Company's shares before this news reached the public. Identify the type of malpractice used by Charu. [1]
- Q.6 What kind of cases can be filed in state commission? [1]
- Q.7 HCL company's finance manager has decide to retain its entire profit to meet financial requirement of its growth. Name the type of decision involved. [1]
- Q.8 Business environment include both "specific and general forces". List any four general forces. [1]
- Q.9 A company gave its sales Executives, the directive that they would sell goods on credit but told the employees to strictly inform the customers that if they will not make payment within one month they will have to pay, an interest of 10 % per annum. In the above mentioned paragraph two types of plans have been mentioned. Identify them, and explain them briefly. [3]
- Q.10 A company is manufactured paper plates and bowls. If produces 1,00,000 plates and bowls each day. Due to local festival it got an urgent order of 50,000 extra plates. Advise how will the company fulfill its order and which method of recruitment would you suggest? Explain it briefly. [3]

- Q.11 Differentiate between Unity of Command and Unity of Direction on the following basis:- [3]
 (a) Meaning ; (b) Purpose; (c) Results
- Q.12 One day the managements instructor of BBA classes organized a "Panel Discussion" on important topics of management. The students were given the following clues for discussion. Each student was given three minutes for elaborating on the clues given below:
- Clue 1: They are inseparable twins.
 Clue 2: They are inter-dependent , inter related and reinforce each other.
 Clue 3: They both are forward looking and backward looking.
- (i) Identify the function of management written in the chess, above.
 (ii) Elaborate furthers, on the 3 clues mentioned. [1+2=3]
- Q.13 Vivo Mobile aims to produce 20,000 mobiles in 2017. To achieve this target production department strives for timely production, finance department agreed for timely release of funds, purchase department agreed for timely supply of raw materials and sales department agreed to take all possible steps to sell them. Due to the combined effects of all the departments, Company can achieve its target?
- (a) Which characteristics of management is highlighted in the above para.
 (b) Which importance of management helps the Vivo mobile Ltd. to achieve its objectives.
 (c) Which other aspect of management helps the Vivo mobile Ltd. to achieve its objectives. [3x1=3]
- Q.14 Mention and explain briefly, any four importance of consumer protection from consumer's point -of-view. [4]
- Q.15

<p>NOTICE</p> <p>A Meeting of all supervisors is scheduled on 18th may 2016</p>

This notice board was placed in the reception area of ABC Ltd. The notice placed here, did not mention clear specification regarding the time. This scheduled in the ambiguity of .

Which barrier of communication is refereed to here? Explain briefly any three other forms of barriers of effective communication. [1+3=4]

- Q.16 A few days back in UP, an ATM of a nationalized bank in Shatijahanpur dispensed counterfeit Rs. 2000 notes. The victim Punit Gupta who withdrew a total of Rs. 10,000 , was shocked when he found that one of the fire notes he withdrew was a scanned copy, but the bank refused to change it. They , in fact, even refused to acknowledge that the note came out of their ATM. His friend Avneet who is banker told him that as per Reserve Bank directive issued in May 2012, no bank can put received by them, without first processing them for automaticity. Moreover he suggested to him to exercise a particular right and ask the bank for evidence on the kind of steps being taken by the bank to stop false notes entering the ATM and also the number of complaints that they have received so far from consumers about false notes coming out of their ATMs.

In context of the above case:

- (a) Identify and explain the right of consumer that Puneet Gupta has been suggested to exercise by his friend in the above case.
- (b) List any two values being ignored by the bank . [4]
- Q.17 Mention any four importance of financial planning. [4]
- Q.18 Explain the following as features affecting financial decision: -
- (a) Cost;
- (b) Cost their position of business
- (c) Level of fixed operating cost;
- (d) Control consideration [4x1=4]
- Q.19 You are the finance manager of a company. The Board of Directors have asked you to determine the working capital requirement for the company. State any four factors that you would take in consideration while determining the working capital requirement for the company. [4]
- Q.20 Samir Gupta started a telecommunication company, 'Donira Ltd'. to manufacture economical mobile phones for the Indian rural market with 15 employees . The company did very well in the initial years. As the product was good and marketed well, the demand of its products went up. To Samir Gupta , who was earlier taking all decision for the company had to selectively disperse the authority. He believed that subordinates are competent, Capable and resourceful and can assume responsibility for effective implementation of their decision. This paid off and the company was not only able to increase its production but also expanded its product range.
- (a) Identify the concept used by Samir Gupta which he was able to take his company to greater height.
- (b) Also explain any four points of importance of this concept. [1+4=5]
- Q.21 Ranbaxy Ltd, has been earning handsome profits since last 15 years. Company enjoys fair goodwill in the market, so company can easily arrange debt as well as equity from the market, whenever needed. Therefore Ranbaxy declared 15 % hike in the dividend since last year. [5]
- (a) Which two components affecting dividend decision have been highlighted in the above paragraph.
- (b) Briefly explain three more features of dividend decision.
- Q.22. What is a financial market? Mention and explain the function of a financial market. [5]
- Q.23 ITC started its business with Jobaico Industry later on its entered in Hotel Industry, consumer goods industry, stationery etc. ITC assured quality to customer and kept company's name as its identity. This help the customers in product identification and thence ensured quality. It also built up their confidence and help in increasing their level of satisfaction.
- (a) Name the element of marketing mix referred in above para.
- (b) Name the other elements of marketing mix.
- (c) Name the concept which assure quality and help in identification of product.
- (d) Mention any three advantage of the concept so identified, in (c) [1+1+1+3=5]
- Q.24 Mention two points each of the three function of SEBI. [2x3=6]
- Q.25 Explain any six factors that affect the choice of capital structure. [1x6=6]