DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Accountancy**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

1. All questions are compulsory.
2. Marks are indicated against each questions.

1. **Would a charitable dispensary run by 8 members be deemed a partnership firm? Give reason in support of your answer?** **[1]**
2. **What Journal Entry is passed to transfer 10% of profits (Rs. 275000) to General Reserve.** **[1]**
3. **Why is Profit and Loss Suspense Account Prepared?** **[1]**
4. **State two basis for determination of profits from the date of last Balance sheet to the date of death.** **[1]**
5. **State any two matters that need adjustments at the time of retirement of a partner.** **[1]**
6. **A,B, and C are partners in a firm B retires and his claim including his capital and his share of Goodwill is Rs. 40000. He is paid in kind a vehicle at Rs. 20000 unrecorded in the books of the firm till the date of retirement and the balance in cash. Give the journal entries for recording the payment to B in the books of the firm.** **[3]**
7. **A B and C are partners in a firm whose books are closed on 31st March each year. A dies on 30th June 2017 and according to the agreement, the share of profits of a deceased partner upto the date of the death is to be calculated on the basis of the average profit for last 5 years. The net profits for the last 5 years have been I Rs. 14000 II Rs. 18000 III Rs. 16000 IV Rs. 10000 (loss) and V Rs. 16000. Calculate A's share of profits upto the date of death and pass necessary journal entries.** **[3]**
8. **A and B were partners in a firm sharing profits in the ratio of 3:1. They admitted C as a new partner for 1/3rd share. It was decided that A,B and C will share future profits equally C brought Rs. 5000 in cash and Machinery worth Rs. 70000 for his share of profit as premium for goodwill. Pass necessary journal entries in the books of the firm.** **[3]**
9. **A, B and C were partners in a firm sharing profits and losses in the ratio of 3:3:4. Their partnership deed provided for the following :**
   (a) Interest on Capital @ 5 % p.a.
   (b) Interest on drawings @ 12 % p.a
   (c) Interest on partners loan @ 6 % p.a
   (d) A was allowed on annual salary of Rs. 4000 B was allowed a commission of 10% of net profit as shown by profit and loss A/c and C was guaranteed a profit of Rs. 150000 after making all the adjustments as provided in the partnership agreement.
   Their fixed capitals were A Rs. 500000 B Rs. 800000 and C Rs. 400000. On 1st April 2016 B extended a loan was Rs. 100000 to the firm. The net profit of the firm for the year ended 31st March 2017 before interest on B's loan was Rs. 306000.

Prepare

(a) Profit and Loss Appropriation Account of A,B, and C for the year ended 31 March 2017.

(b) Current accounts of A,B and C assuming that B withdrew Rs. 5000 at the end of each month A withdrew Rs. 10000 at the end of each quarter and C withdrew Rs. 40000 at the end of each half year. [4+4]

10. A and B are partners in a firm sharing profits and losses in the ratio of 3:2. They admit C as a partner for 1/4th share in profits of the firm C brings Rs. 600000 as his capital and his share of goodwill in cash. Goodwill of the firm is to be valued at two year's purchase of average profits of the last four years.

The profits of the firm during the last four years are given below:

Year	Profit (Rs.)
2013-14	350000
2014-15	475000
2015-16	670000
2016-17	745000

The following additional information is given

(i) To cover management cost on annual charge of Rs. 56250 should be made for the purpose of valuation of goodwill.

(ii) The closing stock for the year ended 31.03.2017 was overvalued by Rs. 15000. Pass necessary Journal entries on C's admission showing the working notes clearly. [4]

11. X, Y and Z were partners in a firm sharing profits and losses in the ratio of 2:2:1 on 31st March 2017 their Balance sheet was as follows: -

Liabilities		Amount Rs.	Assets	Amount Rs.
Creditors		300000	Fixed Assets	450000
General Reserve		150000	Stock	150000
Capitals			Debtors	200000
X	200000		Bank	150000
Y	200000			
Z	100000	500000		
		950000		950000

Y died on 30.06.2017. According to the partnership deed, the legal representatives Of the deceased partner were entitled to the following

(i) Balance in his capital account

(ii) Interest on Capital @ 12% p.a.

(iii) Share of Goodwill. Goodwill of the firm on B's death was valued Rs. 60000

(iv) Share in the profits of the firm till the date of his death, calculated on the basis of last year's profit. The profit of the firm for the year ended 31.03.2017 was Rs. 500000. Prepare Y's capital Account to be presented to his representatives. [4]

12. A,B and C are partners in a firm sharing profits and losses in the ratio of 4:5:6. On 31.03.2014 B retired. On that day the capitals of A, B and C before the necessary adjustments stood at Rs. 400000 Rs. 200000 and Rs. 100000 respectively. On B's retirement goodwill of the firm was valued at

Rs. 228000. Revaluation of Assets and reassessment of liabilities resulted in a profit Rs. 12000. General Reserve Stood in the books of the firm at Rs. 60000. The amount payable to B was transferred to his loan account. A and C agreed to pay B two yearly installments of Rs. 150000 each including interest @ 10% p.a. on the outstanding balance during the first two years and balance including interest in the third year. The firm closes its books on 31st March every year.

Prepare B's capital Account and B's loan Account till finally paid.

Showing working notes clearly. **[6]**

13. **X and Y are partners in a firm sharing profits in the ratio of 2:3. The Balance Sheet of the firm as at 31.03.2018 is given below:-**

Liabilities	Amount	Assets	Amount
X's capital	1600000	Land	1000000
Y's capital	2400000	Building	1200000
Creditors	620000	Plant	1600000
Outstanding Expenses	140000	Furniture	240000
		Stock	360000
		Debtors	300000
		Cash	60000
	----------		……..
	4760000		4760000

The partners decided to share profits in equal ratio w.e.f April 1, 2018. The Following adjustments were agreed upon:-

(a) Goodwill of the firm was valued at Rs. 800000 but it was not to appear in the books.

(b) Land to be valued at Rs. 1600000

(c) Plant to be reduced by Rs. 160000

Pass the necessary journal entries to give the above effect and prepare the Balance Sheet. **[6]**

14. **A and B are partners, sharing profits and losses in the ratio of 3:2. Their Balance sheet on 31st March 2018 was as follows:-**

Liabilities	Amount Rs.	Assets		Amount Rs.
Capitals		Machinery		66000
A 70000		Furniture		30000
B 60000	130000	Investment		40000
General Reserve	20000	Stock		46000
Bank Loan	18000	Debtors	38000	
Creditors	72000	Loss Provision	4000	34000
		Cash		24000
	240000			240000
	---------			---------

On 01.04.2018 they admitted C for 25 % share in profits on following terms:-

(i) C brings capital proportionate to his share after all adjustments and Rs. 8000 for goodwill out of his share Rs. 14000

(ii) Depreciate Furniture by 10 %

(iii) Half of Investments were taken over by A and B in their profit sharing ratio and remaining valued at Rs. 26000

(iv) New ratio will 3:3:2

Prepare Revaluation Account, Partners' Capital Accounts and Balance sheet after C's admission. **[8]**

OR

A and B are partners sharing profits in the ratio of 5:3. They admitted C as a partner with 1/5th share in profits. The Balance Sheet of A and B 31st March 2018 was as under.

Liabilities		Amounts	Assets		Amount
		Rs.			Rs.
Creditors		25000	Goodwill		10000
Bills Payable		2000	Land and Building		25000
Capitals			Plant and Machinery		30000
A	50000		Stock		15000
B	35000	85000	Sundry Debtors	20000	
General Reserve		16000	- Provision	1500	18500
			Investments		20000
		…….	Cash		9500
		1,28000			1,28000

Other term agreed upon were

(i) Goodwill of the firm valued Rs. 22000

(ii) Land and Buildings were to be valued a Rs. 35000 and Plant and Machinery at Rs. 25000

(iii) A liability of Rs. 1000 included in Sundry Creditors was not likely to arise.

(iv) Rs. 12000 of investments were taken over by A and B in their profit sharing ratio.

(v) The provision for bad debts was found to be in excess by Rs. 400.

(vi) C will bring Rs. 100000 as capital and his share of goodwill in cash.

Prepare Revaluation Account, Partners, Capital Account and Balance sheet of the firm after C's admission. **[8]**

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:-Business Studies**

Time- 2 Hrs. **M.M.- 50**

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 to 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.***

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1. On most edible goods, manufacturing and expiry dates are mentioned. Name the business environment which makes mentioning of such information necessary. [1]
2. State the reason why marketing is called a social process. [1]
3. What does the principle 'initiative' indicate? [1]
4. Akash was given a target of producing 50 buckets at a cost of Rs. 40 per bucket. He produced 48 buckets at a cost of Rs. 39 per bucket. Is Akash effective and efficient? Give reason. [1]
5. What does equity principle of management imply? [1]
6. Give one reason why principles of management do not provide readymade solution to all managerial problems. [1]
7. Radhika was a student of Business Studies, Class XII. Her father was a farmer who grew different varieties of rice and was well versed in various aspects of rice cultivation. He was selected by the government for a pilot project on rice cultivation. As a project work in Business Studies, she decided to study the feasibility of marketing good quality rice at a reasonable price.Her father suggested her to use internet to gather consumer's views. She found that there was a huge demand for packaged Organic rice. She knew that there were no pre-determined specifications in case of rice because of which it would be difficult to achieve uniformity in the output. To differentiate the product from competitors, she gave it the name of "Malabari Organic Rice" and classified it into three different varieties namely - Popular, Classic and Supreme, based on the quality. She felt that these names would help her in product differentiation.

   Explain the three functions of marketing, with reference to the above paragraphs. [3]

8. Sanchit , after completing his entrepreneurship course from Sweden returned to India and started a coffee shop, "Aroma Coffee Can" in a famous mall in New Delhi. The speciality of the coffee shop was the special aroma of coffee and a wide variety of flavors to choose from.Somehow the business was neither profitable nor popular. Sanchit wanted to find out the reason. He appointed Sandhya, an MBA from a reputed college, as a manager to find out the causes for the same. Sandhya took feedback from the clients and found out that though they loved the special unique aroma of coffee but were not happy with the long waiting time being taken to process the order. She analyzed and found out that there were many unnecessary obstructions in between which could be eliminated.She fixed a standard time for processing the order. She also realized that there were some flavours whose demand was not enough. So she also decided to stop the sale of such flavours. As a result within a short period Sandhya was able to attract the customers. Identify and explain any two techniques of scientific management used by Sandhya to solve the problem. [3]

P.T.O

9. What is meant by "Business Environment "? State and explain briefly, any two importance of business environment. [1+1+1=3]

10. Explain any four features of business environment. [4]

11. Fair Value Limited is in the business of consumer products like cream, oil, shampoo etc All these products are non - herbal. Recently the company decided to launch herbal products which are quite safe and have long lasting effects which are beneficial to both customers and the society. The company decided to establish a new factory to manufacture these herbal products in a tribal area on the assumption that herbal ingredients would be available locally which will be beneficial to both the company and the local population.

    a) Identify the marketing management philosophy on the basis of which the company decided to go for manufacturing herbal products and explain it.
    b) Mention any two values involved in the Company's decision to establish the factory in a tribal area. [2+2= 4]

12. In a company, there is frequent conflict between the production department and marketing department over product quality, product delivery schedule etc. In order to overcome this problem which aspect of management is relevant? Give any five features of this aspect of management. [5]

13. Explain any five factors which affect the choice of channels of distribution. [5]

14. In the present day context, management has become quite important. Explain the reasons for this. [5]

15. Explain the following techniques of Scientific management with suitable examples:-
    a. Standardization & Simplification of work.
    b. Differential piece wage system. [6]

16. Joy Ltd. manufactures consumer products of different types. It puts a very high emphasis on marketing because of keen competition on consumer products. As a result, marketing became the key strength of the company. In order to increase sales, the company decided to take advantage of its marketing strength. The company decided to take over a company, Evergreen Ltd., engaged in manufacturing facilities. On the occasion of the takeover, Joy Ltd. organized a press conference to announce the takeover.

    a. Identify the tool of communication used by Joy Ltd., explain it.
    b. Explain any five roles of this tool. [1+5=6]

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Biology**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

1. **There are total of 20 questions, and five sections A,B,C,D and E in this question paper.**
2. **All questions are compulsory.**
3. **Section A contains 5 question of one mark each.**
4. **Section B contains 5 questions (Q. No. 6 to 10) of two marks each.**
5. **Section C contains 7 questions (Q. No. 11 to 17) of three marks each.**
6. **Section D contains 1 value based question (Q. No.- 18) of four marks.**
7. **Section E contains 2 questions (Q. No.- 19 to 20) of five marks each.**
8. **There is no overall choice is the question paper, however, an internal choice is provided in one questions of two marks, one question of three marks and all two questions of five marks. An examinee is to attempt any one of the questions.**
9. **Wherever necessary, the diagram drawn should be neat and properly labelled.**

SECTION-A **[1x5=5]**

1. **Why are cattle and goats not seen browsing on calotropis growing in the field?**
2. **A male honeybee has 16 chromosomes where as 'its female has 32 chromosome. Why?**
3. **Mention two advantages for preferring CNG over diesel as an automobile fuel.**
4. **Name two water pollinated plants.**
5. **Differentiate between standing state and standing crop.**

SECTION-B **[2x5=10]**

6. **Gynoecium of a flower may be apocarpous or syncarpous. Explain with the help of an example each.**
7. **Differentiate between**
   (a) Autogamy and Geitonogamy
   (b) Chasmogamous and Cleistogamous flowers

   OR

   Differentiate between
   (a) True fruit and Parthenocarpic fruit
   (b) Perisperm and Pericarp
8. **Differentiate between in –situ and ex-situ approaches of conservation of biodiversity.**
9. **Give two reasons why tropics have greater biological diversity than temperate regions.**
10. **What is the main conduit for energy in aquatic ecosystem and in terrestrial ecosystem? How is detritus food chain linked to grazing food chain.**

SECTION-C **[3x7=21]**

11. **Predation is usually referred to as a detrimental association. State any three positive roles that a predator plays in an ecosystem.**
12. **Give three limitations of ecological pyramids.**

    OR

    "Explain graphically "species area relationship."

13. Draw a diagram of L.S. of an anatropous ovule and label its parts. Give function of any three.

14. (a) Mention are crop improvement programme.

(b) What are the steps involved in it

(c) In case of unisexual pistilate flower which step is omitted?

15. Mention three outbreeding devices found in flowering plants to overcome 'in breeding depression'.

16. (a) What is poly blend?

(b) Name the person whose company made it

(c) Give its advantage.

17. (a) What are the symptoms of attitude sickness?

(b) How do desert lizards maintain a fairly constant body temperature?

SECTION-D

18. Mohan goes to his friend's house and sees the gardener taking out potatoes by uprooting the plant and destroying all the flowers. The farmer removes all the green and other non edible parts of the plant and keeps them a big bin kept on the side.

(a) How will the farmer grow potatoes next year as he has destroyed the flowers?

(b) Mention two examples of plants which can be grown by similar methods.

(c) How can the farmer use green and other non edible part of the plant? [4]

SECTION-E

19. Differentiate between

(a) Primary productivity and secondary productivity.

(b) Hummification and Mineralisation

(c) Hydrach succession and xerach succession

(d) Explain why primary succession is slower than secondary succession [5]

OR

(a) Give two characteristics of wind pollinated plant and insect pollinated plant. Give an example each.

(b) Explain the events upto double fertilisation after the pollen tube enters one of the synergids in an ovule of an angiosperm.

20. (a) Following are the respones of different animals to various abiotic factors. Describe each with the help of an example.

(i) Regualte (ii) Conform (iii) Migrate (iv) Suspend

(b) If 8 individuals in a population of 80 butterflies die in a week, calculate the death rate of population of butterflies during that period. [5]

OR

(a) Taking an example of a small pond. Explain how the four components of an ecosystem function as a unit.

(b) Name the two types of food chain that exist in pond.

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Chemistry**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

1. *All questions are compulsory.*
2. *Question number 1 to 5 are very short answer questions and carry 01 mark each.*
3. *Question number 6 to 10 are short answer questions and carry 2 marks each.*
4. *Question number 11 to 17 are also short answer questions and carry 3 marks each.*
5. *Question number 18 is value based question and carry 4 marks.*
6. *Question number 19 to are long answer question and carry 5 marks each.*
7. *Use log table, if necessary. Use of calculator is not allowed.*
8. *Attempt the questions in serial order. (if possible)*

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1. Name the crystal system which contain maximum number of Bravais lattices. [1]

2. Why is equilibrium constant related to E° cell and not E cell? [1]

3. The cryoscopic constant (K_f) for water is 1.86 k kg mol^{-1}. What does it signify? [1]

4. In the Arrhenius equation, what does the factor $e^{-Ea/RT}$ corresponds to? [1]

5. NaCl and CsCl have similar formula, but have different structure. Why? [1]

6. KCl or NaCl solution freezes at lower temperature than water but boils at higher temperature than water. Explain. [2]

7. Ionic solids which have anionic vacancies due to metal excess defect develop colour. Explain with example. [2]

8. What is Van't Hoff factor? How is it related to degree of dissociation of an electrolyte? [2]

9. Conductivity always decreases with decrease in concentration both for weak and strong electrolyte but molar conductivity increases with decrease in concentration. Why? [2]

10. (i) What is a nickel-cadmium cell?

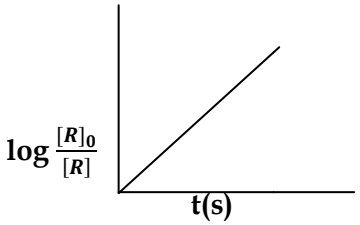
(ii) Write the overall reaction that occurs during the use of nickel- cadmium cell. Mention its one merit over the lead-storage cell. [2]

11. Lithium has bcc structure. Its density is 530 kg m^{-3} and its atomic mass is 6.94 g mol^{-1} . Calculate the edge length of a unit cell of lithium metal in picometre. ($N_A = 6.02 \times 10^{23}$) [3]

OR

An element crystallises into fcc unit cell is 150 p.m. If 150 g of this element has 12×10^{23} atoms, then calculate density of the element.

12. For a chemical reaction R⟶ P the variation in the concentration of $\log \frac{[R]_0}{[R]}$ Vs time 't' plot is given here. [3]



For this reaction:

(i) What is the order of the reaction?

(ii)What is the unit of rate constant?

(iii) What is the slope of the curve?

13. For the reaction: $2\ AgCl_{(s)} + H_2(g)\ (1\ atm) \longrightarrow 2\ Ag(s) + 2H^+\ (0.1M) + 2Cl^-\ (0.1M)$

$\Delta G° = -43600$ J at 25° C.

Calculate the emf of the cell. [$\log 10^{-n} = -n$] [3]

14. (i) Which out of hcp and ccp arrangements is more efficient?

(ii) In Quartz some of their physical properties show different values when measured along different direction. Why?

(iii) What explain rigidity in solids? [3]

15. 75.2 g pf phenol (C_6H_5OH) is dissolved in solvent of K_f 14 k kg mol^{-1}. If depression in freezing point is 7 k , find the percentage of phenol that dimerises. [3]

16. (i) Frenkel defects are not found in pure alkali halide. Why?

(ii) If NaCl is doped with 10^{-3} mole % of $GaCl_3$ what is the concentration of the cation vacancies? [1+2=3]

17. (i) Molecularity of any reaction can't be equal to zero. Why?

(ii) Molecularity is applicable only for elementary reaction and order is applicable for elementary as well as complex reactions. Explain this differences. [1+2=3]

18. The electricity production by thermal plant is not a very good option as it is the major source of pollution. So H_2-O_2 fuel cell is most commonly used to provide electrical power which is ecofriendly also. Based on above passage, answer the following :

(i) Write the reaction of $H_2 - O_2$ fuel cell occurring at anode and cathode. [½+½=1]

(ii) Why is $H_2 - O_2$ fuel cell most useful for astronauts? [1]

(iii) Write the catalyst used in this cell. [1]

(iv) What are the values you gain from above passage? [1]

19. (a) State a condition under which a biomolecular reaction is kinetically first order reaction. Give one example of such of reactions. [2]

(b) The decomposition of PH_3 proceeds according to the following equation:

$4PH_3 \longrightarrow P_4\ (g) + 6H_2\ (g)$

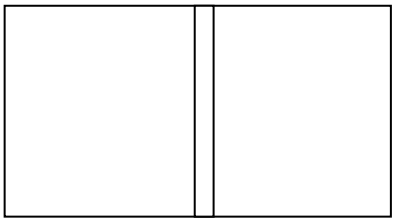
It is found that the reaction follows the following rate equation : Rate = K $[PH_3]$

The half life of PH_3 is 37.9 s at 20° C.

(a) How much time is required for 3/4th of PH_3 to decompose?

(b) What fraction of original sample of PH_3 remains behind after 1 minute? [2+3=5]

20. Given is the sketch of a plant for carrying out a process.



(a) Name the process taking place in the above plant.

(b) To which container does the net flow of solvent take place?

(c) Name any one SPM which can be used in this plant.

(d) Write one practical use of the plant.

(e) Pickles have long shelf life and do not get spoiled for month. Why? [1x5=5]

DELHI PUBILC SCHOOL

SAIL Township, RANCHI

QUALIFYING EXAM 2018-19

CLASS XII **SUB: Computer Science (083)**
TIME: 2 HRS. **Full Marks: 50**

Q. 1. Answer any **FIVE** :

(a) Name the header files in which the following function belongs to: **[2]**
(i) **islower** ( ) (ii) **strcpy ( )** (iii) **exit ( )** (iv) **floor ( )**

(b) Discuss the concept of an **'Object'** and a **'Class'.** How are **Objects** implemented in C++**?** **[2]**

(c) Differentiate between **OOP** and **POP**. Provide at least four points. **[2]**

(d) Along with example, explain the significance of **SRO (::) i**n CPP. **[2]**

(e) What is the significance of Access Specifiers in a class. What is the default access Level ? **[2]**

(f) How are Abstraction & Encapsulation Interrelated? Give an example through Program. **[2]**

Q.2. Answer any **FOUR :**

(a) Why Function Overloading is used? In F.O., How is matching done? **[2]**

(b) Explain the Benefits of Constructor Overloading. Can other member function of a class be also overloaded? **[2]**

(c) Discuss the concept of Constructor and Destructor. Briefly discuss the Types of constructor. **[2]**

(d)What do you understand by Default Ctor & Copy Ctor functions used in classes? How are these functions different from normal constructor? **[2]**

(e) What do you understand by Member function of a class ? How does it different from an Ordinary Function ? **[2]**

Q. 3. (a) Rewrite the following program after removing the syntactical errors (if any). Underline each correction. **[2]**

```
# include<iostream.h>
Void main( )
{ clrscr( ); Structure Film
{ char FName (20 ); char MType;  int Tick_Cost = 210; } FM ;
gets ( FName ); gets ( FType ); }
```

(b) Justify & Find the output of the following program: **[2]**

```
#include<iostream.h>
void ChangArr (int Num, int Arr[ ], int Size)
{ for ( int C = 0 ; C < Size ; C++)
  if (C < Num )  Arr[C]  += C ; else Arr[C]  *= C;   }
void show (int Arr[], int Size )
{ for (int C= 0; C <Size ; C++ )
(C%2 != 0 ) ? cout <<Arr[C] << " @ " : cout<< Arr[C];
cout<<endl ; }
void main( )
{ int Arr[ ] = { 30, 20, 40, 10, 60, 50};
ChangArr (3, Array , 6);   show (Array, 6); }
```

(c) Find the output of the following: **[2]**

```
#include<iostream.h>
int Area ( int A )
{ return (A * A ) ; }
 float Area( int b, int h )
{ return ( 0.5 * b * h ) }
void main( )
{
  cout <<Area(8) <<endl ;
   cout <<Area(10, 3) <<endl ;
   cout <<Area(8, Area(5)) <<endl;
   getch( ); }
```

(d) In the following program, Justify & write the Least and Highest value, which can be assigned to variable Guess. **[2]**

```
# include< iostream . h>
# include<stdlib .h>
void main( )
{ randomize( );  int Guess , H= 5;
Guess = random(H) +50 ;
for ( int C=Guess; C<= 55; C++ )
cout<< " # "; }
```

Q.**4** Using concept of function overloading, WAP that uses an **Area()** function for the calculation of area of a triangle or a rectangle or a square. Number of sides (3 for triangle, 2 for rectangle and 1 for square) suggest about the shape for which area is to be calculated. **[3]**

Q.5. (a) Write Characteristics of destructor Function used in a class. Provide an example of dtor. **[1]**

(b) Answer the questions (i) and (ii) after going through the following program: **[2]**

```
class Purse {
int pockets ;
public :        Purse( )                    // Function 1
{ pockets = 30; cout<< "The Purse has pockets" << "\n";  }
void Company ( )        // Function 2
{ cout<< "The Company of the Purse  is Puma" << "\n"; }
Purse (int D)           // Function 3
{ pockets = D; cout << ""The Purse has pockets" << "\n";  }
~ Purse( )              //Function 4
{ cout << "All the Best…"<<"\n"; } };
```

(i) In OOP, what is Function 4 referred to as and when it gets invoked/called ?

(ii) In OOP, which concept is illustrated by Function 1 and Function 3 together?

Q.6. Write a Program, defining a class **Employee** in C++ with following description: **[4]**

Private Members :

(i) EmpNo of type integer

(ii) EmpName of 20 characters

(iii) Baic, HRA, DA of type float.

(iv) NetPay of type float.

A member function **Compute( )** to calculate sum of Basic, HRA & DA with float return type.

Public Members :

(i) A function HaveData( ) to accept values for EmpNo, EmpName, Basic, HRA, DA and invoke Compute ( ) to calculate the NetPay of the Employee.

(ii) A function Display( ) to show all the data members on the screen.

Q.7. WAP defining a class RESORT with the following description: **[4]**

Private Members:

Rno	//Data member to store Room No. of type int
Name	//Data member to store customer name of type string
Charges	//Data member to store per day charges of type float
Days	// Data member to store number of days of stay of type int
COMPUTE( )	//A function to calculate and return Amount as (Days*Charges) and if the value of (Days*Charges) is more than 11000 then as (1.02*Days*Charges)

Public Members:

Getinfo() //A function to enter the content Rno, Name, Charges and Days

Dispinfo() //A function to display Rno, Name, Charges, Days and Amount
(Amount to be displayed by calling function COMPUTE())

OR

Write a Program to solve all roots of a **Quadratic Equation** using OOP technique (using class)

Q.8. (a) State and algebraically verify Distributive Laws. Also test the Laws by Truth Table. **[2]**

(b) Express Boolean Function: **F = A.B + C ;** as a Canonical Standard Sum of minterms. **[1]**

(c) Draw Logic Circuit of the Function : **F (A, B, C) = A.B'.C + A'.B.C'** . **[1]**

(d) State Principle of Duality along with example. **[1]**

Q.9. (a) State and verify **DeMorgan's Laws** by Algebra **OR** by Truth Table. **[1]**

(b) Give few points on importance of Digital Algebra. **[2]**

Q.10. (a) Verify the following algebraically : **(A'+B').(A +B)=A'.B+A.B' ;** **[1]**

(b) Write the POS and SOP forms of a Boolean function H, which is represented in a truth table as follows: **[1]**

X	Y	Z	H
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

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DELHI PUBLIC SCHOOL, RANCHI

Qualifying Examination
2018-19

Class- XII | Subject- Economics

Time: 2 hours | Maximum Marks: 50

General Instructions:

(i) All questions in both the sections are compulsory.

(ii) Marks for questions are indicated against each question.

(iii) Questions Nos. **1-2** and **8-9** are very short-answer questions carrying **1** mark each. They are required to be answered in **One sentence** each.

(iv) Question Nos. **3** and **10** are short-answer questions carrying **3** marks each. Answers to them should normally not exceed **60** words each.

(v) Questions Nos. **4-5** and **11-12** are also short-answer questions carrying **4** marks each. Answers to them should normally not exceed **70** words each.

(vi) Questions Nos. **6-7** and **13-14** are long-answer questions carrying **6** marks each. Answers to them should normally not exceed **100** words each.

(vii) Answers should be brief and to the point and the above word limits should be adhered to as far as possible.

Section-A

1. Give the meaning of normative economics with an example. *1*

2. The Opportunity cost of 100 kg of rice produced on a land which can also produce 80 tonnes of wheat is. *1*
   (a) 100 kg of wheat
   (b) 80 tonnes of wheat
   (c) 8,000 tonnes of wheat
   (d) None of these

3. How would you as a consumer change your consumption basket when the rate at which you are willing to substitute Good-X for Good-Y is higher than the rate at which the market allows you to do it? *3*

   OR

   A Consumer consumes only two goods X and Y. Marginal utilities of X and Y are 4 and 3 respectively. Price of X and Price of Y is Rs. 3 per unit. Is Consumer in equilibrium? What will be further reaction of the Consumer? Give reasons.

4. Assuming that no resource is equally efficient in production of all goods, name the curve which shows production potential of the economy, Explain, giving reasons, its properties with the help of a diagram. When can Production Possibility Curve shift to the left? *4*

5. Briefly explain two important reasons for increase in demand. Use diagram.

   OR

   Show that demand for a commodity is inversely related to its price. Explain with the help of utility analysis. *4*

6. State whether the following statements are true or false. Give reasons for your answer. *6*
   (a) If Indifference curve is convex to the origin, MRS should not be diminishing.
   (b) Consumer's equilibrium can be determined only if the law of diminishing marginal utility holds good.
   (c) A consumer is in equilibrium and buys commodities X and Y. When price of X falls, he starts buying more of X than Y.

(d) Law of demand must fail if less of a commodity is demanded even when income of the buyer rises.
(e) Decrease in demand refers to contraction of demands.
(f) A consumer buys more of a commodity even when MU of every successive unit tends to decrease.

7. What will be the impact of the following on the demand curve for good X? Explain with the help of diagrams: *6*

(i) Consumer's income falls and good X is an inferior good.
(ii) Price of Complementary good Y rises.
(iii) An increase in price of the commodity.

OR

Define Market demand. How market demand schedule is is obtained from individual demand schedule? Explain with the help of a numerical example. Briefly explain two important factors which affect market demand.

Section-B

8. If the total deposit created by commercial banks is Rs. 10,000 crores and legal reserve ratio is 40% then the amount of initial deposits will be: 1

(a) Rs. 2,000 Cr.
(b) Rs. 4,000 Cr.
(c) Rs. 3,000 Cr.
(d) Rs. 14,000 Cr.

9. Define Fiduciary money. *1*

10. Explain the role of "reverse repo rate" in controlling money apply 3

OR

Explain the " Currency authority" function of the central bank.

11. Explain the process of money creation by commercial bank with the help of numerical example. 4

12. Distinguish between:- 4

(a) Intermediate goods and final goods.
(b) Factor payment and transfer payment.

OR

What is real GDP? How do externalities affect the welfare of the people? Explain with examples.

13. Calculate (a) Gross domestic product at market price and (b) Factor income to abroad from the following data: 6

Item	Rs. (In Crore)
(i) Compensation of employees	1,000
(ii) Net exports	(-) 50
(iii) Profits	400
(iv) Interest	250
(v) Rent	150
(vi) Gross national product at factor cost	1,850
(vii) Gross domestic capital formation	220
(viii) Net fixed capital formation	150
(ix) Change in stock	20
(x) Factor income from abroad	30
(xi) Net indirect Tax	100

OR

Calculate (a) NDP $_{FC}$ and (b) Compensation of employees.

Item	Rs. (In Crore)
(i) Net Factor income from abroad	5
(ii) Net exports	15
(iii) Net indirect taxes	40
(iv) Rent and royalty	20
(v) Consumption of fixed capital	10
(vi) Personal consumption expenditure on goods and services.	500
(vii) Corporate taxes	10
(viii) Interest	30
(ix) Net domestic capital formation	60
(x) Dividends	20
(xi) Government expenditure on goods and services	120
(xii) Undistributed profits	5
(xiii) Mixed income	25

14. How are the following treated while estimate national income? Give reasons for your answer. 6

(i) Wheat grown by a farmer but used entirely for family's consumption.
(ii) Increase in the price of stocks lying with a trader.
(iii) Interest free loans provided by employer to employee.
(iv) Interest received by a household from a commercial bank.
(v) Stationeries purchased by the government offices.
(vi) Purchases by foreign tourists.

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Engineering Graphics**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

Attempt all the questions. Use both sides of the drawing sheet, If necessary. All dimensions are in millimeters, missing and mismatching dimension, if any, may be suitably assumed. Follow the SP46:2003 revised codes (with first angle method of Projection). In question 2 , no views of hidden edges or lines are required. In questions 4 , hidden edges or lines are to be shown in views without section.

1. **Answer the following multiple choice questions. Print the correct choice on your drawing sheet.**

(i) How many minimum parts an assembly drawing has? [1x5=5]

(a) one (b) three (c) two

(ii) Part list of an assembly drawing is denoted by

(a) arrows (b) numbers (c) triangle

(iii) A stud is a bolt

(a) having need on the left (b) having head on the right (c) without a head

(iv) The angle between the flanks of a B.S.W. thread is

(a) 55° (b) 60° (c) 90°

(v) The Centre line running length wise through screw or nut is

(a) axis (b) pitch diameter (c) crest

2. **(a) Construct an isometric scale. [3]**

(b) A square pyramid of base side 40 mm, height of the axis 60 mm. Base side parallel to V.P. Axis Perpendicular to H.P., it is resting on the ground of it's base. Draw the isometric Projections. Give all the dimensions. Show the direction from viewing. [5]

(c) A hexagonal prism of base side 30 mm, height 55 mm, base side parallel to V.P. It is centrally placed on the top of circular disc of 70 mm diameter, height 35 mm., it is resting on the ground of it's base. Common axis perpendicular to the H.P. Give all the dimensions. Show the direction from viewing. [11]

3. **Draw to scale 1:1 the standard profile of square thread. Taking inlarged pitch is 40 mm. Give the standard dimensions. [6]**

4. **In Fig-1 show the details of parts of a 'Open Bearing'. Assemble these parts correctly and then draw the following views. Using scale 1:1.**

(i) Front view left half in section. [11]

(ii) Side view from right. [5]

Print the title and scale used. Draw the projection symbol. Give 6 important dimensions. [4]

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Fine Art- Graphics / Painting**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

(i) All the eight questions are compulsory which carry equal marks.

(ii) Answers to be written for question nos.1, 2 and 3 in about 200 words each and for question nos. 4, 5 & 6 in about 100 words each. Question nos.7, 8, 9 and 10 are objective type.

Q.1. Write an essay on the origin and development of the Rajasthani or Pahari School of Miniature Painting. [5]

Q.2. Write about the characteristics of Rajasthani or Pahari School of miniature painting. [5]

Q.3. What is miniature painting? Describe in short about Pal, Jain and Central Indian miniature paintings. [5]

Q.4. Which human life-values are expressed in any of the following miniature paintings? Explain in short: [5]

(a) Bharat Meets Rama at Chitrakuta (Rajasthani School)

(b) Nand Yashoda and Krishna with Kinsmen going to Vrindavana (Pahari School)

Q.5. Identify any relevant painting of the Rajasthani or Pahari School of Miniature Painting included in your course of study comprising the following features and explains them in that particular painting accordingly: [5]

(1) The tradition of simple and straight forward compositions in the Rajasthani miniature paintings, in which main figures stand out against a flat background in dark or bright colours.

OR

(2) Depiction of the Krishna Lila themes in the Pahari miniature paintings.

Q.6.Appreciate any of the following miniature-paintings included in your course of study only based on its (i) Name of the painter (ii) medium & technique (iii) subject-matter and (composition): [5]

(a) Radha (Bani-Thani) (Rajasthani School)

(b) Krishna with Gopis (Pahari School)

Q.7. Mention the name of the Painting and Sub-school of each of the following miniature paintings included in your course of study: [5]

(1) Nuruddin (2) Dana (3) Manaku (4) Guman (5) Sahibdin

Q.8. Write in short;- [5]

(a) What is Ragmala Painting? (b) What is Barahmasa Painting?

(c) What is Tempera Painting? (d) What is Pragyaparamita?

(e) What is Kalpasutra?

Q.9. Write the Moral Value depicted in the following miniature paintings:- [5]

(a) Cosmic Dance of Shiva (b) Bharat Worshipping Charan Padukas of Rama

(c) Krishna on swing (d) Chaugan Players

(e) Radha and Krishna Looking into a Mirror

Q.10. Fill in the blank:- [5]

(a) _____ painting is called Indian Monalisa?

(b) Patka is _____

(c) Manuscript is _____

(d) In _____ miniature painting different episodes of one story is depicted in one painting?

(e) On _____ papers Pahari miniature paintings were done.

DELHI PUBLIC SCHOOL, RANCHI
Qualifying Examination
Session (2018-19)

Class-XII **Subject- Mathematics**
Time: 2 Hours **Full Marks: 50**

Genera l Instructions:

i. Answer all questions.
ii. Put the question number against each answer.
iii. Question paper is comprised of four sections A, B, C and D.
iv. Section- A carries 3 questions of one mark each. Section-B carries 5 questions of two marks each. Section-C carries 7 questions of three marks each. Section-D carries 4 questions of four marks each.
v. Internal choices are given in three questions of section-C and three questions of Section-D.
vi. Use of calculator is not permitted.
vii. If you wish to answer any question again, then you cancel the answer given earlier, which is to be changed.

Section – A

1. If A=$\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 0\\ 0 & 0 & 1\end{bmatrix}$, then $A^2 + 2A = ?$
2. Find a vector of magnitude 5 units and parallel to the resultant of the vectors $\vec{a} = 2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ and $\vec{b} = \hat{\imath} - 2\hat{\jmath} + 2\hat{k}$.
3. Find the Cartesian equation of a straight line which passes through the point(1,2,3) and is parallel to the line$\frac{-x-2}{1} = \frac{y+3}{7} = \frac{2z-6}{6}$.

Section –B

4. Express the matrix A = $\begin{bmatrix}3 & -4\\ 1 & -1\end{bmatrix}$ as the sum of a symmetric and skew – symmetric matrix.
5. Using properties of determinants, evaluate the following $\begin{vmatrix}0 & ab^2 & ac^2\\ a^2b & 0 & bc^2\\ a^2c & cb^2 & 0\end{vmatrix}$.
6. Find the area of the parallelogram whose diagonals $\overrightarrow{d_1} = 3\hat{\imath} + \hat{\jmath} - 2\hat{k}\ and\ \overrightarrow{d_2} = \hat{\imath} - 3\hat{\jmath} + 4\hat{k}$.
7. Find the distance of the point (2,3,4)from the plane$3x + 2y + 2z + 5 = 0$ measured parallel to the line $\frac{x+3}{3} = \frac{y-2}{6} = \frac{z}{2}$.
8. Given two independent events A and B such that P(A)=0.3 and P(B)=0.6 Determine (i)P(A and B),(ii) P(A and not B) (iii) P(not A and B) and (iv) P(neither A nor B).

Section-C

9. Maximise Z = $80x + 120y$. Subject to the constraints $9x + 12y \leq 180, x + 3y \leq 30, x \geq 0, y \geq 0$.
10. If $A = \begin{bmatrix}1 & 0 & 2\\ 0 & 2 & 1\\ 2 & 0 & 3\end{bmatrix}$, Prove that $A^3 - 6A^2 + 7A + 2I = \boldsymbol{O}$. Using this equation find A^{-1}.

    OR, If $A = \begin{bmatrix}\cos\theta & -\sin\theta\\ \sin\theta & \cos\theta\end{bmatrix}$, then show that $A^n = \begin{bmatrix}\cos n\theta & -\sin n\theta\\ \sin n\theta & \cos n\theta\end{bmatrix}$ where $n \in N$.

11. If vectors $\vec{a} = 4\hat{\imath} + 5\hat{\jmath} - \hat{k}$, vectors $\vec{b} = \hat{\imath} - 4\hat{\jmath} + 5\hat{k} and$ vectors $\vec{c} = 3\hat{\imath} + \hat{\jmath} - \hat{k}$. Find a vector $\vec{d}$ which is perpendicular to both the vectors $\vec{a}$ and $\vec{b}$ and $\vec{c}.\vec{d} = 21$.

12. Show that $\vec{b} + \vec{c}$, $\vec{c} + \vec{a}$ and $\vec{a} + \vec{b}$ are coplanar if $\vec{a}, \vec{b}$ and $\vec{c}$ are coplanar.

    OR, Find the condition for the co-planarity of four points A(1,2,3),B(3,-1,2)C,(-2,3,1) and $P(x, y, z)$.

13. Find the shortest distance between two skewed lines $\frac{x+1}{7} = \frac{y+1}{-6} = \frac{z+1}{1}$ and $\frac{x-3}{1} = \frac{y-5}{-2} = \frac{z-7}{1}$.

14. Using properties of determinants ,prove that $\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$.

15. Consider the experiment of tossing a coin. If the coin shows head, toss it again but it shows tail , then throws a die . Find the conditional probability of the event that the die shows a number greater than 4, given that "there is at least one tail

Section-D

16. A diet is to contain at least 80 units of vitamin A and 100 units of minerals. Two foods F_1 and F_2 are available. Food F_1 costs Rs.4 per unit and F_2 costs Rs.6 per unit. One unit of food F_1 contains 3 units of vitamin A and 4 units of minerals. One unit of food F_2 contains 6 units of vitamin A and 3 units of minerals. Formulate this as a linear programming problem. Find the minimum costs for diet that consists of mixture of these two foods and also meets the minimal nutritional requirements.

    OR,

    An aeroplane can carry a maximum of 200 passengers. A profit of Rs. 1000 is made on each executive class ticket and a profit of Rs. 600 is made on each economy class ticket. The airline reserves at least 20 seats for executive class, however at least 4 times as many passengers prefer to travel by economy class than by the executive class. Determine how many tickets of each type must be sold in order to maximise profit for the airline. What is the maximum profit?

17. Using matrix method, solve equations for x,y and z.
    $\frac{2}{x} - \frac{3}{y} + \frac{3}{z} = 10, \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 10$ and $\frac{3}{x} - \frac{1}{y} + \frac{2}{z} = 13, x \neq 0, y \neq 0, z \neq 0.$

    OR , Using elementary transformations find the inverse of the square matrix $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$.

18. Find the equation of the plane which contains the line of intersection of planes $\vec{r}.\left(\hat{\imath} + 2\hat{\jmath} + 3\hat{k}\right) - 4 = 0$ and $\vec{r}.\left(2\hat{\imath} - \hat{\jmath} + \hat{k}\right) + 5 = 0$ and which is perpendicular to the plane $\vec{r}.\left(5\hat{\imath} + 3\hat{\jmath} - 6\hat{k}\right) + 8 = 0$.

19. Assume that the chances of a patient having a heart attack is 40%.It is also assumed that a meditation and yoga courses reduce the risk of heart attack by 30% and prescription of certain drug reduces its chance by 25%. At a time a patient can choose any one of the two options with equal probabilities .It is given that after going through one of the two options, the patient selected at random suffers a heart attack. Find the probability that the patient followed a course of meditation and yoga. On which date UNO celebrates International yoga day every year and why?

Marking scheme

Class –XII **Mathematics** **Session -2018-19**

Section –A : 1). 3A , 2). $\frac{5}{\sqrt{11}}(3\hat{\imath}+\hat{\jmath}+\hat{k})$,3). $\frac{x-1}{-1}=\frac{y-2}{7}=\frac{z-3}{3}$

Section –B : 4)A=$\begin{bmatrix}3 & -4\\ 1 & -1\end{bmatrix}$, A' = $\begin{bmatrix}3 & 1\\ -4 & 1\end{bmatrix}$,A = (Symmetric matrix) P+(Skew – Symmetric matrix)- (1/2 +1/2-marks),

P = $\frac{1}{2}$(A+A')= $\begin{bmatrix}3 & -3/2\\ -3/2 & 0\end{bmatrix}$ (1/2 – marks) ,Q = $\frac{1}{2}(A-A')$= $\begin{bmatrix}0 & -5/2\\ 5/2 & 0\end{bmatrix}$ (1/2 – marks) .

5). $\begin{vmatrix}0 & ab^2 & ac^2\\ a^2b & 0 & bc^2\\ a^2c & cb^2 & 0\end{vmatrix}=abc\begin{vmatrix}0 & b^2 & c^2\\ a^2 & 0 & c^2\\ a^2 & b^2 & 0\end{vmatrix}\left(\frac{1}{2}-marks\right)=a^3b^3c^3\begin{vmatrix}0 & 1 & 1\\ 1 & 0 & 1\\ 1 & 1 & 0\end{vmatrix}\left(\frac{1}{2}-marks\right)$, Operating $C_3 - C_2$

$=a^3b^3c^3\begin{vmatrix}0 & 0 & 1\\ 1 & -1 & 1\\ 1 & 1 & 0\end{vmatrix}\left(\frac{1}{2}-marks\right)=2a^3b^3c^3\left(\frac{1}{2}-marks\right)$. .

6). Area of parallelogram = $\frac{1}{2}|\overrightarrow{d_1}\times\overrightarrow{d_2}|\left(\frac{1}{2}-marks\right)$, $|\overrightarrow{d_1}\times\overrightarrow{d_2}|=\begin{vmatrix}\hat{\imath} & \hat{\jmath} & \hat{k}\\ 3 & 1 & -2\\ 1 & -3 & 4\end{vmatrix}=-2\hat{\imath}-14\hat{\jmath}-10\hat{k}\ (1-mark)$

Area =$\frac{1}{2}\sqrt{75}=\frac{5\sqrt{3}}{2}\ Sq\ unit.\ \left(\frac{1}{2}-marks\right)$

7). Equation of the line through (2,3,4) parallel to given line is

$\frac{x-2}{3}=\frac{y-3}{6}=\frac{z-4}{2}=\lambda$ implies $(x=3\lambda+2, y=6\lambda+3, z=2\lambda+4)\in Plane.\left(\frac{1}{2}-mark\right)$, 25λ=-25 => λ=-1(1/2-mark)

Point is (-1,-3,2) -(1/2-mark), Required distance=$\sqrt{9+36+4}=\sqrt{49}=7.\ \left(\frac{1}{2}-mark\right)$.

8).(i)P(A and B)=P(A).P(B)=0.18 (ii) P(A and not B)=P(A)-P(A∩B)=0.12, (iii)P(not A and B)=P(B)-P(A∩B)=0.42,

(iv)P(neither A nor B)= P(A').P(B')=0.28 -$\left(\frac{1}{2}\times 4=2\ marks\right)$.

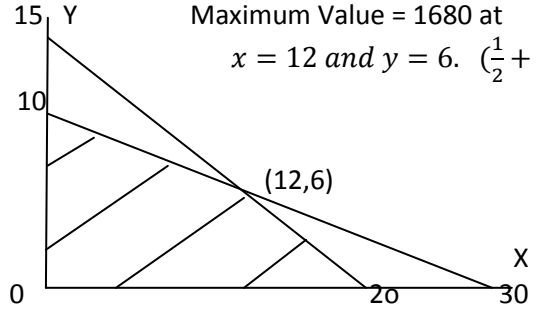
Section-C : 9). Corresponding equations $3x+4y=60$

X	0	20
y	15	0

($\frac{1}{2}+\frac{1}{2}$-mark-sketch and shading)

$x+3y=30$ ($\frac{1}{2}+\frac{1}{2}$-mark-sketch and shading)

X	0	20
y	15	0



Maximum Value = 1680 at $x=12\ and\ y=6.\ \left(\frac{1}{2}+\frac{1}{2}-mark\right)$

10).$A^2=\begin{bmatrix}5 & 0 & 8\\ 2 & 4 & 5\\ 8 & 0 & 13\end{bmatrix}\left(\frac{1}{2}-mark\right), A^3=\begin{bmatrix}21 & 0 & 34\\ 12 & 8 & 23\\ 34 & 0 & 55\end{bmatrix}\left(\frac{1}{2}-\ mark\right), 7A=\begin{bmatrix}7 & 0 & 14\\ 0 & 14 & 7\\ 14 & 0 & 21\end{bmatrix}, 2I=\begin{bmatrix}2 & 0 & 0\\ 0 & 2 & 0\\ 0 & 0 & 2\end{bmatrix}, (\frac{1}{2}-$

$mark\quad A^3-6A^2+7A+2I=O,\ (\frac{1}{2}-mark)\ A^{-1}=\frac{1}{2}(-A^2+6A-7A)=\begin{bmatrix}-3 & 0 & 2\\ -1 & 1/2 & -1/2\\ 2 & 0 & -1\end{bmatrix}\ (\frac{1}{2}+\frac{1}{2}\ mark)$.

OR, Part : For verification of n=1, (1/2-mark) For assuming the validity of the statement for n=k, (1/2-mark)
Claim for the validity of the statement for n=k+1 (1/2- mark), Proof of the claim-(1-mark) Conclusion-(1/2-mark).

11). $\vec{a}\times\vec{b}=\begin{vmatrix}\hat{\imath} & \hat{\jmath} & \hat{k}\\ 4 & 5 & -1\\ 1 & -4 & 5\end{vmatrix}=\vec{a}\times\vec{b}\ \ (1-mark),\ \vec{d}=\lambda(\vec{a}\times\vec{b})=\lambda\left(21\hat{\imath}-21\hat{\jmath}-21\hat{k}\right)(\frac{1}{2}-mark)$ since

$\vec{c}.\vec{d}=21$ so λ21$(\hat{\imath}-\hat{\jmath}-\hat{k}).\left(3\hat{\imath}+\hat{\jmath}-\hat{k}\right)=21 => \lambda=\frac{1}{3}.(1-mark)$ Hence $\vec{d}=7\left(\hat{\imath}-\hat{\jmath}-\hat{k}\right)$. (1/2-mark).

12). $\left[\vec{b}+\vec{c}\ \ \vec{c}+\vec{a}\ \ \vec{a}+\vec{b}\right]=\left[\vec{b}\ \ \vec{c}+\vec{a}\ \ \vec{a}+\vec{b}\right]+\left[\vec{c}\ \ \vec{c}+\vec{a}\ \ \vec{a}+\vec{b}\right](\frac{1}{2}-mark)$

$=\left[\vec{b}\ \ \vec{c}\ \ \vec{a}+\vec{b}\right]+\left[\vec{b}\ \ \vec{a}\ \ \vec{a}+\vec{b}\right]+\left[\vec{c}\ \ \vec{c}\ \ \vec{a}+\vec{b}\right]+\left[\vec{c}\ \ \vec{a}\ \ \vec{a}+\vec{b}\right](\frac{1}{2}\ mark)$

$=\left[\vec{b}\ \ \vec{c}\ \ \vec{a}\right]+\left[\vec{b}\ \ \vec{c}\ \ \vec{b}\right]+\left[\vec{b}\ \ \vec{a}\ \ \vec{a}\right]+\left[\vec{b}\ \ \vec{a}\ \ \vec{b}\right]+0+[\vec{c}\ \ \vec{a}\ \ \vec{a}]+\left[\vec{c}\ \ \vec{a}\ \ \vec{b}\right]\ \ (\frac{1}{2}+\frac{1}{2}\ mark)$

$=\left[\vec{a}\ \ \vec{b}\ \ \vec{c}\right]+0+0+0+0+0+\left[\vec{a}\ \ \vec{b}\ \ \vec{c}\right]=2\left[\vec{a}\ \ \vec{b}\ \ \vec{c}\right](\frac{1}{2}-mark)$

= 0 as $\left[\vec{a}\ \ \vec{b}\ \ \vec{c}\right]=0$ being co-planar $\vec{a}\ \ \vec{b}\ and\ \vec{c}.\ (\frac{1}{2}-mark)$

OR, $\overrightarrow{AB},\overrightarrow{AC}\ and\ \overrightarrow{AP}$ are co-planar. So $\left[\overrightarrow{AB},\overrightarrow{AC}\ \ \overrightarrow{AP}\right]=0\ \left(\frac{1}{2}-mark\right)\begin{vmatrix}x-1 & y-2 & z-3\\ 2 & -3 & 1\\ -3 & 1 & 2\end{vmatrix}=0\ (\frac{1}{2}\times 3=1\frac{1}{2}\ mark)$

$x+y+z=6\ (1-mark)$.

13). $\overrightarrow{a_1} \equiv (-1,-1,-1).\overrightarrow{a_2} \equiv (3,5,7), \overrightarrow{b_1} \equiv (7,-6,1), \overrightarrow{b_2} \equiv (1,-2,1)$). $(\overrightarrow{a_2} - \overrightarrow{a_1}) \equiv (4,6,8)$ $(\frac{1}{2} - mark)$

$\overrightarrow{b_1} \times \overrightarrow{b_2} = \begin{vmatrix} \hat{\imath} & \hat{\jmath} & \hat{k} \\ 7 & -6 & 1 \\ 1 & -2 & 1 \end{vmatrix}$=$(-4\hat{\imath} - 6\hat{\jmath} - 8\hat{k})$ $\left|\overrightarrow{b_1} \times \overrightarrow{b_2}\right| = \sqrt{116}$ $(1 - mark)$

Shortest distance = $\left|\frac{(\overrightarrow{a_2} - \overrightarrow{a_1}).(\overrightarrow{b_1} \times \overrightarrow{b_2})}{|\overrightarrow{b_1} \times \overrightarrow{b_2}|}\right|$ $(1 - mark) = \sqrt{116} = 2\sqrt{29}\ unit$ $\left(\frac{1}{2} - mark\right)$.

14). Applying $C_1+C_2+C_3$, LHS$=2(a+b+c)\begin{vmatrix} 1 & a & b \\ 1 & b+c+2a & b \\ 1 & a & c+a+2b \end{vmatrix}$ $(1 - mark)$

Applying R_2-R_1 and R_3-R_1, Expression $= 2(a+b+c)\begin{vmatrix} 1 & a & b \\ 0 & b+c+a & 0 \\ 0 & 0 & c+a+b \end{vmatrix}$ $\left(\frac{1}{2} + \frac{1}{2} - mark\right)$

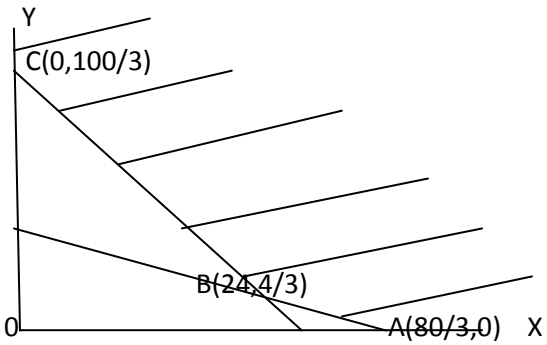
$=2(a+b+c)^3 \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} = 2(a+b+c)^3.\left(\frac{1}{2} + \frac{1}{2} - mark\right)$

15). E = $\{T5, T6\}, F = \{HT, T1, T2, T3, T4, T5, T6\}\ and\ E \cap F = \{T5, T6\} - \left(\frac{1}{2} - marks\right)$

$P(E \cap F) = 2 \times \frac{1}{12} = \frac{1}{6} - \left(\frac{1}{2} - mark\right), P(F) = \frac{1}{4} + 6 \times \frac{1}{12} = \frac{3}{4} - (1 - mark), P((E|F) = \frac{P(E \cap F)}{P(F)} = \frac{1/6}{3/4} = \frac{2}{9}(1\ mark).$

16). $Objective\ function: Z = 4x + 6y,$

$Subject\ to: 3x + 6y \geq 80, 4x + 3y \geq 100, x \geq 0, y \geq 0. \left(\frac{1}{2} - mark\right).$



For $3x + 6y = 80$ and $4x + 3y = 100$

(1/2+1/2=1 for two lines and 1/2+1/2=1 mark)

X	0	80/3
y	40/3	0

X	0	25
y	100/3	0

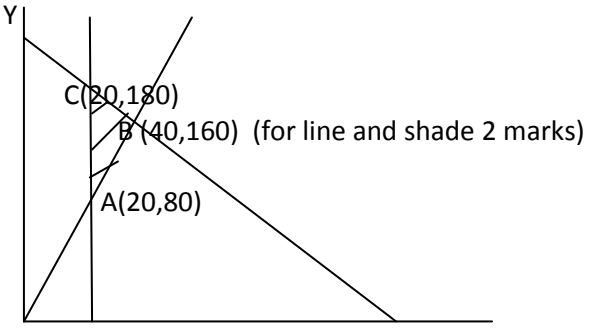
Corners are (0,100/3),(24,4/3)and (80/3,0) (1-mark)

$Z_A = 106\frac{2}{3}$, $Z_B = 104$(Minimum) and $Z_C = 200$ (1/2-mark)

OR,

Objective function : Z = $1000x + 600y$

Subject to: $x + y \leq 200, x \geq 20, y \geq 4x, and\ x, y \geq 0. \left(\frac{1}{2} - mark\right)$



X	0	200
y	200	0

St.line parallel to Y -axis ,

X	0	20
y	0	80

Corners are A(20,180),B(40,160) and C(20,180) (1/2-mark)

Z_A = Rs.68000, Z_B = Rs.136000 (Maximum) and Z_C = Rs.128000.(1-mark)

17). $\begin{bmatrix} 2 & -3 & 3 \\ 1 & 1 & 1 \\ 3 & -1 & 2 \end{bmatrix}\begin{bmatrix} 1/x \\ 1/y \\ 1/z \end{bmatrix} = \begin{bmatrix} 10 \\ 10 \\ 13 \end{bmatrix}, AX = B. (\frac{1}{2} - mark)$

$|A| = -9 \neq 0.$ (1/2-mark) X = $A^{-1}B = \frac{1}{|A|}(adj\ A)B. (\frac{1}{2} - mark), X = \frac{1}{-9}\begin{bmatrix} 3 & 3 & -6 \\ 1 & -5 & 1 \\ -4 & -7 & 5 \end{bmatrix}\begin{bmatrix} 10 \\ 10 \\ 13 \end{bmatrix} = \begin{bmatrix} 2 \\ 3 \\ 5 \end{bmatrix}(1\frac{1}{2} + \frac{1}{2} - mark)$

$x = \frac{1}{2}, y = \frac{1}{3}\ and\ z = \frac{1}{5}. \left(\frac{1}{2} - mark\right)..$

OR, $A^{-1} = \begin{bmatrix} 3 & 2 & 6 \\ 1 & 1 & 2 \\ 2 & 2 & 5 \end{bmatrix}$ (every correct elementary operation shares ½ mark each that will go to total of 4 marks)

18). Family of planes passing through $(x + 2y + 3z - 4) + \lambda(2x - y + z + 5) = 0$ (1-mark)

$(1 + 2\lambda)x + (2 - \lambda)y + (3 + \lambda)z - 4 + 5\lambda = 0$ $(\frac{1}{2} - mark)$ d.r. of those lines are $\left((1 + 2\lambda), (2 - \lambda), (3 + \lambda)\right)$

d.r. of third plane which is perpendicular to the above plane is (5,3,-6).(1/2 +1/2 mark)

$5(1 + 2\lambda) + 3(2 - \lambda) - 6(3 + \lambda) = 0$ $\left(\frac{1}{2} - mark\right), \lambda = 7$ $\left(\frac{1}{2} - mark\right), 15x - 5y + 10z + 31 = 0. \left(\frac{1}{2} - mark\right).$

19.Let M=Following Meditation and Yoga ,D = Following prescription of Drug and H =Suffered with Heart attack.
P(M)=1/2,P(D) =1/2,P($(H|M) = 70\%, P(H|D) = 75\%$ $(1 - mark)$

P$(M|H) = \frac{P(M)P(H|M)}{P(M)P(H|M)+P(D)P(H|D)}$ $(1 - mark), P(M|H) = \frac{\frac{1}{2}\times 70\%}{\frac{1}{2}\times 70\%+\frac{1}{2}\times 75\%} = \frac{14}{29}.$ $(1 - mark)$

Value based Answer: International Yoga Day-21 June,
To keep everyone fit and healthy in entire Globe.

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

Class:-XII **Subject:- Physical Education**

Time- 2 Hrs. **M.M.- 50**

General Instructions:-

1. *The questions paper contains 20 questions.*
2. *All questions are compulsory.*
3. *Questions no. 1 to 10 carry 1 mark each. Answer to these questions should be in approximately 10-20 words each.*
4. *Question no.- 11-15 carry 3 marks each. Answer to these questions should be in approximately 30-50 words each.*
5. *Question no.- 16-20 carry 5 marks each. Answer to these questions should be in approximately 75-100 words each.*

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1. What do you mean by 'special seeding'? **[1]**

2. What is coordinative ability? **[1]**

3. What are Pace Races? **[1]**

4. Which motor quality does a senior citizen lack who finds difficulty in tying the shoe laces while sitting on the chair? **[1]**

5. Define Interval Training. **[1]**

6. What do you mean by combination tournament? **[1]**

7. Which test would you suggest for your grandmother to test lower body flexibility? **[1]**

8. What is rhythm ability? **[1]**

9. In which conditions knock out tournament are better than Round Robin? **[1]**

10. Differentiate between 1:1 and 1:2 ratio interval training method. **[1]**

11. Explain the "Eight foot up and Go" test for measuring agility and dynamic balance. **[3]**

12. Sushant was a good athlete. He used to practice regularly to achieve a position at the state level. But he could not get success. He got frustrated with his poor performance and started misbehaving with his teachers and friends in school. Due to depression and anxiety, he started taking drugs. The Principal counseled Sushant and called his parents. They took him to a rehabilitation centre for treatment. After a few months, he recovered and came back home. On the basis of above passage answer the following questions: **[1x3=3]**

(a) Do you think that consuming drugs is a solution to emotion-focused problems?

(b) What values are shown by the principal?

(c) What should be the attitude of the teachers and the parents after his recovery?

13. Discuss any three importance of tournament. **[3]**

14. Explain the Rockport one mile test. **[3]**

15. Dynamic strength is divided into three parts write in brief about each. **[3]**

16. Define league tournament. Draw a fixture of 24 teams using knock-out method. **[5]**

17. Write in detail about the various test items and their administration of the American Alliance for health, Physical Education and Recreation (AAPHER) test. **[5]**

18. What is circuit training? Draw a diagram of 10 stations to improve general fitness. How can load be increased in circuit training? **[5]**

19. Briefly explain about any two specific sports programmes. **[5]**

20. Discuss the factors affecting motor development in detail. **[5]**

DELHI PUBLIC SCHOOL

SAIL TOWNSHIP, RANCHI

QUALIFYING EXAMINATION (2018-19)

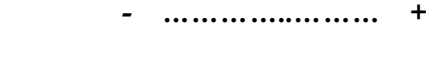
Class:-XII **Subject:- Physics**
Time- 2 Hrs. **M.M.- 50**

General Instructions:-

1. There are 19 questions in all. All questions are compulsory.
2. The question paper has five sections: Section A, Section B, Section C, Section D and Section E.
3. Section A contains four questions of 1 mark each.
4. Section B contains four questions of 2 mark each.
5. Section C contains eight questions of 3 mark each.
6. Section D contains 1 value based question of 4 marks.
7. Section E contains 2 questions of 5 marks each.
8. There is no overall choice. However an internal choice has been provided 1 question of 2 marks 1 question of 3 marks and both question of 5 marks . Attempt only one question on the choices.

Section-A

Q.1 A charge q is moved from a point A above a dipole of dipole moment 'p' to a point B below the dipole in equatorial plane without acceleration. Find the work done in the process.



Q.2 In the figure, electric field lines due to a point charge q_1 and q_2 are shown.
(i) What are the signs of charges q_1 and q_2 ?
(ii) What is the ratio of q_1 and q_2?

Q.3 A carbon resistor is marked in coloured bands of red, black, orange and silver. What is the resistance and the tolerance value of the resistor?

Q.4 How will the magnetic field intensity at the centre of a circular coil carrying current change if the current though the coil is doubled and the radius of coil is halved?

Section-B

Q.5 (i) If the radius of the Gaussian surface enclosing a charge in halved, how does the electric flux through the surface change?
(ii) The electric field induced in a dielectric placed in an external field is 1/8 times the external field. Calculate the relative permittivity of the dielectric.

Q.6 Define the terms
(i) drift velocity (ii) relaxation time.

OR

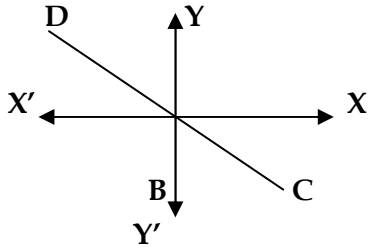
Derive an expression for drift velocity in terms of relaxation time of charge carriers in a conductor.

Q.7 Derive the expression for the magnetic field due to a circular loop carrying current I of radius R at a point P distant x from its centre along the axis of the loop.

Q.8 **A wire placed along the north –south direction carries a current of 8A from south to north. Find the magnetic field due to a 1 cm piece of wire at a point 200 cm north –east from the piece. Indicate the direction of magnetic field at point P.**

Section-C

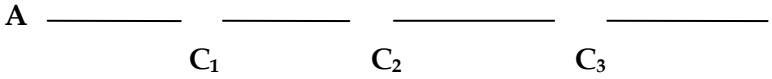
Q.9 **Two small identical electrical dipole AB and CD, each of dipole moment 'p' are kept at an angle of 120° as shown in the figure. What is the resultant dipole moment of this combination? If this system is subjected to electric field $\vec{E}$ directed along +X direction, what will be the magnitude and direction of torque acting on this?**



Q.10 **Calculate the potential difference and the energy stored in the capacitor C_2 in the circuit shown in the figure.**

Given potential at A is 90 V,

$C_1 = 20\ \mu$ F , $C_2 = 30\ \mu$ F $C_3 = 15\ \mu$ F .



Q.11 **A dielectric slab of thickness t is kept between the plates of a parallel plate capacitor separated by distance d. Derive the expression for the capacitance of the capacitor for t<<d.**

Q.12 **(a) An infinitely long positively charged straight wire has a linear charge density λ Cm^{-1}. An electron is revolving around the wire as its centre with a constant velocity in a circular plane perpendicular to the wire. Deduce an expression for its kinetic energy.**

(b) Plot a graph of the kinetic energy as a function of charge density λ.

Q.13 **Two cells of emfs $\varepsilon_1$and ε_2 and internal resistances r_1 and r_2 are combined in parallel. Determine the effective emf of the combination.**

OR

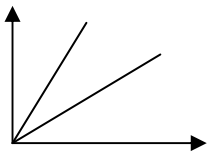
Find the ammeter reading in the circuit shown in the figure below.

Q.14 **Draw a circuit –diagram using a meter bridge and write the necessary mathematical relation used to determine the value of an unknown resistance. Why cannot such an arrangement be used for measuring low resistances?**

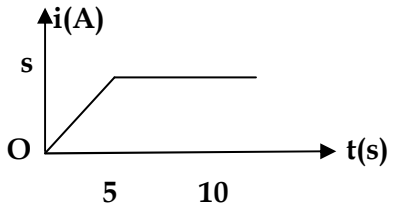
Q.15 **State the two Kirchhoff's rules used in electrical networks and derive the condition of balance in a whetstone's bridge using Kirchhoff's laws.**

Q.16 **(i) What is the largest voltage you can safely put across a resistor marked 49 Ω – 0.5 W?**

(ii) The variation of potential difference V with length *l* in case of two potentiometers X and Y are shown. Which of these will you prefer for comparing emf's of two cells and why?



(iii) The plot in figure shown the variation of current i through the cross-section of a wire over a time internal of 10s. Find the charge that flows through the wire over this time period.



Section-D

Q.17 **Immediately after school hour, as Bimla with her friends came out, they noticed that was a sudden thunderstorm accompanied by the lighting. They could not find any suitable place for shelter.**

Dr. Kapoor who was passing thereby in his car noticed these children and offered them to come in his car. He dropped them to the locality where they were staying.

(a) What values did Dr. Kapoor display?

(b) Why is it considered safe to be inside a car especially during lighting and thunderstorm?

(c) Define the term dielectric strength.

Section-E

Q.18 **(a) Define electric flux. Write its SI unit.**

(b) Using Gauss's law prove that the electric field at a point due to a uniformly charged sheet is independent of the distance from it.

(c) Plot a graph showing the variation of coulomb force (F) verses $\left(\frac{1}{r^2}\right)$, where r is the distance between the two charges of each pair of charges (1 μ c, 2 μ c) and (2 μ c, - 3 μ c).

Interpret the graphs obtained.

OR

Figure above shows the identical parallel capacitors connected to a battery with the switch s closed. The switch is now opened and the free space between the plates of the capacitors is filled with a dielectric of dielectric constant 3. Find the ratio of the total electrostatic energy stored in both capacitors before and after the introduction of the dielectric.

Q.19 (a) State the working principle of a potentiometer. Draw a circuit diagram to compare the emfs of two primary cells. Derive the formula used.

(b) Which material is used for potentiometer wire and why?

(c) Why should the current be not passed through potentiometer wire for a long time?

OR

(a) At room temperature (27.0°C), the resistance of heating element is 100 Ω. At what temperature does the resistance of the element change to 117 Ω. Given that the temperature coefficient of the material of the resistor in 1.70×10^{-4}°C .

(b) Two 120 V light bulbs, one of 25 W and one other of 200 W use connected in series across a 240 V line. One bulb burnt out almost instantaneously. Which one was burnt and why?

(c) What is current density? Is it a scalar or a vector quantity?

……X……