

# **M.R.Vivekananda Model School**

**Sector-13, Dwarka, New Delhi**

**Class- XII ( Commerce)**

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**Dear Parents**

**Greetings!**

**The academic session 2020-21 could not begin as the way we wanted it and even we couldn't welcome our students in their new class because of the pandemic Covid 19. We at MRV always strive to go extra miles for our students and try to provide them with quality education. Please find herewith the Holiday Homework for your ward to be done by them in your guidance. Hopefully, schools may start functioning in its normal course wef. 1.7.2020**

**All the phone numbers you are connected with will be operational during the vacation for your convenience.**

**Looking forward for your support and cooperation in future too.**

**Warm regards**

# ENGLISH CORE

## \*\*\*Literature\*\*\*

### 1. Write the character sketch of the following

- \*M. Hamel ( Last Lesson)
- \*Saheb e Alam + Mukesh ( Lost Spring)
- \*Crofter + Ironmaster+ rattap seller ( Rattap)
- \*Douglas ( Deep Water)
- \*Charley (Third Level)
- \*Jack (Should Wizard....)
- \*Dr.Sadao + General ( Enemy)
- \*Zikala- Sa + Bama ( Memories of Childhood)

### 2. Write in your own words the theme of the following poems :-

- \*Aunt Jennifer's Tigers
- \*My Mother at Sixty Six
- \*Keeping Quiet

## \*\*\*Writing\*\*\*

3. Your friend Isha Gulati has invited you to attend a play in which she will be performing. You cannot attend it as you have your brother's wedding on the same day. Write a polite letter in not more than 50 words, expressing

your inability to attend the play and give her your best wishes. You are Nisha/Nishant of 27, Rajpura Colony, Delhi. (4)

4.Recently the success of the Indian space mission to Mars was in the news. Write an article in 150-200 words on 'Mangalyaan a feather in India's Cap. You are Saroj/Sameer. (10)

5.You have heard that soon Delhi would be a free Wi-fi enabled city. Write a debate in favour of or against the motion 'Delhi Should be a Free Wi-fi Enabled City' in 150-200 words. You are Naisha/Nikunj. (10)

6.The news channels on TV give us instant news from every part of the world. But the importance of the newspaper remains intact. Write a speech for the morning assembly in 150-200 words expressing your views on 'The Relevance of Newspapers., You are Kamal/ Kamla.

7.You have seen that India decided for the longest Lockdown to prevent spread of COVID19. Do you think We saved lives with this Lockdown. Write a debate in favour of & against the motion in 150-200 words .You are Naisha/Nikunj. (10)

Note - write for FOR and AGAINST both

8.During this pandemic when there is a requirement that people should be made aware of the precautions to avoid spread deadly virus , your teacher has asked you spread awareness by making a poster .Design a poster .

9.During the pandemic you witnessed many workers and daily wagers going back to their hometowns as they were starving because of lack of food and money. Write a newspaper report based on your observations . You are Nitesh/Natasha .

### **\*\*\*READING\*\*\***

10. Read the given passages carefully.

## Passage 1:

Given the standing of some of its institutions of higher learning, the IITs and IIMs, India is a potential knowledge power. Realising the potential, however, is not going to be easy. The impressive strides made by Sarva Shiksha Abhiyan (SSA) notwithstanding, universal access to quality school education- a minimum necessary condition for any progress towards making India a knowledge society', as the 2006 report of the National Knowledge Commission (NKC) puts it-remains a distant goal.

There is as yet no legislation at the national level to affirm the right to education, a fundamental right under the Constitution. The number of school buildings for elementary and secondary education falls far short of requirements and so does the number of qualified teachers. The pressure on government budgets, which forces governments to hire teachers on contract paying a pittance of a salary, is playing havoc with quality. While the incursion of the private sector in the field is providing some competition, mechanisms to enforce the required standards are lacking.

Not that there are no national standards or standards-enforcing agencies. We have the National Council for Educational Research and Training (NCERT) to bring out textbooks in various subjects for school education. The central government runs several model schools. The Central Board of Secondary Education (CBSE) conducts examinations for schools affiliated to it across the country. The states too have their school boards to conduct exams and enforce minimum standards. How even the standards vary widely. In their anxiety to show spectacular performance, some states are overly lenient-in marking answer papers.

Questions arise even over the standards applied by CBSE. Going by the number of students securing 90% or more in their higher secondary exam, it would appear India is on the brink of a knowledge revolution. The numbers are so large that the cut-off point for admission to top colleges is

now above 90%. However, admissions to IITs and medical colleges are not based only on CBSE or state board exam results. Leading undergraduate colleges offering non-professional degree courses hold their own admission tests. Obviously, higher secondary school results are not taken to be a reliable index of the quality of a student's learning capability or potential.

It is not difficult to see why. In the CBSE class XII exam., the number of successful candidates securing more than 90% in economics this year turned out to be over 8000 in the Delhi region alone; in English it was above 9000.

The numbers seem to be growing every year. If the country produces so many children who attain very high levels of performance even before graduation, we can expect India to produce Amartya Sens by the dozens.

While scoring high marks or even 100 out of 100 may not be out of a good student's reach in subjects like mathematics or physics, it is difficult to figure out the quality of the answers that fetch 90% marks in Economics or English. The standards applied by higher secondary boards like CBSE seem to have been diluted to the point that leaves a big gap between what students learn at school and what they have to face on entering institutions of higher learning. Thriving teaching shops around the country promise to bridge that gap.

In an attempt to remedy the situation, NCERT had recently commissioned experts to rewrite textbooks on macro and micro economics. Though not entirely free from blemishes, these new texts should go some way in helping beginners get acquainted with the basic concepts in the subject and their applications.

Not surprisingly, their introduction is facing roadblocks. Teachers do not like to be compelled to look at textbooks they are not familiar with. Those who revel in seeing students score 90% are chary of ushering in something that may stop the rush of such scores. Lastly, even teaching shops see red as

they fear loss of business if the higher secondary finalists can get their skills upgraded without buying their help.

One wonders if our Knowledge Commission is aware of these insidious impediments to India's knowledge ambitions.

Questions:

1. On the basis of your understanding of the above passage, answer the following questions by choosing the most appropriate option. (1 x 4 = 4)

(1.1) Why is quality school education a distant goal?

- (a) There are no fundamental rights.
- (b) There is no legislation at the national level.
- (c) Measures to enforce the required standards are not there.
- (d) There are no minimum necessary conditions.

(1.2) What is the tone of writer when he remarks: 'India is on the brink of a knowledge revolution.'

- (a) Optimistic
- (b) Imaginative
- (c) Sarcastic
- (d) Presumptuous

(1.3) What are some states doing for ensuring good performances?

- (a) Lenience in marking
- (b) Following their own school boards
- (c) Following CBSE

(d) All of these

(1.4) Why do teachers oppose the new textbooks?

(a) They are not familiar with them.

(b) They want students to score good marks.

(c) They are happy with the old books.

(d) Teaching shops would lose their business.

2. Answer the following questions as briefly as possible. (1 x 6 = 6)

(2.1) What remains a distant goal?

What is the main factor that has affected the quality of education?

Which are the standard enforcing agencies in India?

Why do leading undergraduate colleges hold their own admission tests?

What is the problem created by the results of CBSE examinations?

Why does the author state, “we can expect India to produce Amartya Sen by the dozens”?

3. Which word in the passage means the same as (1 x 2 = 2)

Reputation (para 1 )

Impressive (para 3)

### **Passage 2:**

Read the given poem carefully.

I heard a thousand blended notes,  
While in a grove I sate reclined,  
In that sweet mood when pleasant thoughts  
Bring sad thoughts to the mind.

To her fair works did Nature link  
The human soul through me ran;  
And much it grieved my heart to think  
What man has made of man.

Through primrose tufts, in that green bower,  
The periwinkle trailed its wreaths;  
And 'tis my faith that every flower  
Enjoys the air it breathes;  
The birds around me hopped and played,  
Their thoughts I cannot measure:-

But the least motion which they made  
It seemed a thrill of pleasure.

The budding twigs spread out their fan,  
To catch the breezy air;  
And I must think, do all I can,



That there was pleasure there.

If this belief from heaven be sent,

If such be Nature's holy plan,

Have I not reason to lament

What man has made of man?.

Questions:

1. On the basis of your understanding of the poem, answer the following questions by choosing the most appropriate option. (1 x 2 = 2)

(1.1)What is the mood of the poet in these lines?

- (a) Amused
- (b) Pessimistic
- (c) Melancholy
- (d) Bewildered

(1.2)What 'seemed a thrill of pleasure'?

- (a) Birds hopping and playing
- (b) The budding twigs
- (c) Nature's holy plan
- (d) Nature's music

2. Answer the following questions as briefly as possible.

(2.1)The poet's mind was filled with

(2.2) Why was the poet sad?

(2.3) According to the poet, nature is

(2.4) The poet found the birds

(2.5) What were the budding twigs doing?

(2.6) Why does the poet have reason to lament?

3. Which word in the poem means the same as (1 x 2 = 2)

(3.1) Windy (fifth stanza)

(3.2) Sprouting leaves (fifth stanza)

### **Passage 3:**

Read the given passage carefully.

Not knowing about websites like Orkut, myspace.com, facebook.com or friendster.com, for teens, isn't it just in the league of the 'uncool' today?

These are an integral part of the information superhighway that students access for academic purposes. Mostly, parents aren't bothered until a case like Adnan Patrawala hits the headlines. Going out to meet friends made through a social networking site cost the teenager's life.

It's important to understand that it isn't the site per se that's at fault. But what perhaps is at fault are the unsafe ways young people communicate over such public forums where it's easy for strangers to access information.

"Teens also swap messages with friends, posting diary-like blogs and share photos. Beyond their profiles, they can search through message boards and blogs about various topics like sports, relationships or music", says

Annette Martis, Manager, Consumer Products and Solutions, Symantec India.

Unfortunately, parents can't always chaperone teens to make sure they're safe online. Martis' tips for parents include

You cannot teach your kids the ways of the internet-especially online communities-unless you know the lay of the land well yourself.

Anyone can join an online community and pretend to be someone they're not. These sites even allow visitors to search for people based on age, city and gender. Kids can post information about their school or pictures of themselves or information about their sporting events, which seems harmless. But they don't understand that predators can piece information together to find, identify and harm them. Explain the dangers of posting personal information and make sure your teen's profile doesn't offer any clues about who she really is.

Kids can never be 100% certain of who they're interacting with in online communities. Some try to add as many friends as possible to their contact list-meaning, people they don't really know can message them directly..

Sometimes teens post material that can be used against them later. Once posted online, these musings are out there for the world to see. People are worried now whether future employers can use such postings against them.

Ask young children what kind of content they think is appropriate to post in online communities. Set some guidelines together and stick them near the computer.

Kids are often scared their internet privileges will be taken away if they tell parents about anything that's making them uncomfortable online. But if you're talking about it, they'll feel comfortable that you'll understand.

Together, become familiar with the online community's safety policies and reporting mechanisms.

For teenagers, Martis has some simple tips.

Use your site's privacy features to limit personal posts to people you trust.

Don't post suggestive pictures or images that might give strangers clues about your identity. They compromise your security and may affect how relatives, teachers, friends and acquaintances perceive you.

Monitor your blog comments and delete anything you don't want people to see.

Don't use your account to spread rumours or disclose personal information about others. Your actions could have serious implications for you and even your parents.

### **Questions:**

1. On the basis of your reading of the above passage **make notes** on it in points only, using recognisable abbreviations wherever necessary. Also suggest a suitable title. (4)

2. Write a **summary** of the above passage in about 80 words. (4)

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## **ACCOUNTANCY**

### **● Project work:-**

**Note:-** The comprehensive project may contain simple GST calculations.

- **Project-1 (COMPREHENSIVE PROJECT)**

Create a virtual company and list out all possible transactions (atleast 30 ) to show the financial condition and financial position of that company. You are required to prepare a project file showing recording, classification , summarizing, analysis and interpretation of results to the potential users. So prepare the followings for all the transactions which were done by the company:-

- Journal
- Ledger
- Trial Balance
- Final Accounts i.e. Profit and Loss Account & Balance Sheet
- Graphical Presentation of :-
- Net Profit in proportion to Revenue from operation
- Classification of assets
- Classification of liabilities
- **Solve the following questions:-**
- X,Y,Z are partner. They admitted W as a partner. W's Share of goodwill is Rs. 24000 out of which he brought Rs.12000 only as he fell short of cash because he had deposited his sister's school admission fees. X,Y,Z did not objected to it. Identify the value in this case.
- X, Y, Z entered into partnership on 1<sup>st</sup> July, 2015 to share Profit and Losses in the ratio of 3:2:1. X personally guaranteed that Z's share of profit after charging interest on capital @6% p.a. would not be less than Rs. 36000 p.a.. The capital contributed by X- Rs.200000; Y- Rs. 100000 and Z- Rs.100000. Profit for the year ended on 31<sup>st</sup> March,2016 was Rs. 138000. Prepare Profit & Loss Appropriation account.

- A, B and C are partners in a firm. They had omitted interest on capital @10% p.a. for three years ended 31st March, 2013. Their fixed capitals on which interest was to be calculated throughout were:

A	Rs.1,00,000
B	Rs. 80,000
C	Rs. 70,000

Give the necessary adjusting journal entry with working notes.

- State any two occasions on which a firm may be reconstituted.
- X,Y and Z were partners in a firm. Their capitals on 1st April, 2012 were: X Rs.2,00,000; Y Rs.2,50,000 and Z Rs.3,00,000. The partnership deed provided for the following:

- (i) They will share profits in the ratio of 2:3:3
- (ii) X will be allowed a salary of Rs.12,000 p.a.
- (iii) Interest on capital will be allowed @ 12% p.a.

During the year X withdrew Rs.28,000; Y ` Rs.30,000 and Z Rs.18,000. For the year ended 31.3.2013 the firm earned a profit of Rs.5,00,000.

Prepare Profit and Loss Appropriation Account and Partner's Capital Accounts.

- R, S, and T entered into a partnership of manufacturing and distributing educational CD's on April 01, 2006. R looked after the business development, S content development and T financed the project. At the end of the year (31-03-2007) T wanted an interest of 12% on the capital employed by him. The other partners were not inclined to this. How would you resolve this within the ambit of the Indian Partnership Act, 1932?

- A, B and C are partners in a firm. A withdrew Rs. 1000 in the beginning of each month of the year. Calculate interest on A's drawing @ 6% p.a.
- A, B and C are partners in a firm, B withdrew Rs. 800 at the end of each month of the year. Calculate interest on B's drawings @ 6% p.a.
- Ravi and Mohan were partner in a firm sharing profits in the ratio of 7:5. Their respective fixed capitals were Ravi Rs. 10,00,000 and Mohan Rs. 7,00,000. The partnership deed provided for the following:-

(i) Interest on capital @ 12% p.a.

(ii) Ravi's salary Rs. 6000 per month and Mohan's salary Rs. 60000 per year.

The profit for the year ended 31-03-2007 was Rs. 5,04,000 which was distributed equally without providing for the above. Pass an adjustment Entry.

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## **ECONOMICS**

Answer the following questions :-

1. "The traditional handicrafts industries were ruined under the British rule". Do you agree with this view? Give reasons in support of your answer.

2. "During the British colonial rule, despite being the occupation of about 85% of India's population, the agricultural sector continued to experience stagnation and, not infrequently, unusual deterioration. Agriculture productivity became low. Do you agree with the above

statement? Give valid reasons in support of your answer.

3. "India could not develop a sound industrial base under the British colonial rule. Even as the encounter world famous handicrafts industries declined, no corresponding modern industrial base was allowed to come up to take pride of place so long enjoyed by the former".

4. In the light of the above statement, critically appraise some of the shortfalls of the industrial policy pursued by the British colonial administration. "The most important characteristic of India's foreign trade throughout the colonial period was the generation of a large export surplus. But this surplus came at a huge cost to the country's economy".

Do you agree with the above statement? Give valid reasons in support of your answers.

5. "Under the colonial regime, basic infrastructure such as railways, ports, water transport, posts and telegraph developed. However, the real motive behind the infrastructure development was not to provide basic amenities to the people but to subscribe various colonial interests" What objectives did the British intend to achieve through their policies of infrastructure development in India.

6. "The introduction of the railways in India was considered as one of the most important contributions of the British. However, the social benefits, which Indian people gained owing to the introduction of the railways, were outweighed by the country's huge economic loss. Do you agree with the above statement? Give valid reasons.

7. "The social and economic challenges before India at the time of the



independence were enormous". Do you agree with the statement? Give reasons.

8. "While the nation had immensely from the Green revolution, the technology involved was not free from risks". Do you agree with the given statement? Give the valid reasons in support of your answer.

9. "The Green Revolution would have favoured the rich farmers only if the state did not play an extensive role in ensuring that the small farmer also gains from the new technology". Do you agree with the given statement? Give valid reason in support of your answer.

10. "The achievement of India's industrial sector during the first seven year plans are impressive indeed". Do you agree with the given statement? Give the valid reasons in support of your answer.

11. "The progress of the Indian economy during the first seven plans was impressive indeed". Do you agree with the given statement? Give valid reason in support of your answer.

12. Why was it necessary for a developing country like India to follow Self reliance as a planning objective?

13. Explain 'growth with equity' as a planning objective.

14. Give a quantitative appraisal of India's demographic profile during the colonial period.

15. Underscore some of India's most crucial economic challenges at the time of independence.

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# BUSINESS STUDIES

Answer the following questions:

- Dheeraj is working as 'Operations Manager' in Tifco Ltd. Name the managerial level at which he is working. State any four functions he will perform as 'Operations Manager' in this company.
- Volvo Ltd's target is to produce 10000 shirts per month at a cost of Rs. 100/- per shirt. The Production Manager achieved this target at a cost of Rs. 90/- per shirt.

Do you think the 'Production Manager' is effective? Give one reason in support of your answer.

- Yash Ltd. is facing a lot of problems these days. It manufactures electronic

goods like washing machines, microwave ovens, refrigeration and air-conditioners. The company's margins are under pressure and the profits and

market marketing department blames production department for producing goods, which are not of good quality to meet customers' expectations. The finance department blames both production and marketing departments for declining return on investment and bad marketing.

- What quality of management do you think the company is lacking?

Justify your answer.

- State the importance of the concept identified in (a)
- . Aman, Ahmad and Ally are partners in a firm engaged in the distribution of dairy products in Maharashtra state. Aman is a holder of Senior Secondary

School Certificate from Central Board of Secondary Education with Business

Studies as one of his elective subjects. Ahmad had done his post graduation in History and Ally in dairy farming. One day there was a serious discussion

between Ahmad and Ally regarding the nature of management. Ahmad argued

that management was a profession whereas Ally argued against it saying that the legal and medical professions are the only professions because they fulfill all the conditions of profession. Aman on the basis of his knowledge of business studies

explained the nature of management as a profession to Ahmad and Ally. Explain,

how Aman would have satisfied both Ahmad and Ally.

- To meet the objectives of the firm, the management of Bhavya Ltd. offers employment to physically challenged persons. Identify the organizational objective it is trying to achieve. Give reason in support of your answer.
- Govinda Ltd. is a highly reputed company. Different functions are performed by different individuals in this company, who are bound together in a hierarchy of relationships. Every individual in the hierarchy is responsible for successful

completion of a particular task. Mr. Gauranga is responsible for the welfare and survival of the organization. He formulates overall organizational goals and

strategies for their achievement. MR. Nityanand ensures that quality of output is maintained, wastage of materials is minimized and safety standards are

maintained. Mr. Sanatan assigns necessary duties and responsibilities to the

personnel and motivates them to achieve desired objectives At what levels of management are MR. Gauranga, Mr. Nityanand and Mr. Sanatan working in Govinda Ltd.? justify your answer.

- Mr. Ajay after completing MBA from USA comes to India to start a new business under the banner Ecom Creations Ltd. He launches a new product in e-learning for senior Secondary School students in Commerce stream, which already has an established market in the UK and USA but not in India. His business starts flourishing in India. Now more Indian companies have entered into the market with other subjects also. Identify and quote the lines from above para which highlight the significance of understanding the business environment.
- Just after declaration of Lok Sabha Elections 2014 results, the Bombay stock exchange's price index (Sensex) rose by 1000 points in a day. Identify the environmental factor which led to this rise giving reason. Also explain any two other dimensions of the business environment.
- The court passed an order that all schools must have a water purifier for the school children as 1. Society in general is more concerned about quality of life. 2. Innovative techniques are being developed to manufacture water purifiers at competitive rates. 3. Incomes are rising and children at home are also drinking purified water. The government is also showing a positive attitude towards the water purifier business. Identify the different dimensions of the business environment by quoting from the above details.
- 'It is common now to see CD-ROM's, computerized information kiosks, and Internet/World Wide Web multimedia pages highlighting the virtues of products.' Name the dimension of the business environment highlighted by this statement.
- Which component of the business environment requires that advertisements of baby food must necessarily inform the potential buyers that mother's milk is the best?

- “Zero Defect Zero Effect” (ZED) is a slogan coined by the Prime Minister of India, Narendra Modi with reference to the Make in India initiative launched by the government. The slogan reflects the efficiency of production processes, i.e. the products have no defects and the process through which the product is made has zero adverse environmental and ecological effects. The Zed model aims to make India the manufacturing hub of the world and prevent the products developed in India from being rejected by the global market. Moreover, before the initiative was launched, the limits of foreign direct investment in various sectors had been relaxed. The application for licenses was made available online and the validity of licenses was increased to three years. Various other norms and procedures were also relaxed by the government. In the light of the above paragraph, identify and explain the major components of New Economic Policy of 1991 that are being referred to by quoting lines from the paragraph.
- The organic food market in India is growing at 25-30 per cent which reflects a clear shift in consumer tastes and preferences. The current growth in the organic food market is driven by multiplicity of factors like rising health consciousness, changing lifestyles, increase in disposable income and growing availability of organic food products in shopping malls, retail outlets and online. In context of the above case:
  1. Identify and explain the features of the business environment being referred to here.
  2. By quoting phrases from the paragraph identify the various components of general forces which have led to a growth in the organic food market.
- Suhasini a home science graduate from a reputed college has recently done a cookery course. She wished to start her own venture with a goal to provide ‘health food’ at a reasonable price. She discussed her idea with her teacher (|mentor) who encouraged her. After analyzing various options for starting her business venture, they

shortlisted the option to sell readymade and 'ready to make' vegetable shakes and sattu milk shakes. Then they both weighed the pros and cons of both the shortlisted options.

- Name the function of management being discussed above and give any one of its characteristics.
- Also briefly discuss any three limitations the function discussed in the case.
- Company is manufacturing garments. The manager wants to increase profits by purchasing new high speed machines or increasing the sale price or using waste material in manufacturing stuffed toys. He decided that 'using waste material' to increase the profit is the best solution for him.
  - Identify the concept of management involved.
  - Mention the steps involved in the above process by quoting the line from the question.
  - To complete the process of the concept identified in (a), what two next steps

does the manager have to take? Explain.

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## **MATHEMATICS**

1. Write all formulae for chapter Trigonometry function , differential and integral in a notebook and revise it daily.
2. Revise NCERT chapters 3 to 6. (exercises and examples)
3. Solve the following questions in notebook :-

Q.8. If  $f(x)$  defined by the following, is continuous at  $x=0$ , find the values of  $a$ ,  $b$  and  $c$ .

$$f(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x} & , \text{if } x < 0 \\ c & , \text{if } x = 0 \\ \frac{\sqrt{x+bx^2} - \sqrt{x}}{bx^{3/2}} & , \text{if } x \geq 0 \end{cases}$$

Q.9. If:

$$y = \sin^{-1} \left[ \frac{5x + 12\sqrt{1-x^2}}{13} \right], \text{ find } \frac{dy}{dx}.$$

Q.10. If:

$$x = a \left( \cos \theta + \log \tan \frac{\theta}{2} \right) \text{ and } y = a \sin \theta, \text{ find the value of } \frac{dy}{dx} \text{ at } \theta = \frac{\pi}{4}.$$

Q.11. Find the value of ' $a$ ' for which the function  $f$  defined as:

$$f(x) = \begin{cases} a \sin \frac{\pi}{2}(x+1), & x \leq 0 \\ \frac{\tan x - \sin x}{x^3}, & x > 0 \end{cases} \text{ is continuous at } x = 0.$$

Q.12:

$$\text{If } x^y + y^x = a^b, \text{ then find } \frac{dy}{dx}$$

Q.13 If  $e^y(x+1) = 1$ , then show that  $\frac{d^2y}{dx^2} = \left( \frac{dy}{dx} \right)^2$

Q. 14. Find:

$$\frac{dy}{dx}, \text{ if } (x^2 + y^2)^2 = xy.$$

Q.1:

Differentiate  $\tan^{-1}\left(\frac{1 + \cos x}{\sin x}\right)$  with respect to  $x$ .

Q.2.

If  $(x^2 + y^2)^2 = xy$ , find  $\frac{dy}{dx}$

Q.3. Determine the value of 'k' for which the following function is continuous at  $x = 3$  :

$$f(x) = \begin{cases} \frac{(x+3)^2 - 36}{x-3} & , x \neq 3 \\ k & , x = 3 \end{cases}$$

Q.4: Find the value of  $c$  in Rolle's theorem for the function

$$f(x) = x^3 - 3x \text{ in } [-\sqrt{3}, 0].$$

Q. 5. For what value of  $k$  is the following function continuous at  $x = 2$ ?

$$f(x) = \begin{cases} 2x + 1 & ; x < 2 \\ k & ; x = 2 \\ 3x - 1 & ; x > 2 \end{cases}$$

Q.6. If  $x = a(2\theta - \sin 2\theta)$  and  $y = a(1 - \cos 2\theta)$ , find  $\frac{dy}{dx}$  when  $\theta = \frac{\pi}{3}$

Q.7:

If  $y = \sin(\sin x)$ , prove that  $\frac{d^2y}{dx^2} + \tan x \frac{dy}{dx} + y \cos^2 x = 0$



- 13) Find  $\frac{dy}{dx}$  when (a)  $xy + xe^{-y} + ye^x = x^2$  (b)  $e^{x-y} = \log\left(\frac{x}{y}\right)$
- 14) If  $\log(x^2 + y^2) = 2 + \tan^{-1} \frac{y}{x}$  Show that  $\frac{dy}{dx} = \frac{x+y}{x-y}$
- 15) Find  $\frac{dy}{dx}$  if  
 (a)  $y = (\sin x)^x + (\cos x)^{-\tan x}$  (b)  $(\sin x)^{\log x} + x^{1/x}$
- 16) If  $x = a [\cos \theta + \log \tan(\theta/2)]$ ,  $y = a \sin \theta$  find  $\frac{dy}{dx}$  if  $\theta = \pi/4$
- 17) If  $y = \tan^{-1} x$  prove that  $(1+x^2) \frac{d^2y}{dx^2} + 2x \frac{dy}{dx} = 0$
- 18) If  $y = \sin(\log x)$  prove  $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + y = 0$
- 19) If  $y = x \cos x$  prove  $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} + (2+x^2)y = 0$
- 20) The volume of a spherical balloon is increasing at the rate of  $3 \text{ cm}^3/\text{sec}$ . Find the rate of change of its surface area when radius is  $2 \text{ cm}$ .
- 21) Find the equation of tangent and Normal to the curve  
 (a)  $x = \cos t$ ,  $y = \sin t$  at  $t = \pi/4$   
 (b)  $x = a \sin^3 \theta$ ,  $y = a \cos^3 \theta$  at  $\theta = \pi/4$
- 22) Determine the interval in which function is Incr. or Decr.  
 (a)  $f(x) = x^4 - \frac{4x^3}{3}$  (b)  $f(x) = 3x^4 - 4x^3 - 12x^2 + 5$
- 23) Find the points of local maxima and local minima also find the maximum & minimum values  
 (a)  $f(x) = x\sqrt{1-x}$ ,  $0 < x \leq 1$   
 (b)  $f(x) = \sin x - \cos x$ ,  $0 < x < 2\pi$
- 24) Show that the right circular cone of least curved surface and given volume has an altitude equal to  $\sqrt{2}$  times the radius of base
- 25) Show that the right circular cylinder of given surface and maximum volume is such that its height is equal to the diameter of the base.

A - Solve the following:

1) If  $A = \begin{bmatrix} 1 & 2 \\ -1 & 1 \\ 2 & 3 \end{bmatrix}$   $B = \begin{bmatrix} 3 & -2 & 1 \\ 1 & 4 & 2 \end{bmatrix}$  and  $(AB) = [C_{ij}]$  find  $C_{23} + C_{31}$

2) If  $\begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix} \begin{bmatrix} 1 & -3 \\ -2 & 4 \end{bmatrix} = \begin{bmatrix} -4 & 6 \\ -9 & x \end{bmatrix}$  find  $x$

3) Find  $x+y+z$  if  $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$

4) Find products:

a)  $\begin{bmatrix} 1 & -2 \\ 2 & 3 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$  b)  $\begin{bmatrix} 3 & -1 & 3 \\ -1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 2 & -3 \\ 1 & 0 \\ 3 & 1 \end{bmatrix}$

5) Write as a single matrix

$\begin{bmatrix} 1 & -2 & 3 \end{bmatrix} \begin{bmatrix} 2 & -1 & 5 \\ 0 & 2 & 4 \\ 7 & 5 & 0 \end{bmatrix} - \begin{bmatrix} 2 & -5 & 7 \end{bmatrix}$

6) If  $A = \begin{bmatrix} 3 & 2 \\ -1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} -1 & 0 \\ 2 & 5 \\ 3 & 4 \end{bmatrix}$  find  $(BA)^T$

7) If  $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & x \\ -2 & 2 & -1 \end{bmatrix}$  is satisfying  $AA^T = 9I_3$  Find  $x$ .

8) Using elementary row operation find inverse

i)  $\begin{bmatrix} 2 & -1 & 3 \\ -5 & 3 & 1 \\ -3 & 2 & 3 \end{bmatrix}$  ii)  $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$  iii)  $\begin{bmatrix} 2 & 3 & 1 \\ 2 & 4 & 1 \\ 3 & 7 & 2 \end{bmatrix}$

9) Show that  $A = \begin{bmatrix} 5 & 3 \\ -1 & -2 \end{bmatrix}$  satisfies the equation  $A^2 - 3A - 7I = 0$  and hence find  $A^{-1}$

10) If  $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$  prove  $A^2 - 4A - 5I = 0$  Hence find  $A^{-1}$

11) Locate the points of discontinuity:

a)  $f(x) = \begin{cases} 2x & \text{if } x < 0 \\ 0 & \text{if } 0 \leq x \leq 1 \\ 4x & \text{if } x > 1 \end{cases}$

b)  $f(x) = \begin{cases} x+2, & x \leq 1 \\ x-2, & 1 < x < 2 \\ 0, & x \geq 2 \end{cases}$

12) Find a & b if function is continuous.

a)  $f(x) = \begin{cases} -5, & \text{if } x \leq -1 \\ ax-b, & \text{if } -1 < x < 3 \\ 7, & \text{if } x \geq 3 \end{cases}$

b)  $f(x) = \begin{cases} x^2+ax+b, & 0 \leq x < 2 \\ 3x+2, & 2 \leq x \leq 4 \\ 2ax+5b, & 4 < x \leq 8 \end{cases}$

## Physical Education

\* Do questions and answers of Ch. 1 & 3

### **Record File-**

**Practical 1-** Modified AMPER administration for all items.

**Practical 2-** Conduct Barrow 3 Hem Test on 10 students.

**Practical 3-** Procedure for Asanas , benefits and contraindications for any two Asanas each lifestyle disease.

**Practical 4-** Procedure for administering fitness for senior citizens. Fitness Test for 5 elderly family members.

**Practical 5-** Draw a labelled diagram of the field, equipment, risk terminologies and skills of any one game of your choice from the syllabus.

**NOTE:- Do the above tasks on your registers. Teachers are available on phone for guidance if needed.**

*\* Stay Safe \**

