JAWAHAR HIGHER SECONDARY SCHOOL, CBSE – NEYVELI

CLASS: XII **FULL PORTION EXAM (2022 – 2023)** **MARKS: 80**

DATE: 02.01.2023 **ENGLISH (CODE – II)** **TIME: 3Hrs**

I Read the given passage carefully:

1. The basic concept of photography has been around since about the 5th century BCE. It wasn't until an Iraqi scientist developed something called the camera obscure a in the 11th century that the art was born. Photography, as we know it today, began in the late 1830s in France. Joseph Nicephore used a portable camera obscure a to expose a pewter plate coated with bitumen to light. This is the first recorded image that did not fade quickly Niepce's success led to a number of other experiments, and photography progressed very rapidly. Daguerreotypes, emulsion plates, and wet plates were developed almost simultaneously in the midtown-late 1800s.

2. In the 1870s, photography took another huge leap forward. Richard Maddox improved on a previous invention to make dry gelatine plates that were nearly equal to wet plates in speed and quality. Photography was only for professionals and the very rich until George Eastman started a company called Kodak in the 1880s.

3. Eastman created a flexible roll film that did not require constantly changing the solid plates. This allowed him to develop a self-contained box camera that held 100 film exposures. The camera had a small single lens with no focusing adjustment. The consumer would take pictures and send the camera back to the factory for the film to be developed and prints made, much like modern disposable cameras. This was the first camera inexpensive enough for the average person to afford. The film was still large in comparison to today's 35mm film. It was not until the late 1940s that35mm film became cheap enough for the majority of consumers to use.

4. Around 1930, Henri-Cartier Bresson and other photographers began to use small 35mm cameras to capture images of life as it occurred rather than staged portraits. When World War II started in1939, many photojournalists adopted this style. At the same time, 35mm cameras were becoming popular; Polaroid introduced the Model 95. Model 95 used a secret chemical process to develop the film inside the camera in less than a minute. This new camera was fairly expensive, but the novelty of instant images caught the public's attention. In the 1950s, Asahi (which later became Pentax) introduced the Asahi flex and Nikon introduced its Nikon F camera. These were both Single-Lens Reflex (SLR)-type cameras, and the Nikon Fallowed for interchangeable lenses and other accessories. For the next 30 years, SLR-style cameras remained the camera of choice.

5. In the late 1970s and early 1980s, compact cameras that were capable of making image control decisions on their own were introduced. These "point and shoot" cameras calculated shutter speed, aperture and focus, leaving photographers free to concentrate on composition. The automatic cameras became immensely popular with casual photographers. Professionals and serious amateurs continued to prefer to make their own adjustments and enjoyed the image control available with SLR cameras.

On the basis of your understanding of the passage, answer the following questions: (10x1=10)

1. "Something called camera obscura was developed around 11th century" was NOT made by
   a) an Indian scientist. b) an English scientist c) an Iraqi scientist. d) both (a) and (b)
2. "…but the novelty of instant images caught the public's attention." Pick the option in which the meaning of 'novelty' is NOT the same as it is in the passage.
   a) It came from the days when a vintage car was a novelty b) He bought chocolate novelties for Christmas.
   c) The movie included a few novelty songs d) The shop sells gifts and other novelties.
3. Based on your understanding of the passage, choose the option that lists the correct sequence of the beginning and the progression of the first Modern photography.
   1. 1830 in France 2. Company Kodak in 1880's 3. Mid-to-late 1800s 4. Took huge leap in 1870s
   a) 1, 4, 3, 2 b) 3, 4, 2, 1 c) 1, 3, 4, 2 d) 2, 4, 1, 3
4. In the passage, it is written, "This point *and shoot* cameras calculated shutter speed, aperture and focus…" What would have been if it had been the opposite and the camera was NOT COMPACT?
   a) It would have been loose. b) It would be free of lenses.
   c) It would have been auto focus. d) It would have a flash unit.
5. The creation of the flexible roll flim lead to
6. Write a note on the achievement of George Eastman in the field of photography?
7. According to the passage, the fact that Model 95 was a fairly expensive camera yet it attracted the public was
   a) a worthy invention. b) a useless attempt c) just a waste of time and money. d) a genuine buy
8. Which option represents the correct combination according to the passage?
   a) Iraqi scientist and Kodak b) Joseph Nicephore Niepce and portable camera obscura
   c) Richard madden and dry gelatine d) George Eastman and Kodak
9. Pick the option showing the CORRECT use of the word "expose."
   a) Political scandals exposed the family in the newspapers today.
   b) The scientist experimented on the upper part of the shelf to expose the stains.
   c) He worked hard to expose him as a traitor.
   d) He damaged his arm so badly in the accident that the bone was exposed.
10. Complete:
    Success of Joseph Niepce's creation was revolutionary _____

2. Read the given passage carefully:

1. The human race constantly needs energy sources for survival. A present-day estimate by National Geographic determined that we use 320 billion kilowatt-hours of energy every day Today, most of this enormous requirement is addressed by burning fossil fuels. So far, fossil fuels have catered to our energy needs very efficiently, but they are also non-renewable and rapidly depleting. These fuel sources have also contributed greatly to greenhouse gas emissions and pollution. Atomic energy, solar energy and energy from wind and bio fuels are just a few of the promising alternatives for a cleaner and greener future. Other relatively new sources of energy such as fuel cells, geothermal energy and ocean energy are also being explored.

2. According to estimates provided by the Energy Information Administration, fossil fuels account for 86% of the total energy produced in the world. Of this, petroleum accounted for 36.8%, coal 26.6% and natural gas 22.9 %. It is estimated that 23.5 tons of fossilized organic material deposited on the ocean floor is required to produce 1 litre of gasoline. In 1997, the total amount of fossil fuel used was equivalent to plant matter that grew on the entire land and ocean surface of the earth over a period of 422 years. Another disadvantage of our heavy dependence on fossil fuels is the amount of carbon dioxide produced during combustion, which is estimated at 21.3 billion tons per year. However, natural processes are capable of absorbing only about half of the total amount of carbon dioxide emissions released into the atmosphere, which means every year, the amount of carbon dioxide in the atmosphere is increasing by 10.65 billion tons, which is theorized to be the leading contributor to global warming that could potentially have very adverse effects on the ecosystem.

3. Although natural gas is considered to be cleaner than other fossil fuels, it has still been found to contribute to pollution and global warming. While it can be used to supplement the world's ever depleting reserves of traditional fossil fuels, it is not a 100% clean, non-polluting alternative. In 2004, carbon dioxide emissions resulting from the use of natural gas stood at 5,300 million tons while coal and oil contributed to carbon dioxide emissions of 10,600 million tons and 10,200 million tons, respectively. However, this trend is expected to reverse by 2030 when natural gas is likely to emit 11,000 million tons of carbon dioxide as opposed to 8,400 million tons from coal and 17,200 tons from oil at that time. Also, when released directly into the atmosphere, natural gas is a far more potent greenhouse gas than carbon dioxide, but since this occurs in very small amounts, it is currently not a major cause of concern.

4. As the human race evolves, we will continually search for newer, more efficient forms of energy that have the least amount of impact on the environment) However, the fact of the matter is that we must be proactive in researching new forms of energy to continue the advancement of civilization and to ensure a high quality of living that we all have grown accustomed to.

On the basis of your understanding of the passage, answer the following questions: (10)

1. According to the passage, the reason why other energy sources are being explored is that :
   a) Fossil fuels are rare to find b) Fossil fuels require massive deforestation
   c) Fossil fuels take a long time to produce d) Fossil fuel are non – renewable and depleting
2. Pick the option that lists statements that NOT TRUE according to the passage :
   1) Human need energy sources for some time 2) Alternative sources of energy are being explored
   3) Petroleum is the most economically efficient fuel today 4) Fossil fuels produces carbon during combustion
   a) 1 and 2 b) 1 and 3 c) 1 and 4 d) 1 and 4
3. However, the fact of the matter is that use must be proactive in researching new forms of energy to continue the advancement of civilization and to ensure a high quality of living that we all have grown accustomed .
   Rewrite the sentence using the synonym of the underlined word accustomed to:
   a) Habitual b) unfamiliar c) customised d) concerned
4. What will happen when human race evolves?
5. " _____ it is currently not a major cause concern". This statement refers to
   a) carbon dioxide combustion b) 320 billion kilowatt – hours
   c) natural gas being a for more potent greenhouse has d) depletion of all resources
6. Based on the given graphical representation of data in the passage, choose the option which is true.
   1) The use of coal from 1965 to 1975 has been almost the same
   2) The consumption of oil in 1982 was as an all – time high
   3) Consumption of almost all resources reduced in 2014
   4) It was in 1970 that nuclear energy began to be used
   a) 1 and 2 b) 2 and 3 c) 3 and 4 d) 1 and 4
7. Based on the graphical representation, pick out the year when energy consumption of coal reduced and rose against the next year _____
   a) 1996 b) 2009 c) 2015 d) 2004
8. The emission trend of _____ is likely to reverse in 2030
   a) 1996 b) 2009 c) 2015 d) 2004
9. Why is researching about new forms of energy important?
10. According to the graphical representation, which of the following is the correct combination for global use?
    1) 1976 - 6, 000 million
    2) 1965 – 4, 000 million
    3) 1987 – 8, 000 million
    4) 2002 – 10,000 million

    a) option – 1 b) option – 2 c) option – 3 d) option - 4

SECTION – B (Creative Writing Skills)

3. Attempt any one from A and B given below: (5marks)

A) You are Akash / Akshita, a student of class XII – A , Yesterday, during lunch break, you misplaced your notes on History lecture. You want to get them back soon as the exams are approaching. Write a notice in about 50 words for the school notice board.

(or)

B) Every year in the central park of city a flower show is held in month of February. Your school has received a circular from the district collector inviting your students to visit it. The District Collector will himself teach the students about the Variety of flora. Write a notice about in about 50 words informing the students about the show and advising them to go and attend the class by the District Collector. You are Navtej / Navita, Head boy / Head girl St. Smith school, Mumbai.

4 Attempt **any one** from A and B given below: (5marks)

A) You are Natasha, residing in Pune. Your cousin, from the same city is hosting your grandmother's eightieth birth anniversary and has extended an invite to you. He has also requested your assistance for arrangements needed. Draft a reply of acceptance, in not more than 50 words.

(or)

B) Your school , Bal Vidya Mandir is Planning to organize the Annual sports day in the school premises. Draft a formal invitation in not more than 50 words for the event giving all the essential detail.

5. Attempt **any one** from A and B given below: (5marks)

A) National Book Trust organised a week – long book fair at Anna grounds, Chennai. You visited the fair and bought a few books, You were pleased with the arrangements, enthusiasm of the visitors and the fact that books have not yet lost their relevance in the world of the Internet. Write a letter in 120-150 words to the editor of a local newspaper to express your feelings. You are Lalit / Latha, 112, Mount Road, Chennai.

(or)

B) You are Niharika Jain 15 – D Pitampura New Delhi Pitampura, New Delhi. You have seen an advertisement in “The Hindustan Times” for the past of Marketing Manager. Apply with a complete bio – data for the same General Manager, Bansal Pvt, Ltd, Gurgaon.

6. Attempt **any one** from A and B given below: (5marks)

A) As compared to the older generation, the youth of today are greatly inclined to pursue adventurous activities either for money or fun. There is a latest craze for joining reality shows, rafting, rock climbing, mountain erring , etc.. Write an article in 150 – 200 words on “which life would you prefer safe or adventurous?”

(or)

B) The efforts of 400 volunteers working with the NGO, 4 literacy , in the district of Malkangiri, Odisha, was lauded by the District Collector, Shri V. Singh (IAS). As a staff reporter of 'The Odisha Bhaskar", write a report about this in 120-150 words covering all the details, such as training, teaching and infrastructure involved in the 'Each One Teach One' campaign, initiated by the district administration in association with the NGO.

SECTION – C (Creative Writing Skills) (40marks)

7. Read the passage given below and attempt any **one** of the two given by answering the questions: (6x1=6)

A) “Aunt Jennifer's tigers prance across a screen,
Bright topaz denizens of a world of green.
They do not fear the men beneath the tree;
They pace in sleek chivalric certainty.

i) Aunt Jennifer’s tiger are not real as they _____
a) are kept as a showpiece in her home b) have been embroidered on panels
c) float around in a tub d) are never seen fighting

ii) The tigers are _____
a) not afraid a Aunt Jennifer b) afraid of Aunt Jennifer
c) dull and afraid d) not afraid of the men beneath the trees

iii) The poem is a depiction of _____
a) Valiant nature of tigers b) Aunt Jennifer troubled married life
c) Aunt Jennifer’s happy married life d) happiness and success

iv) Pick out the word that means the same as ‘Chivalric”.
a) Valliant b) understanding c) coward d) mischievous

v) What figure of speech has been used in the second line “ bright topaz denizens”?

vi) Choose the option that does NOT reflect what the tigers represent in the poem?
a) Aunt Jennifer’s undying hopes b) Aunt Jennifer’s failing marriage
c) Aunt Jennifer artistic merit d) Aunt Jennifer frustrations

(or)

B) “It would not be fair to say for a dole of bread,
But for some of the money the cash, where flow supports
The flower of cities from sinking and withering faint”.

i) What does “It would not be fair to say for a dole of bread imply?
a) do not plead for bread b) wait in vain to get some money for their sustenance
c) yearn for some city money d) do not expect money for sustenance

ii) ‘The flower of cities from sinking and withering faint’. The poetic device used in the line is
a) Smile b) personification c) metaphor d) Irony

iii) Who are supported by the flow of money?
a) city dwellers b) peasants c) roadside stand d) fisherman
iv) What does words 'withering faint' man?
a) despair b) lacking conviction or enthusiasm c) happiness d) dream
v) Some of cash from cities sustains peasants (Say True / False)
vi) The peasants prefer cash to charities as the charities cannot support them and provide them with all basic _

8. Read the extracts given below and attempt any ONE by answering the questions that follow: (4)
A) Mr LAMS : So you believe everything you hear , than?
DERRY : It was cruel
Mr. LAMB : May be not meant as such, Just something said between them
DERRY : Only i heard it, i heard
Mr LAMB : And is that the only thing you ever heard anyone say, in you life?
DERRY : Oh no! I' ve heard a lot of things
Mr. LAMB : So now you keep your ears shut
i) What had Derry heard that he found cruel?
a) An animal being beaten b) Terrible things about his face
c) The cries of a child d) Gossip about some domestic abuse
ii) Mr. Lamb advised Derry to do something what was it?
a) take some rest b) make more friends c) be more outspoken d) keep his ears shut
iii) Why did Derry wish to be left alone?
a) Because of his scarred face b) Because of his own insecurities
c) Because he feared people's comments d) all of these
iv) After listening to Mr. Lamb's views , Derry found him very _____
a) odd b) peculiar c) familiar d) entertaining
(or)
B) "But this eating by formula was not the hardest trial in that first day. Late in the morning, my friend Judewin gave me a terrible warning. Judewin knew a few words of English; and she had overheard the paleface woman talk about cutting our long, heavy hair. Our mothers had taught us that only unskilled warriors who were captured had their hair shingled by the enemy. Among our people, short hair was worn by mourners, and shingled hair by cowards!
We discussed our fate some moments, and when Judewin said, "We have to submit, because they are strong," I rebelled.
i) This eating by formula was not the hardest trial in that first day". This means that Zitkala – sa _____
a) was not aware of the tradition of eating by formula b) was happy to take breakfast by formula
c) was fascinated by the tradition of eating d) already knew the formula
ii) "Late in the morning , my friend Judewin gave me a terrible warning;: The terrible warning was that the paleface women would_____
a) invite Zitkala and Judewin at her house for dinner b) cut their long, heavy hair
c) bob their hair for good look d) suggested new haircut method
iii)" Our mothers had taught us that only unskilled warriors who were captures had their hair shingled by the enemy" This indicates _____
a) praise for the unskilled warriors b) punishment for the unskilled warriors
c) lesson for the unskilled warriors d) blunders for the unskilled warriors
iv) 'Among our people, short hair was worn by mourners, and shingled hair by cowards! 'This implies that it ___
a) was not aware of the tradition of eating by formula b) cut their long , heavy hair
c) punishment for the unskilled warriors d) signified their humiliation

9. Read the extracts given below and attempt any ONE of the two given by answering the questions: (6x1=6)
"In those days I worked in a cubicle, two whole sides of which were French windows. (I didn't know at that time they were called French windows.) Seeing me sitting at my desk tearing up newspapers day in and day out, most people thought I was doing next to nothing. It is likely that the Boss thought likewise too. So anyone who felt I should be given some occupation would barge into my cubicle and deliver an extended lecture. The 'boy' in the make-up department had decided I should be enlightened on how great literary talent was being allowed to go waste in a department fit only for barbers and perverts. Soon I was praying for crowd-shooting all the time. Nothing short of it could save me from his epics.

i) 'In those days i worked in a cubicle'. This means that the author.
a) worked in a small room b) was doing nothing sitting in the room
c) was writing stories d) was playing the piano
ii) 'It is likely that the Boss thought likewise too'. This reveals that the Boss _____
a) had bad impression about the author
b) though that the writer was simply tearing up the daily newspaper
c) liked the writer for stories
d) thought that the writer was idling away his time
iii) 'I should be enlightened on how great literary talent was being allowed to go waste'. This reveals that the by _____
a) told the written how his great literary talent was being wasted in the studio
b) Was enlightened to find the writer's fault
c) suggested the writer to be cautious
d) was not in the good books of the writer

iv) 'Soon I was praying for crowd shooting all the time'. This implies that the writer was so tired of him that he prayed for _____

a) crowd shooting all the time b) drawing some picture
c) acting is the Gemini studio d) painting the hall with pancakes

v) The 'boy' in the make up department decided to enlighten the author (say True / False)
vi) The phrasal verb 'barge into' means _____

(or)

B) Jansie, knowing they were both earmarked for the biscuit factory, became melancholy. She wished Sophie wouldn't say these things. When they reached Sophie's street Jansie said, "It's only a few months away now, Soaf, you really should be sensible. They don't pay well for shop work, you know that, your dad would never allow it." "Or an actress. Now there's real money in that. Yes, and I could maybe have the boutique on the side. Actresses don't work full time, do they? Anyway, that or a fashion designer, you know — something a bit sophisticated". And she turned in through the open street door leaving Jansie standing in the rain.

i) Jansie knowing they were both earmarked for the biscuit factory, become melancholy. This indicated that____

a) Jansie and Sophie were different on their views b) Sophie lived in a world of fantasy
b) Both Jansie and Sophie were not practical d) Sophie did not like to work in a biscuit factory

ii) 'You really should be sensible'. This implies that _____

a) Sophie should be sensible and practical in life
b) She did not have money to open a boutique like Mary Quant
c) She wanted to become an actress and earn money
d) She should follow Jansie

iii) 'Your dad would never allow it'. This means that _____

a) Sophie's father would not allow her to open a boutique shop like Mary Quant
b) Her father would not allow her to see football match
c) her father did not like her playing on the street
d) her father wanted Sophie to be practical in life

iv) 'Anyway, that or a father designer, you know – something a bit Sophisticate'. This reveals that _____

a) Sophie imagined herself as a fashion designer
b) She aspired for a career that would be considered 'Sophisticate'
c) She was in a dream world
d) Sophies thought was unrealistic

v) The expert shows fashion designing more Sophisticated than acting (say True / Fase)
vi) _____ father would not allow shop work

10. Attempt any **FIVE** out of six questions given below in 40 – 50 words: (5x2=10)

a) Gandhi alleviated not only the economic conditions of the people of champaran but also their social and cultural life . Justify?
b) What are the difficulties that Aunt Jennifer faces in her life?
c) Who in today's world is our chief source of information about personalities?
d) Why are cars called selfish?
e) How different is Jennie from Sophie?
f) What make the lawyer stand out from the others at Gemini Studios?

11. Attempt any **TWO** of the three questions given below in 40 – 50 words each: (2x2= 4m)

a) In what sense is the friendship between Mr. Lamb and Derry fruitful?
b) What help Dr. Sadao seek from Hana while operating on the wounded white man?
c) What were Zitkala sa's objection to the cutting of hair?

12. Attempt any **ONE** of the following in 120 – 150 words: (5marks)

a) Attempt a character Sketch of Sophie as a women who lives in her dreams?

(or)

b) Explain how the Road side stand is evidence of the decline of agricultural prosperity. Substantiate with reference to the text

13. Attempt any **ONE** of the following in 120 – 150 words: (5marks)

a) How did Dr. Sadao resolve the conflict in his mind between his loyalty to his country and his duty as October?

(or)

b) Both Derry and Mr. Lamb suffered physical and emotional damage, but Derry has a lot of anger inside him while Mr. Lame is serene. What will it take Derry to grow into someone like Mr. Lamb?

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JAWAHAR HIGHER SECONDARY SCHOOL, CBSE – NEYVELI

CLASS: XII **FIRST PORTION EXAM (2022 – 2023)** **MARKS: 80**

DATE: 23.01.2023 **ENGLISH (CODE – I)** **TIME: 3Hrs**

General instructions:

i) This paper is divided into three sections, section A, B and C.
ii. All the sections are compulsory.
iii) Read the instructions given with each section and question wherever necessary
iv) Read these instructions carefully

SECTION – A (Reading)

I. Read the passage given below:

THE FUTURE OF TOURISM

(1) Deep in the heart of summer and a dystopian present, if there's one desire that people share with each other now, it is to escape. If you are lucky enough to be able to take a vacation sometimes and haven't yet this year - it's best to get to it while you still can, because tomorrow's vacation, predictably, is going to be complicated.

(2) As we head into the future, artificial intelligence will grow even better at predicting exactly what sort of holidays we'd like, based on our taste, and packaging the whole experience for us. So, expect those decisions to take far less time. Within a couple of decades, we'll just be telling our digital assistants our travel dates and companions letting them handle the rest. It won't all be perfectly predictable though.

(3) Climate change will mean that many summer destinations will become less idyllic leading to tourism switching to new places. The deepening climate crisis will also lead to various regions becoming more dangerous in terms of hurricanes and tsunami risks Heading further into the future, we are also going to see a few travel experiences disappear because of the damage we are doing to the environment. Visit coral reef and go on a safari as soon as possible - if those are on your bucket list - those plants and animals might not be there for much longer. New experiences will arrive, on the other hand - giant malls in the Middle East are already providing experiences from skiing to diving indoors.

(4) Another inevitable prospect is regulation. Most major tourist hubs are already groaning under the influx of thousands of holidaymakers, so expect higher tourist taxes, or even limits on the number of tourists allowed. After all, we live in a time where even Mount Everest is over-crowded with tourists! There's also likely to be political instability worldwide, of course, but you will have to look beyond travel. Al will keep track of that. Plane travel might not get significantly faster, but airlines will deploy lower carbon footprint technology, airport check-ins will turn biometric to more invasive, but more efficient, they'll claim - and luggage will get smarter and more difficult to lose despite airlines' best efforts. You will have more stay options- post Airbnb home-renting experiences, social travel companies and new tools for interfacing between tourists and locals.

On the basis of your understanding of the above passage, answer the following questions: 1x 10 = 10

(A) Author's suggestion to take a vacation while one still can, is intended to
a) Create awareness about the environmental changes b) Criticize the readers
c) Elope the readers d) Complicit the readers

(B) leading to tourism switching to new places" Pick the option in which the meaning of 'switching' is NOT the same as it is in the passage.
a) The organization is switching the supply of goods to new customers to increase its sales.
b) A couple of farmers are switching from inorganic farming to organic farming in order to reduce soil erosion.
c) Switching off the unnecessary electronic items would save the electricity and lower the expenses.
d) Many UN Women conventions are switching their campaigns from gender equality to gender equity.

(C) Based on your understanding of the passage, choose the option that lists the correct sequence of the information delivered in the passage about the future of tourism
I) Climate change will affect a lot of summer destinations due to environmental risks
II) The increase in the number of tourists will expect an increase in the tourist's taxes and tourism regulations.
III) People desire to escape from their everyday lives and go for a vacation
IV) In future, artificial intelligence will take over the task of predicting, packaging and handling the vacations for people.
V) However, there would be new experiences with coming up of man-mode tourist spots.
a) (IV), (III). (V). (I). (II) b) (III), (IV). (I). (V). (II)
c) (IV). (III). (I). (V). (II) d) (III), (IV). (V). (I). (II)

(D) The author mentions that climate change will mean that many summer destinations will become less idyllic 'Less idyllic means, being
a) Unattractive b) Inexpensive c) Inaccessible d) Imperfect

(E) Choose the option that best captures the central idea of the passage from the following:
a) The future of tourism is very dark due to increase in climate change and influx of thousands of tourists at holiday hubs.
b) There is a shift in the future of tourism with the tourists visiting the man-made tourist spots more than the natural tourist spots
c) The association of tourism with artificial intelligence has taken the tourism sector to greater heights by making it accessible to all and contributing in climate change.
d) In future, tourism will grow better in association with artificial intelligence, however, one might not be able to enjoy natural tourist spots due to the climatic crisis

F) Author suggests the readers to visit coral reef and go on a safari as soon as possible if those are on our bucket list - those plants and animals might not be there for much longer. Why is it so?

a) because of the association of artificial intelligence with tourism
b) due to growth in man-made tourist spots.
c) because of the regulation on tourism.
d) due to environmental degradation by humans.

G) According to the author, in future we would see a few travel experiences disappear because of the damage we are doing to the environment, shows that humans are

a) Anti-Libertarian b) Anti-Conservationist c) Anti-Rationalist d) Anti-Materialistic

H) Pick the option showing the CORRECT use of the word 'inevitable:

a) Mistakes are inevitable. b) it is important to inevitable the burdens of life.
c) He met inevitable to his demise. d) Shift in the work does not inevitable the success.

I) Pick the option which correctly states what DOES NOT contribute in the future of tourism:

a) Climate Changes b) Tourism Regulation
c) Environment Conservation d) Artificial Intelligence

J) The author mentions that regulation is an inevitable prospect in tourism because

a) of association with artificial intelligence b) of change in climate
c) of man-made tourist spots d) of over-crowded tourist spots

II. Read the passage given below:

1) Conflict between people takes the form of assertiveness, aggression and violence. Is fuel led by many factors including greed, selfishness, desire, jealousy, envy, fear hate, and lust for power. From the perspective of yogic philosophy, these fuels for conflict are all caused by our clouding of our perception called 'avidya. Because of 'avidya' we do not recognise our true spiritual kinship with other people, and we are prone to experience those fuels of conflict. These fuels are widely varied, but have one commonality, experience of any of these emotions or desires is done from the 'I' perspective. People who feel these emotions want more or less of something for themselves, as compared to what they see in other people. These people do not identify with others but feel separated from them, left out or isolated.

2) Two powerful tools exist to reduce the effect of these "fuels" within ourselves cultivating theright attitude, and behaving in constructive ways. Some of us feel envious or jealous when we see another who is happy, successful or content. We may feel disgust or even hatred at the sight of a drifter or a drug addict. We need a change in attitude, a change that will help us purify our minds and become more peaceful. We should practise being pleased when we see someone who is happy. We should try to be compassionate towards those in misery, and be joyful to see the virtues of another. In cultivating this attitude, we become more accepting of the world and more peaceful towards others. Non-possessiveness can be practised, as can contentment.

3) Our behaviour how we act includes both how we treat others, and how we treat ourselves. To become satisfied in our lives and more peaceful in our treatment of others, we should practice non-violence, truthfulness and non-stealing. These qualities help us become happier in our lives and less aggressive towards others. We should decide what is proper here. Practising meditation is also known to reduce stress and increase happiness.

4) A study was conducted to examine how meditation frequency (from daily to non- practice) is related to greater happiness, and how dispositional mindfulness and self- compassion could be mediating this relationship. Correlations analyses were conducted for the frequency of meditation practice, dispositional mindfulness (FFMQ), self- compassion (SCS-SF) and happiness (PHI). The results from the data collected by 365 participants through survey showed that the mind-fullness and self-compassion scales were positively and significantly correlated with the happiness measure. Furthermore, as expected, frequency of meditation was positively and significantly correlated with the mindfulness scales, the self-compassion scales and happiness.

Mindfulness scales	Frequency of mediation	Happiness
Observing	.445**	.387**
Describing	.210**	.398**
Acting with awareness	.137**	.347**
Non-judging	.327**	.391**
Non-reactivity	.442**	.499**
FFMQ total score	.441**	.555**
Self-compassion scales		
Self-kindness	.377**	.598**
Common humanity	.344**	.558**
Mindfulness	.421**	.546**
SCS total score	.424**	.630**
Happiness	.222**	-

On the basis of your understanding of the above passage, answer the following questions: 1x 10 = 10

(A) According to the passage, what is 'I' perspective is associated with?

a) Individualism b) Isolation c) Selfishness d) Self-compassion

(B) Pick the options that lists statements that are NOT TRUE according to the passage.

I) The fuels that originate conflict among people are all caused by the clouding of our perception called 'avidya'.

II) Cultivating right personality and behaving in co curricular ways are two powerful tools to reduce the effect of these "fuels" within ourselves.

III) Meditation helps to reduce stress and increase happiness.

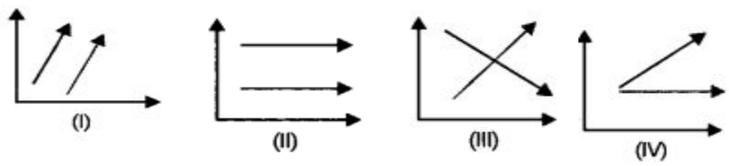
IV) The results of the study conducted revealed the correlation of the happiness index with self-care and love.

a) (II) and (III) b) (III) and (IV) c) (II) and (IV) d) (IV) and (1)

(C) The word 'contentment' as used in paragraph 2, means same as:

a) Satisfaction b) Disappointment c) Convenience d) Enchantment

(D) Based on the graphical representation, choose the option that correctly states the depiction of the positive correlation of the two variables - mindfulness and self- compassion scales with happiness measures.



a) Option (I) b) Option (II) c) Option (III) d) Option (IV)

(E) "These fuels are widely varied, but have one commonality." What is 'one commonality' the author is referring to:

a) Egocentrism b) Avidya c) Possessiveness d) Discontentment

(F) Based on the findings of the research, mentioned in the paragraph 4 of the passage, choose the option that lists the statements that are TRUE.

I) Mindfulness and self-compassion are the two variables that mediate the relationship between happiness and the frequency of meditation.

II) Higher mindfulness and self- compassion results in greater happiness.

III) Higher frequency of meditation results in greater happiness.

IV) The frequency of meditation increases with the increase in mindfulness and self-

(a) (I) and (II) b) (III) and (IV) c) (I) and (III) d) (I) and (IV)

(G) Based on data representation in Table 1, pick the option which contributes the most in happiness measure:

a) FFMQ Total score b) both FFMQ and SCS total score

c) SCS Total score d) FFMQ and Happiness score

(H) In the study conducted, the reaction of the 365 participant's reveal that:

a) Happiness and frequency of meditation was correlated to each other with .01 error.

b) Happiness measures increases with the decrease in the self-compassion scales.

c) Mindfulness is the only variable which mediates relationship between frequency of meditation and
\ happiness.

d) Self-compassion scales are positively correlated with happiness measures.

(I) Which of the following statements is NOT substantiated by information in paragraph 3?

a) In an order to stay happy and stress-less, one should practice meditation.

b) The qualities of non-violence, truthfulness and non-stealing helps ones to become happier and less aggressive towards others.

c) To practice satisfaction and peace in life, one should follow non-violence, truthfulness and stealing.

d) How we act includes, how we treat others as well as how we treat ourselves.

(J) Based on your understanding of the passage, choose the option that lists the correct sequence of the information delivered to the reader.

I) Cultivating the right attitude, and behaving in constructive ways can reduce the effect of conflicts.

II) In cultivating this attitude, we become more accepting of the world and more peaceful towards others.

III) According to yogic philosophy, conflicts are all caused by our clouding of our perception called 'avidya'.

IV) Conflict between people takes the form of assertiveness, aggression and violence.

a) (III), (IV),(II), (I) b) (I), (II), (IV), (III) c) (IV). (III), (I), (II) (d) (III), (IV). (I), (II)

SECTION – C (Literature)

7. Read the given extract and answer the questions that follow: (6)

A. And such too is the grandeur of the dooms
We have imagined for the mighty dead,
All lovely tales that we have of read,
An endless fountain of immortal drink,
Pouring unto us from the heaven’s brink

i) Which of the following does the grandeur of the dooms “refer to?

a) the stories told to commemorate the dead
b) The forests grown to give shelter to people
c) The fountains built in honour of beauty
d) the monuments erected to honour the heroes

ii) Which poetic device is used in this line – “We have imagined for the mighty dead”-

a) Oxymoron b) Apostrophe c) Assonance d) Symbol

iii) Whose tabs has the poet heard or read?

a) The joy of beauty b) The eternal fountain c) The heroic dead d) Gods and Goddesses

iv) Which of the following pours from the heavens according to the poet?

a) Water b) beauty c) Streams d) grandeur

v). All lovely tales evoke the feeling of

a) Sadness and nostalgia b) Only nostalgia c) Inspiration and Pride d) Only pride

(or)

B Pick out the Rhymming words from the extract.

. Sometimes I feel myself I con hardly bear
The thought of so much childish longing in Vain
The sadness that lurks near the open window there
That waits all day in almost open prayer
For the squeal of the brakes, the sound of a stopping car

i) Why does the poet call the farmer’s longing childish?

a) Because it sounds like a childish thing to do
b) Because it has an obsessive quality to it.
c) Because the farmers have children
d) Because he empathises with the farmers.

ii) Why does the poet say, “Sometimes I feel myself I can hardly bear”?

a) Because the poet observes the farmer’s plight
b) Because the knew the roadside stand farmer.
c) Because he has relatives who are farmer.
d) Because he empathises with the famers.

iii) Bring out the poetic devics used in, “The sadness that lurks near the open window there”-

a) Personification b) transferred epithet c) satire d) metaphor

iv) Which of the following words from the extract mean ‘screech’?

a) longing b) sadness c) brakes c) squeal

v) Pick the option with the slogan that is likely to be used by a person selling at the roadside stand.

slogan – 1. Men and women in equality, a road to dignity.
slogan – 2. By the people and for the people.
Slogan – 3 I see humans but no humanity
Slogan – 4 Corruption, corruption, you leave my country, That’s all I pray

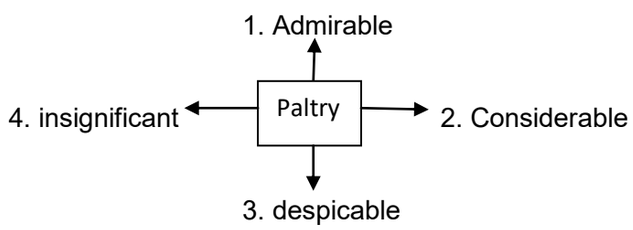
a) Slogan 1 b) Slogan 2 c) Slogan 3 d) Slogan 4

vi) The above extract is taken from the poem ---------- written by

8. Read the extract and answer the question given below: (4)

A. Human civilisations have been around for a paltry 12000 years – barely a few seconds on the geological clack. In that short amount of time, we’ ve managed to create quite a ruckus, etching our dominance over nature with our villages, towns, cities, megacities. The rapid increase of human populations has left us battling with other species for limited resources and the unmitigated burning of fossil fuels has now created a blanket of carbon dioxide, around the world which is slowly but, surely increasing the average global temperature.

i) Choose the two meanings of “paltry”



a) (1) & (2) b) (2) & (3) c) (3)& (4) d) (4) & (1)

ii) Which of the following issues does the author hint at when she writes, “etching our dominance over Nature with our villages, towns, cities, megacities”.

a) Deforestation b) Health care c) Population growth d) racial justice

a) 1 & 3 b) 2 & 3 c) 3 & 4 d) 1 & 4

Complete

iii) Human beings are etching our dominance over

iv) Journey to the End of the Earth was headed by

a) Geoff Green b) Thomas Richard c) Christopher Green d) None of the above

(or)

B. I felt so provoked and angry that I wanted to touch those wretched readais myself straightaway. Why should we fetch and carry for these people. I wondered. such an important elder of ours goes meekly to the shops to fetch snacks and hands them reverently, bouring and shrinking to this fellow who just sits there and stuffs them into his mouth. The thought of it infuriated me.

1. The elder handing snacks reverently, bowing and shrinking to the fellow indicates that the 'fellow' was
   i) condescending 2) unassuming 3) Submissive 4) disdainful
   5) aggressive 6) domineering
   a) 2, 3 & 6 b) 1, 4&5 c) 1, 4&6 d) 2, 3 & 4
2. Pick an idiom that Does Not describe how the author felt about this incident –
   a) At the end of one's tether b) Be in a black mood
   c) Up in arms d) Throw up one's hands.
3. Based on the given context, choose the option that illustrates when a person can be provoked, out of the examples given below.
   1) The emplo0yees organised a peaceful protest outside the firm
   2) The manager ill – treated one of the employees and wrongfully terminated him.
   3) The employees wrote a letter of complaint against the manager.
   4) The director of the firm scheduled a meeting for reconciliation
   a) 1 b) 2 c) 3 d) 4
4. The given extract Does Not talk about
   a) author's realisation of her misconception b) elders being ill – treated in her society
   c) The haughtiness of the fellow d) how the author was enraged.

9. Read the given extract and answer the Questions that follow. (6)

A. Then all effort ceased, I relaxed. Even my legs felt limp, and a blackness swept over my brain. It wiped out fear, it wiped out terror. There was no more panic. It was quiet and peaceful. Nothing to be afeaid of. This is nice ---------- to be drowsy --------- to go to sleep ---------- no need to jump ---------- too tired to jump ---------- it's nice to be carried gently to float along in space ---------- tender arms around me ---------- tender arms like mother's ---------- now I must go to sleep ---------- I crossed to oblivion, and the curtain of life fell.

1) Choose the correct option with reference to the two statements given below.
   Statement: 1. The author tried his best to jump out of water.
   Statement: 2. After a while, the author was not anxious in water
   a) If statement I is the cause, statement 2 is the effect.
   b) If statement I is the effect, statement 2 is the cause.
   c) Both the statements are the effects of a common cause.
   d) Both the statements are the effects of independent cause.
2. When the author was nearly drowning how did he feel?
   a) He felt paralysed and rigid b) He felt choked c) He screamed d) All of the above
3. The author sucked water instead of air when he was going down the third time' – How did his brain work?
   a) His brain stopped working b) He felt gripped by a super force
   c) Blackness swept over his brain d) He felt limped and his brain stopped working
4. The curtain (of life) fell' corresponds to an aspect of
   a) Geometry b) History c) Sports d) drama
5. The purpose of using ' --------' in the above passage is to
   a) show omission b) Indicate pauses c) Shorten a dialogue d) replace an idea
6. Which option indicates that the poet lost consciousness?
   a) 'It was quiet and peaceful b) 'I crossed to Oblivion
   c) Tender arms like mother's d)'It wiped out fear"

(or)

B. Umberto Eco. No Journalists are puzzled. And sometimes publishers. And this is because journalists and publishers believe that people like trash and don't like difficult reading experiences. Consider there are six billion people on this planet. The name of the Rose sold between 10 and 15 million copies so in a way I reached only a small percentage of readers. But it is exactly these kinds of readers who don't want easy experiences. Or at least don't always want this. I myself, at 9pm after dinner, watch television and want to see either "mimai Vice" or 'Emergency Room'. I enjoy it and I need it. But not all day".

1. From the extract what does 'trash' mean here?
   a) books that are not challenging to read b) books that are not easily available
   c) books that are from second hand stores d) books that are priced really low
2. It can be inferred that ---------- is a difficult reading experience for the reader
   a) Miami Vice b) The name of the Rose c) Emergency Room d) Eco's interview
3. What is Umberto Eco's altitude towards his readers?
   a) He doesn't think much of them b) He expects to get their feedback
   c) He appreciates their efforts d) He thinks they should read more
4. What is Eco's altitude towards watching television?
   a) It should have mare detective stories b) It should not be watched at all
   c) It can be watched for a short while d)
5. What makes Christopher silvester qualified to write the introduction to the Penguin book of interviews?
   a) He had written may introductions before. b) He had written features for vanity fair
   c) He was a student of history of Cambridge. d) He was a reporter for Private Eye for ten years

10. Answer any **five** of the following briefly: (5x2=10)

a) 'Separation Anxiety" is the psychological term for anxiety that children feel when they are away from their parents – Justify with reference to the poem "my mother at sixty six?

b) How does Sophies father react when Geoff tells him about her meeting with Danny Casey?

c) What role does Savitho play in Bangle making?

d) Why was Gandhi opposed to Charles F Andrews helping him in Champaran ?

e) What does Pablo Neruda mean when he says, 'I want no truck with death" in the poem keeping Quiet?

f) Why did Aunt Jennifer create animals that are different from her own character.

11. Answer any **two** of the following questions briefly: (2x2=4)

a) In what condition did Dr. Sado find the American soldier at the sea-shore?

b) Explain, "I was only one of many little animals driven by a herder"? (memories of childhood)

c) Why did Derry go back to Mr. Lamb is garden even after opposition?

12. Answer any **one** of the following: (5)

Imagine a car stops and actually buys from the roadside stand. Keeping in mind the reaction you think the peasants would have, write a diary entry as the farmer describing not only your immediate experience but also your after – thoughts on being able to eary 'city – money'.

you may begin this way

Wednesday, 2nd march XX9 pm.

We had an unexpectedly good day today! ----------

(or)

Compare and contrast the two visits by artists from foreign countries at Gemini studios in madras.

13. Answer any **one** of the following: (5)

Imagine you are a journalist who writes about social justice. write an article about the oppression faced by Bama

(or)

"Things that matter. Things nobody else has ever said. Things I want to things about. What are the things that Derry is referring to and how did Derry's chance meeting with Mr. Lamb prone meaningful to him'

JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

CLASS: XII **FULL PORTION EXAMINATION – (2022 – 2023)** **MARKS: 80**

DATE: 04.01.2023 **MATHEMATICS (CODE – I)** **TIME : 3 hrs**

GENERAL INSTRUCTIONS:

(i) This question paper contains – five sections A , B , C , D and E. Each section is compulsory. However, there are internal choices in some questions.

(ii) Section – A has 18 MCQ's and 02 Assertion – Reason based questions of 1 mark each.

(iii) Section – B has 5 very short answer (VSA) type questions of 2 marks each

(iv) Section – C has 6 short answer type (SA) questions of 3 marks each

(v) Section – D has 4 long answer (LA) type questions of 5 marks each

(vi) Section – E has 3 source based / case based / passage based / integrated unit of assessment (4 marks each) with sub parts.

SECTION – A

1. Given a matrix $A = [a_{ij}]$ of order 3×3 whose elements $a_{ij} = \frac{(2i-j)^2}{i+j}$, then the elements a_{32} of matrix A is

   (a) 12 (b) 18 (c) $^{16}/_{5}$ (d) $^{15}/_{4}$

2. What is the principal value of $sin^{-1}\left(^{-1}/_{\sqrt{2}}\right)$?

   (a) $^{\pi}/_{4}$ (b) $^{-\pi}/_{4}$ (c) $^{-\pi}/_{3}$ (d) $^{-\pi}/_{6}$

3. If $\begin{vmatrix} 4 & 1 \\ 2 & 1 \end{vmatrix}^2 = \begin{vmatrix} 3 & 2 \\ 1 & x \end{vmatrix} - \begin{vmatrix} x & 3 \\ -2 & 1 \end{vmatrix}$ then the value of x is

   (a) 6 (b) 3 (c) 7 (d) 1

4. The value of K for which the function

   $f(x) = \begin{cases} \frac{1-\cos 4x}{8x^2} & , \ if \ x \neq 0 \\ K & , \ if \ x = 0 \end{cases}$ is continuous at $x = 0$

   (a) 0 (b) -1 (c) 1 (d) 2

5. $\int_{1}^{\sqrt{3}} \frac{dx}{1+x^2}$ is equal to

   (a) $^{\pi}/_{3}$ (b) $^{2\pi}/_{3}$ (c) $^{\pi}/_{12}$ (d) $^{\pi}/_{6}$

6. If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ then $A + A' = I$

   (a) $^{\pi}/_{3}$ (b) $^{\pi}/_{6}$ (c) π (d) $^{3\pi}/_{2}$

7. The general solution of the differential equation $\frac{y\,dx - x\,dy}{y} = 0$ is

   (a) $xy = C$ (b) $x = Cy^2$ (c) $y = Cx$ (d) $y = Cx^2$

8. If A is a square matrix of order 3 and $|A| = 5$ then $|adj\ A| =$

   (a) 5 (b) 25 (c) 125 (d) $^{1}/_{5}$

9. The angle between the unit vectors $\widehat{a}$ and $\widehat{b}$ given that $\left|\widehat{a} + \widehat{b}\right| = 1$ is

   (a) $^{\pi}/_{2}$ (b) $^{\pi}/_{6}$ (c) $^{\pi}/_{4}$ (d) $^{2\pi}/_{3}$

10. P is a point on the line joining the points $A\,(0\,,5\,,-2)$ and $B\,(3\,,-1\,,2)$. If the $x-$ coodinate of P is 6 then its $z-$ coordinate is

    (a) 10 (b) 6 (c) -6 (d) -10

11. Let $Z = Px + qy\,,(p\,,q\ > 0)$ the corner points of the feasible region determined by the system of linear constraints are $(0\,,3)\,,(1\,,1)$ and $(3\,,0)$. Condition on p and q so that the minimum of Z occurs at $(3\,,0)$ and $(1\,,1)$ is

    (a) $p = q$ (b) $P = \frac{q}{2}$ (c) $P = 2q$ (d) $P = 3q$

12. A card is picked at random from a pack of 52 playing cards. Given that the picked card is a queen, the probability of this card to be a card of spade is

    (a) $\frac{1}{3}$ (b) $\frac{4}{13}$ (c) $\frac{1}{4}$ (d) $\frac{1}{2}$

13. If $f'(x) = x + \frac{1}{x}$, then $f(x)$ is

    (a) $x^2 + \log|x| + C$ (b) $\frac{x^2}{2} + \log|x| + C$ (c) $\frac{x}{2} + \log|x| + C$ (d) $\frac{x}{2} - \log|x| + C$

14. The sum of Cofactors of 7 and 12 in the determinant $\begin{vmatrix} 1 & 2 & 4 \\ 5 & 7 & 8 \\ 9 & 10 & 12 \end{vmatrix}$ is

(a) -27 (b) -24 (c) -18 (d) 0

15. Differentiate $sin^2\,(x)^2$ with respect to x^2

(a) $sin^2\,x^2\cos x^2$ (b) $2\,sin\,(x^2)\cos(x^2)$ (c) $sin^2\,x^2\cos x$ (d) $2\,sin^2\,x\,cos^2\,x$

16. The number of arbitrary constants in the particular solution of a differential equation of second order is (are) :

(a) 0 (b) 1 (c) 2 (d) 3

17. The value of p for which $P(\hat{\imath}+\hat{\jmath}+\hat{k})$ is a unit vector is

(a) 0 (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\sqrt{3}$

18. The length of the perpendicular drawn from the point $(4\,,-7\,,3)$ on the y axis is

(a) 3 units (b) 4 units (c) 5 units (d) 7 units

ASSERTION – REASON BASED QUESTIONS:

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

19. Assertion (A) : For the constraints of linear optimizing function $Z=x_1+x_2$ given by $x_1+x_2\le 1\,,3x_1+x_2\ge 1$ there is no feasible region

Reason (R) : $Z=7x+y$ subject to $5x+y\le 5\,,x+y\ge 3\,,\ x\ge 0$ out of the corner points of feasible region $(3\,,0)\,,\left({}^{1}/_{2}\,,{}^{5}/_{2}\right),(7\,,0)$ and $(0\,,5)$ the maximum value of Z occurs at $(7\,,0)$

20. Assertion (A) : The vector equation of the line through the points $(3\,,4\,,-7)$ and $(1\,,-1\,,6)$ is $(x-3)\,\hat{\imath}+\,(y-4)\,\hat{\jmath}+(Z+7)\hat{k}=\,\lambda\,(-2\hat{\imath}-5\hat{\jmath}+13\hat{k})$

Reason (R) : The vector equation of a line passes through two vectors $\vec{a}$ and $\vec{b}$ is given by $\vec{r}=\vec{a}+\lambda\,(\vec{b}-\vec{a})$

SECTION – B

21. If $\vec{a}=\hat{\imath}-\hat{\jmath}+7\hat{k}$ and $\vec{b}=\,5\hat{\imath}-\hat{\jmath}+\lambda\,\hat{k}$, then find the value of λ so that the vectors $\vec{a}+\vec{b}$ and $\vec{a}-\vec{b}$ are orthogonal

22. Prove that $3\,cos^{-1}\,x=cos^{-1}\,(4x^3-3x),\ x\in\left[\frac{1}{2}\,,1\right]$

(or)

Let $A=R-\{3\}$ and $B=R-\{1\}$. Consider the function $f:A\to B$ defined by $f(x)=\frac{x-2}{x-3}$. Is f is one to one and onto. Justify your answer

23. Find $\frac{dy}{dx}$: $y=sin^{-1}\left[\frac{2x}{1+x^2}\right]$

24. If $\vec{a}=2\hat{\imath}-\hat{\jmath}-2\hat{k}$ and $\vec{b}=\,7\hat{\imath}+2\hat{\jmath}-3\,\hat{k}$, then express $\vec{b}$ in the form of $\vec{b}=\,\vec{b_1}+\,\vec{b_2}$ where $\vec{b_1}$ is parallel to $\vec{a}$ and $\vec{b_2}$ is perpendicular to $\vec{a}$

(or)

Find the direction ratio and direction cosines of a line parallel to the line whose equations are $6x-12=3y+9=2z-2$

25. Find the absolute maximum and minimum values of a function f given by

$$f(x)=\,2x^3\,-15x^2+36x+1$$

on the interval $[1\,,5]$

SECTION – C

26. Solve the following problem graphically. Minimize and maximize $Z=3x+9y$. Subject to the constraints

$$x+3y\le 60$$
$$x+\ y\ \ge 10$$
$$x\ \le\ y$$
$$x\ \ge\ 0\,,\ y\ge 0$$

27. Evaluate : $\int_0^{\pi/2}\frac{sin^4x}{sin^4\,x+cos^4\,x}\,dx$

28. A coin is biased, so that the head is three times as likely to occur as tail of the coin is tossed twice, find the probability distribution of number of tails. Hence find the mean of the number of tails.

(or)

In a class, 5% of boys and 10% of girls have an IQ of more than 150. In the class, 60% are boys and the rest are girls. If a student is selected at random and found to have an IQ of more than 150, then find the probability that the student is a boy.

29. Integrate the function : $\frac{1}{\sqrt{7-6x-x^2}}$

30. Find the particular solution of the differential equation $x\frac{dy}{dx} = y - x\tan\left(\frac{y}{x}\right)$, given that $y = \frac{\pi}{4}$ at $x = 1$

(or)

Solve the following differential equation $x\frac{dy}{dx} + y - x + xy\cot x = 0$

31. Find $\int \frac{x^2}{(x^2+1)(x^2+4)}\,dx$

(or)

Integrate : $x^2 e^x$

SECTION – D

32. Find the shortest distance between the lines whose vector equations are

$\vec{r} = (1-t)\hat{\imath} + (t-2)\hat{\jmath} + (3-2t)\hat{k}$ and $\vec{r} = (S+1)\hat{\imath} + (2S-1)\hat{\jmath} - (2S+1)\hat{k}$

(or)

Show that the lines $\vec{r} = (\hat{\imath} + \hat{\jmath} - \hat{k}) + \lambda(3\hat{\imath} - \hat{\jmath})$ and $\vec{r} = (4\hat{\imath} - \hat{k}) + \mu(2\hat{\imath} + 3\hat{k})$ intersect. Also find their point of intersection.

33. Find the area of the region bounded by the line $y = 3x + 2$, the $x-$ axis and the ordinates $x = -1$ and $x = 1$

34. If $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$ find A^{-1}. How we can use A^{-1} to find x, y, z for the following system of equations

$$2x - 3y + 5z = 16\,;\ 3x + 2y - 4z = -4\,;\ x + y - 2z = -3$$

35. Show that the function $f : R \to R$ defined by $f(x) = \frac{x}{x^2+1}$, $\forall\, x \in R$ is neither one – one nor onto.

(or)

Let $A = \{x \in z : 0 \le x \le 12\}$. Show that $R = \{(a, b) : a, b \in A, |a-b|$ is divisible by $4\}$ is an equivalence relation. Also write the equivalence class [2]

SECTION – E

CASE BASED QUESTIONS

36. Read the following text and answer the following questions, on the basis of the same.

The relation between the height of the plant $(y\ in\ cm)$with respect to exposure to sunlight is governed by the following equation $y = 4x - \frac{1}{2}x^2$ where x is the numberof days exposed to sunlight.

(i) The rate of growth of the plant with respect to sunlight is _____

(ii) What is the number of days it will take for the plant to grow to the maximum height?

(iii) What is the maximum height of the plant?

(or)

If the height of the plant is $^7/_2\ cm$, then find the number of days it has been exposed to the sunlight.

37. Read the following text and answer the following questions :

Anand ,Samanyu and Shah of SHORTCUTS classes were given a problem in Mathematics whose respective probabilities of solving it are 1/2 , 1/3 and 1/4. They were asked to solve it independently.

Based on the above data, answer the following questions.

(i) What is the probability that Anand alone solves it?

(ii) What is the probability that the problem is not solved?

(iii) What is the probability that exactly one of them solves it?

(or)

What is the probability that exactly two of them solves it?

38. To make best out of waste, Rishi took a piece of cardboard which is in the shape of square of side $20\ cm$ Let $x\ cm$ be the length of each side of square cardboard which is to be cut off from each corner of the Cardboard

Based on the above information, answer the following questions.

(i) Find the value of x for which $\frac{dv}{dx} = 0$

(ii) What should be the side of the square to be cut off so that the volume of the box is maximum

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JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

CLASS: XII **FULL PORTION EXAMINATION – (2022 – 2023)** **MARKS: 80**

DATE: 30.01.2023 **MATHEMATICS (CODE – II)** **TIME : 3 hrs**

GENERAL INSTRUCTIONS:

(i) This question paper contains – five sections A , B , C , D and E. Each section is compulsory. However, there are internal choices in some questions.

(ii) Section – A has 18 MCQ's and 02 Assertion – Reason based questions of 1 mark each.

(iii) Section – B has 5 very short answer (VSA) type questions of 2 marks each

(iv) Section – C has 6 short answer type (SA) questions of 3 marks each

(v) Section – D has 4 long answer (LA) type questions of 5 marks each

(vi) Section – E has 3 source based / case based / passage based / integrated unit of assessment (4 marks each) with sub parts.

SECTION – A

1. Which of the following is the principal value branch of $sec^{-1}\, x$?

(a) $\left(\frac{-\pi}{2}\ , \frac{\pi}{2}\right)$ (b) $[\,o\,, \pi] - \{\pi/_2\}$ (c) $\left[\frac{-\pi}{2}\ , \frac{\pi}{2}\right]$ (d) $\left[\frac{-\pi}{2}\ , \frac{\pi}{2}\right] - \{0\}$

2. The matrix $p = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{bmatrix}$ is a

(a) square matrix (b) diagonal matrix (c) unit matrix (d) scalar matrix

3. If $A = \frac{1}{\pi}\begin{bmatrix} sin^{-1}(x\,\pi) & tan^{-1}\,(x/\pi) \\ sin^{-1}\,(x/\pi) & cot^{-1}(\pi\, x) \end{bmatrix}$, $B = \frac{1}{\pi}\begin{bmatrix} -cos^{-1}(x\,\pi) & tan^{-1}\left(\frac{x}{\pi}\right) \\ sin^{-1}\left(\frac{x}{\pi}\right) & -tan^{-1}(\pi\, x) \end{bmatrix}$ then $A - B$ is equal to

(a) I (b) $2\,I$ (c) 0 (d) $\frac{1}{2}\,I$

4. If A is a square matrix of order 3 and $|A| = 5$ then $|adj\ A| =$

(a) 5 (b) 25 (c) 125 (d) $\frac{1}{5}$

5. If A and B are invertible matrices, then which of the following is not correct?

(a) $adj\ A = |A|\, A^{-1}$ (b) $\det(A^{-1}) = [\det(A)\,]^{-1}$

(c) $(AB)^{-1} = B^{-1}\, A^{-1}$ (d) $(A + B)^{-1} = B^{-1} + A^{-1}$

6. If $\sin x$ is the integrating factor of the linear differential equation $\frac{dy}{dx} + Py = Q$, then P is

(a) $\log \sin x$ (b) $tan\ x$ (c) $\cos x$ (d) $cot\ x$

7. The value of k for which the function $f\,(x) = \begin{cases} \frac{1-\cos\,4x}{8x^2} & ,if\ x \neq 0 \\ Kx & ,if\ \ x = 0 \end{cases}$ is continuous at $x = 0$ is

(a) 0 (b) -1 (c) 1 (d) 2

8. If $x = at^2$ and $y = 2\ at$ then $\frac{dy}{dx} =$

(a) t (b) $\frac{1}{t}$ (c) $\frac{-1}{t^2}$ (d) $-t^2$

9. The value of $\int \frac{1}{1+\cos\,8x}\, dx$ is

(a) $\frac{\tan 2x}{8} + C$ (b) $\frac{\tan 8x}{8} + C$ (c) $\frac{\tan 4x}{4} + C$ (d) $\frac{\tan 4x}{8} + C$

10. $\int 4^x\, 3^x\ dx$ equals

(a) $\frac{12^x}{\log\,12} + C$ (b) $\frac{4^x}{\log\,4} + C$ (c) $\frac{4^x \times 3^x}{\log\,4\ \log\,3} + C$ (d) $\frac{3^x}{\log\,3} + C$

11. The curve for which the slope of the tangent at any point is equal to the ratio of the abscissa to the ordinate of the point is

(a) an ellipse (b) parabola (c) circle (d) rectangular hyperbola

12. The number of vectors of unit length perpendicular to the vectors $\overrightarrow{a} = 2\hat{\imath} + \hat{\jmath} + 2\hat{k}$ and $\overrightarrow{b} = \hat{\jmath} + \hat{k}$ is

(a) 1 (b) 2 (c) 3 (d) infinite

13. P is a point on the line joining the points $A\,(0\,,5\,,-2)$ and $B\,(3\,,-1\,,2)$. If the x coordinate of P is 6, then its $z-$ coordinate is

(a) 10 (b) 6 (c) -6 (d) -10

14. If $\propto, \beta, r$ are the angles which a directed line makes with the positive directions of the coordinate axes, then the value of $sin^2 \propto + sin^2 \beta + sin^2 r$ is

(a) 2 (b) 1 (c) 0 (d) -1

15. In a LPP, the objective function is always

(a) cubic (b) linear (c) Quadratic (d) constant

16. The corner points of the feasible region determined by the following system of linear inequalities: $2x + y \leq 10, x + 3y \leq 15, x, y \geq 0$ are $(0,0), (5,0), (3,4)$ and $(0,5)$. Let $Z = px + qy$, where $p, q > 0$. Condition on p & q, so that the maximum of Z occurs at both $(3,4)$ and $(0,5)$ is.

(a) $p = q$ (b) $p = 2q$ (c) $p = 3q$ (d) $q = 3p$

17. If $\left(2\hat{\imath} + 6\hat{\jmath} + 27\hat{k}\right) \times \left(\hat{\imath} + \mathrm{P}\hat{\jmath} + q\hat{k}\right) = \overrightarrow{0}$, then the value of p and q are

(a) $P = 6, q = 27$ (b) $P = 6, q = \frac{27}{2}$ (c) $P = 3, q = \frac{27}{2}$ (d) $P = 3, q = 27$

18. Given two independent events A and B such that $P(A) = 0.3, P(B) = 0.6$ and $P(A' \cap B')$ is

(a) 0.9 (b) 0.18 (c) 0.28 (d) 0.1

ASSERTION – REASON BASED QUESTIONS:

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

19. Assertion (A) : If $|\overrightarrow{a}| = |\overrightarrow{b}|$, does not imply that $\overrightarrow{a} = \overrightarrow{b}$
Reason (R) : If $\overrightarrow{a} = \overrightarrow{b}$, then $\overrightarrow{a}.\overrightarrow{b} = |\overrightarrow{a}|^2 = |\overrightarrow{b}|^2$

20. Assertion (A) : If $|A| = 5$ then $|A^{-1}| = \frac{1}{5}$
Reason (R) : $AA^{-1} = I$

SECTION – B

21. Find the value of $sin^{-1}\left[\sin\left(\frac{13\pi}{7}\right)\right]$

(or)

Prove that the function f is surjective, where $f : N \to N$ such that

$$f(n) = \begin{cases} \frac{n+1}{2} & , if\ n\ is\ add \\ \frac{n}{2} & ,\ if\ n\ is\ even \end{cases}$$

Is the function injective? Justify your answer.

22. A man $1.6\ m$ tall walks at the rate of $0.3\ {}^{m}/_{sec}$ away from a street light that is $4\ m$ above the ground. At what rate is the tip of his shadow moving? At what rate is his shadow lengthening?

23. If $y = 3\cos(\log x) + 4\sin(\log x)$. Show that $x^2 y_2 + x y_1 + y = 0$.

24. If $\overrightarrow{a}, \overrightarrow{b}, \overrightarrow{c}$ are unit vectors such that $\overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = 0$, find the value of $\overrightarrow{a}.\overrightarrow{b} + \overrightarrow{b}.\overrightarrow{c} + \overrightarrow{c}.\overrightarrow{a}$

(or)

Find the area of the triangle with vertices $A(1,1,2)$, $B(2,3,5)$ and $C(1,5,5)$

25. Find the vector equation of the line passing through the point $A(1,2,-1)$ and parallel to the line

$5x - 25 = 14 - 7y = 35z$

SECTION – C

26. Find $\int \frac{(x^4 - x)^{1/4}}{x^5}\ dx$

27. Find the area of the region enclosed by the parabola $x^2 = y$, the line $y = x + 2$ and the $x -$ axis

28. Integrate $\frac{1}{\cos(x-a)\cos(x-b)}$

(or)

Find $\int \frac{x^3 + x + 1}{x^2 - 1}\, dx$

29. In a bank, principal increases continuously at the rate of $5\ \%$ per year. An amount of $Rs.1000$ is deposited with this bank, how much will it worth after 10 years $(e^{0.5} = 1.648)$

(or)

In a culture, the bacteria count is $1{,}00{,}000$. The number is increased by 10% in 2 hours. In how many hours will the count reach $2{,}00{,}000$, if the rate of growth of bacteria is proportional to the number present?

30. Solve the following Linear Programming problem graphically:

Maximize $z = 400x + 300y$
Subject to
$x + y \leq 200,$
$x \leq 40,$
$x \geq 20,$
$y \geq 0$

31. Three friends go for coffee. They decide who will pay the bill, by each tossing a coin and then letting the "Odd Person" pay. There is no odd person if all three tosses produce the same result. If there is no odd person in the first round, they make a second round of tosses and they continue to do so until there is an odd person. What is the probability that exactly three rounds of tosses are made?

(or)

Find the mean number of defective items in a sample of two items drawn one – by – one with replacement from an urn containing 6 items, which include 2 defective items. Assume that the items are identical in shape and size.

SECTION – D

32. If $= \begin{bmatrix} 1 & -1 & 1 \\ 2 & -1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$, find A^2 and show that $A^2 = A^{-1}$

33. Show that the relation R in the set $A = \{1, 2, 3, 4, 5\}$ given by $R = \{(a, b) : |a - b| \text{ is even}\}$ is an equivalence relation. Show that all the elements of $\{1, 3, 5\}$ are related to each other and all the elements of $\{2, 4\}$ are related to each other. But no element of $\{1, 3, 5\}$ is related to any element of $\{2, 4\}$

34. Evaluate $\int_0^{\pi/2} \log(\sin x)\, dx$

(or)

Evaluate $\int_0^{\pi/2} \frac{cos^2 x}{cos^2 x + 4\, sin^2 x}\, dx$

35. Find the equation of the perpendicular from point $(3, -1, 11)$ to line $\frac{x}{2} = \frac{y-2}{3} = \frac{z-3}{4}$. Also find the coordinates of foot of perpendicular and the length of perpendicular

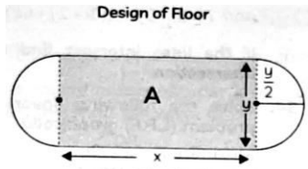
(or)

Using vectors show that the points $A(-2, 3, 5)$ $B(7, 0, -1)$ $C(-3, -2, -5)$ and $D(3, 4, 7)$ are such that AB and CD intersect at the point $P(1, 2, 3)$

SECTION – E

36. Case Study 1:

An architect design a building for a multi national company. the floor consists of a rectangular region with semi circular ends having a perimeter of $200\ m$as shown below:

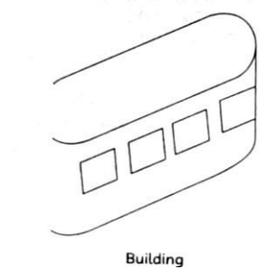


Based on the above information, answer the following questions:

(i) If x and y represents the length and breadth of the rectangular region.
Find the relation between the variables

(ii) Find the area of the rectangular region A expressed as a function of x

(iii) Find the maximum value of area A


Building

37. Case Study 2:

Sonam wants to prepare a sweet box for new year at home. For making lower part of box she takes a square piece of card of side $18\ cm$. Based on the above information. Answer the following question

(i) If $x\ cm$ be the length of each side of the square cardboard which is to be cut off from the corner of the square piece of side $18\ cm$. What are the possible values x can take?

(ii) Write the expansion for the volume of the open box formed by folding up the cutting corner

(iii) Sonam is interested in maximizing the volume of the box. So what should be the side of the square to be cut off so that the volume of the box is maximum?

(or)

Find the maximum volume of the box.

38. Case Study 3:

A shopkeeper sells 3 types of flower seeds A_1 , A_2 and A_3. They are sold as a mixture where the proportions are $4:4:2$, respectively. The germination rates of three types of seeds are $45\%, 60\%$ and 35% . Based on the above information, answer the following questions:

(a) What is the probability that randomly choosen seed to germinate?

(b) What is the probability that seed of type A_3 does not germinate?

(c) What is the probability that seed is of type A_2 given that a randomly choosen seed does not germinate.

(or)

If a randomly choosen seed germinates, What is the probability it is of type A_1?

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JAWAHAR HIGHER SECONDARY SCHOOL, CBSE – NEYVELI

CLASS: XII **FULL PORTION EXAM (2022 – 2023)** **MARKS: 70**

DATE: 23.01.2023 **PHYSICS (CODE – II)** **TIME: 3Hrs**

General Instructions:

1) There are 35 questions in all. All questions are compulsory
2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
3) Section A contains eighteen MCQ of 1 mark each, Section B contains seven questions of two marks each, Section C contains five questions of three marks each, section D contains three long questions of five marks each and Section E contains two case study based questions of 4 marks each.
4) There is no overall choice. However, an internal choice has been provided in section B, C, D and E. You have to attempt only one of the choices in such questions.
5) Use of calculators is not allowed.

SECTION – A

1) For which position of the object does a concave mirror always forms a inverted virtual and erect image ?
   a) Between centre of curvature and focus b) Beyond centre of curvature
   c) Between centre of the lens and focus d) At the centre of curvature
2) With the increase is frequency of an AC supply , the impedance is series LCR circuit.
   a) remain constant b) Increases
   c) decreases d) first decreases and then increases
3) The capacitance of a parallel plate capacitor is 10 μF. when a dielectric plate is introduced in between the plates, its potential becomes. 1/4 th of its original value. What is the value of dielectric constant of the plate introduced?
   a) 4 b) 40 c) 2.5 d) none of these
4) Capacitive reactance is related to frequencies in a manner.
   a) direct b) inverse c) inverse square d) cannot say
5) The phase difference between any two points of a wave front is
   a) 0° b) $\pi/2$ c) $\pi/4$ d) $\pi/8$
6) When a charged particle moves through a magnetic field perpendicular to its direction, then
   a) Linear momentum changes b) kinetic energy remains the same
   c) Both a and b d) Both linear momentum and kinetic energy varies
7) A wire of length L carries a steady current. It is bent to form a circular plane coil of one turn. The current I flowing through it produces a magnetic field "B" at the centre of the coil. The same length is now bent more sharply to form double loop of smaller radius. The magnetic field at the centre caused by the same current is.
   a) B b) 2B c) 4B d) B/2
8) Two waves have amplitude ration 1 : 3 . What is the ratio of their intensities
   a) 9 : 1 b) 1 : 3 c) 3 : 1 d) 1 : 9
9) A square of side 'L' meters lies in (X– Y) plane in a region where the magnetic field is given by $\vec{B} = Bo\,(2\hat{\imath} + 3\hat{\jmath} + 4\hat{k})$ T, where Bo is a constant. The magnetic flux passing through the square is
   a) 2Bo L^2 Wb b) 3Bo L^2 Wb c) 4Bo L^2 Wb d) $\sqrt{29}$ Bo L^2 Wb
10) Identify the trivalent impurity used in the formation of P – type semi conductor.
   a) Arsenic b) indium c) Germanium d) Antimony
11) The penetration of light into the region of Geometrical shadow is known as:
   a) Interference of light b) Diffraction of light c) Refraction of light d) Polarization of light
12) A young double slit experiment it performed air and water. Which of the following is true regarding fringe width (β)
   a) $\beta_{air} > \beta_{water}$ b) $\beta_{water} > \beta_{air}$ c) $\beta_{air} = \beta_{water}$ c) $\beta_{water} = 0$
13) The work function for a metal surface is 4.124eV. The Threshold wave length for this metal surface is
   a) 4125A° b) 2 062.5A° c) 3000A° d) 6000A°
14) The temperature (T) dependence of resistivity of materials A and material "B" is represented by fig(1) and fig (ii) respectively. Identify the material A and material B.

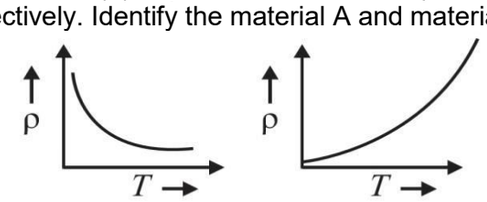


fig. (i) fig. (ii)

   a) Material A is copper and material B is Germanium b) Material A is Germanium and material B is copper
   c) Material A is nichrome and material B is Germanium d) Material A is copper and material B is Nichrome
15) The radius of the inner most electron orbit of a hydrogen atom is 5.3 x 10^{-11} m. What is the radius the n = 3 orbit?
   a) 1.01 x 10^{-10} m b) 1.59 x 10^{-10} m c) 2.12 x 10^{-10} m d) 4.77 x 10^{-10} m

Assertion and Reason

A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
C) Assertion (A) is true, but Reason (R) is false.
D) Assertion (A) is false, but Reason (R) is true.

16) Assertion (A): A direct current flowing through a metallic rod produces magnetic field both inside and outside of the rod.

Reason (R): There is no flow of charge carrier inside the rod.

17) Assertion (A): A step-up transformer cannot be used as a step-down transformer.
Reason (R): A transformer works only in one direction.

18) Assertion (A): Microwaves are considered suitable for radar system.
Reason (R): Microwaves are of shorter wavelength.

SECTION – B

19) Electro magnetic waves with wavelength
i) λ_1 is suitable for radar system used in aircraft navigation
ii) λ_2 is used to kill germs in water purifier,
iii) λ_3 is used to improve the visibility in runways during fog and mist conditions. Identify the EM waves and arrange them in ascending order of their magnitude.

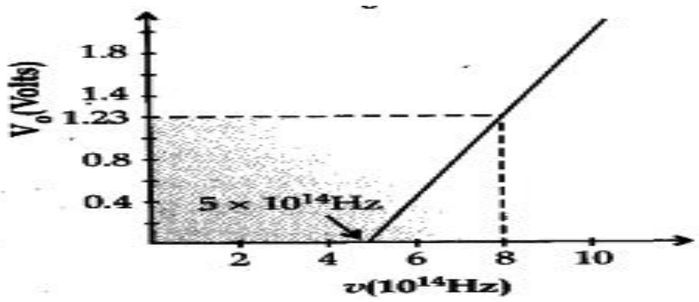
20) A charge 'q' of mass 'm' moving with a velocity 'v' at right angles to a uniform magnetic field. Deduce the expression for the radius of the circular path it describes.

21) Using the concept of drift velocity of charge carriers in a conductor, deduce the relationship between current density and resistivity of the conductor.

(or)

Distinguish between emf (ϵ) and terminal voltage (V) of a cell having internal resistance 'r'.

22)

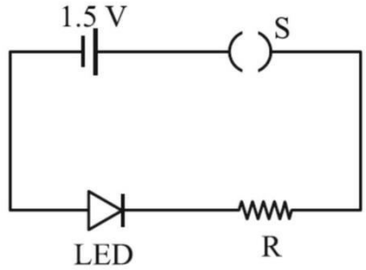


Using the above graph shown in the figure. For stopping potential V/s incident frequency of photons, calculate the Planck's constant.

23) Draw the energy band diagram n type and p type semiconductor at temperature T > 0k, mark the donor and acceptor energy levels

(or)

a) Draw the V.I characteristic of a p – n junction diode in (a) for ward bias (b) reverse bias.
b) A student connects a blue coloured light emitting diode as shown in the figure, what happens when the switch 'S' is closed? Whether the LED will glow or not? Support your answer.



24) A narrow slit is illuminated by a parallel beam of monochromatic light of wavelength λ equals to 6000A° and the angular width of the central maxima in the resulting diffraction pattern is measured. When the slit is next illuminated by light of wavelength λ' the angular width decreases by 30%. Calculate the value of the wavelength λ'.

25) Draw the ray diagram of an astronomical telescope showing the image formation in the normal adjustment position. Write the expression for its magnifying power.

SECTION – C

26) i) Using Gauss's law, deduce the expression for the electric field due to a uniformly charged spherical conducting shell of radius R at a point (i) outside and (ii) inside the shell.
ii) A charge $Q\mu c$ is places at the centre of the cube. What is the flux coming out from any one surface.

(or)

i) Two point charges q_1 and q_2 are kept at a distance 'r' apart in a uniform electric field $\vec{E}$. Find the amount of work done in assembling this system of charges.
ii) Net capacitance of three identical capacitors in series is $1\mu F$. What will be the net capacitance if connected in parallel

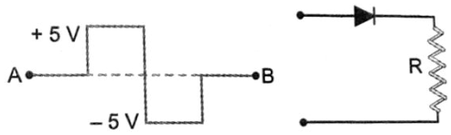
27) i) if n cells of emf E_1, E_2, …. and internal resistances r_1, r_2, ….are connected in series, Derive an expression for the resultant emf E.

ii) Two cells of emf 1.5V and 2.0V having internal resistances 0.2Ω and 0.3 Ω respectively are connected in parallel. Calculate the emf and internal resistance of the equivalent cell.

28) Two long straight parallel conductors carrying current I_1 and I_2 separated by a distance d. If the currents are flowing in the same direction, show how the magnetic field in one produces an attractive force on the other. Obtain the expression for this force and hence define one ampere.

29)i) Draw and explain the output waveform across the (i) load resistor R if the input wave form is as shown in

The figure.



ii) Draw the circuit diagram of a half wave rectifier and explain its working.

30)i) Distinguish between nuclear fission and nuclear fusion

ii) The bending energy per nucleon of deuteron (H_1^2) and helium nucleus (He_2^4) is 1.1 MeV and 7.0 MeV respectively. Calculate the energy released when two deuterons fuse to form a helium nucleus.

(or)

i) When an electron revolves around a nucleus, obtain the expression for the magnetic moment associated with it

ii) A magnetised needle of magnetic moment 4.8 x 10^{-2} JT^{-1} is placed at 30° with the direction of uniform magnetic field of magnitude 3x10^{-2} T. What is the Torque acting on the needle.

SECTION – D

31) i) State the principle and of working of a transformer

ii) Define the efficiency of a transformer

iii) State any two factors that reduce the efficiency of a transformer

iv) Calculate the current drawn by the primary coil of a 90% efficient transformer which steps down 220V to 22V if the out put resistance is 440Ω

(or)

An AC generator consists of a coil of 50 turns and an area 2.5 m^2 rotating at an angular speed of 60 rad/s in a uniform magnetic field of 0.3 T between two fixed poles. The resistance of the circuit including that of the coil is 500 Ω

a) What is the maximum current drawn form the generator?

b) What is the flux through the coil when the current is zero?

c) What is the flux through the coil when the current is maximum?

d) Would the generator work if the coil were stationary and instead pole pieces rotated together with the same speed as above ?

e) Draw a labelled diagram of the generator

32) i) Draw a ray diagram to show the formation of the image of an object placed between f and 2f of a thin convex lens. Deduce the relationship between the object distance, image distance and focal length under the conditions stated.

ii) How does the frequency of a beam of ultraviolet light change when it goes from air in to glass?

iii) An object is placed 20cm in front of a concave mirror of radius curvature 60cm. Find the nature and position of the image .

(or)

i) What is interference of light? Give one example from daily life.

ii) State two necessary condition for sustained interference .

iii) Can two different bulbs similar in all respects act as coherent sources? Support your answer.

iv) What kind of fringes do you expect to observe if white light is used instead of monochromatic light ?

v) What is the effect on interference fringes in young double slit experiment if one slit is covered.

33) i) State the laws of photo electric effect.

ii) What determine the magnitude of stopping potential?

iii) Work function of Na is 2.3eV. Does sodium show photo electric emission for light of wave length 6800A°

(or)

i) State Bohr's postulates. Using these postulates derive an expression for total energy of an electron in the n^{th} orbit. What does negative value of this energy signify? What does Bohr radius

ii) Show the shortest wavelength lines in Lyman, Bulmer and Paschal series have their wavelength in the ratio 1 : 4 : 9.

SECTION – E (Case Study)

34. Case Study: Capacitors Colour Code

Read the following passage and answer the question that follows:

Capacitor Colour Code: Capacitor values as written on small capacitors are sometimes misleading. Letters like p (pico) or n (nano) are used in place of the decimal point to identify its position and the value of the capacitor. For example, a capacitor labelled as n33 0.33nF, 8n2 = 8.2nF, 22n = 47nF and so on. Sometimes, capacitors are marked with the capital letter K to signify a value of Kilo pico-Farads. As for example, a capacitor with the markings of 100K would be 1000 x 100 pF 100 KpF = 100 nF. Sometimes, a three letter code consists of the two value digits and a multiplier. For example, the digits 471=47 x 10 = 470 pF, 332 = 33 x 100 = 3300PF. To reduce these confusions an International colour coding scheme was developed almost same as that of resistance colour code.

Band	Digit 1	Digit 2	Multiplier
Colour			
Black	0	0	×1
Brown	1	1	×10
Red	2	2	×100
Orange	3	3	×1,000
Yellow	4	4	×10,000
Green	5	5	×1000,00
Blue	6	6	×1,000,000
Violet	7	7	×10,000,000
Grey	8	8	×0.01
White	9	9	×0.1

i) What will be the colour code of a 27 nF capacitor?
ii) What is the value of the capacitor bearing a colour code: brown, green, brown?
iii) Two capacitors marked as 221 and 220, respectively are joined in parallel. What is the total capacitance value

(or)

68k is written on a capacitor . What is its value?

Read the following news article and answer the questions that follows:

In 1932, James Chadwick observed emission of neutral radiation when Beryllium nuclei were bombarded with alpha-particles. The only neutral radiation known at that time was photons. Application of the principles of
conservation of energy and momentum showed that if the neutral radiation consisted of photons, the energy of photons would have to be much higher than is available from the bombardment of Beryllium nuclei with γ particles. The clue to this puzzle, which Chadwick satisfactorily solved, was to assume that the neutral radiation consists of a new type of neutral particles called neutrons. From conservation of energy and momentum, he was able to determine the mass of new particle 'as very nearly the same as mass of proton'. The mass of a neutron is now known to a high degree of accuracy. It is 1.00866 u.

A free neutron, unlike a free proton, is unstable. It decays into a proton, an electron and an antineutrino (another elementary particle), and has a mean life of about 1000 s. It is, however, stable inside the nucleus.

(i) What is the mass of a neutron? Express it in amu and kg.
(ii) Write the equation showing the decay of neutron.
(iii) Is neutron stable or unstable?

(or)

Differentiate between proton and neutron.

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JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

CLASS: XII **SECOND 50% PORTION EXAMINATION – (2022 – 2023)** **MARK: 70**

DATE : 30.01.2023 **PHYSICS – CODE – I** **TIME : 3 hrs**

General Instructions:

(1) There are 35 questions in all. All questions are compulsory

(2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.

(3) Section A contains eighteen MCQ of 1 mark each, Section B contains seven questions of two marks each, Section C contains five questions of three marks each, section D contains three long questions of five marks each and Section E contains two case study based questions of 4 marks each.

(4) There is no overall choice. However, an internal choice has been provided in section B, C, D and E. You have to attempt only one of the choices in such questions.

(5) Use of calculators is not allowed.

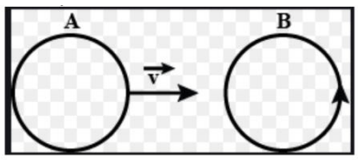
SECTION – A **(18 X 1 = 18)**

1. Kirchhoff's current rule is based on the law of conservation of

(a) charge (b) energy (c) mass (d) B & C

2. There are two coils A & B as shown in figure. A current starts flowing in B as shown, when A is moved towards B and stops when A stops moving. The current in A is counter clockwise. B is kept stationary when A moves. We can infer that

(a) there is a constant current in the clockwise direction in A.
(b) there is a varying current in A.
(c) there is no current in A.
(d) there is a constant current in the counterclockwise direction in A.

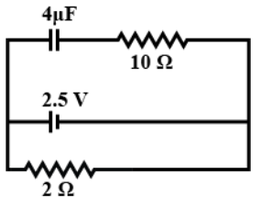


3. Magnifying power of a microscope depends on

(a) Colour of light (b) focal lengthof objective and colour of light
(c) focal length of eyepiece and colour of light (d) focal length of eyepiece and objective

4. A capacitor of $4\ \mu\ F$ is connected as shown in the circuit figure. The internal resistance of the battery is $0.5\ \Omega$. The amount of charge on the capacitor plates will be

(a) $0\ \mu\ C$
(b) $4\ \mu\ C$
(c) $16\ \mu\ C$
(d) $8\ \mu\ C$



5. An EM wave radiates outwards from a dipole antenna, with E_0 as the amplitude of its electric field vector. The electric field E_0 which transports significant energy from the source falls off as

(a) $\frac{1}{r^3}$ (b) $\frac{1}{r^2}$ (c) $\frac{1}{r}$ (d) remains constant

6. If the rms current in a $50\ Hz$ AC circuit is $5\ A$ the value of current $\left[\frac{1}{300}\right]\ s$ after its value becomes zero

(a) $5\sqrt{2}\ A$ (b) $5\sqrt{\frac{3}{2}\ A}$ (c) $\frac{5}{6}\ A$ (d) $\frac{5}{\sqrt{2}}\ A$

7. The self inductance L of a solenoid of length l and area of cross section A, with a fixed number of turns N increases as

(a) l and A increases (b) l decreases and A increases
(c) l increases and A decreases (d) l and A decreases

8. In young's double slit experiment, the distance between the slits is reduced to half and the distance between the slits and the screen is doubled. The fringe width

(a) will be doubled (b) will be half (c) will remain same (d) will be four times

9. A circular current loop of magnetic moment M is in an arbitrary orientation in an external magnetic field B. The work done to rotate the loop by $30°$ about an axis perpendicular to its plane is

(a) MB (b) $\sqrt{3}\ {}^{MB}/_{2}$ (c) ${}^{MB}/_{2}$ (d) zero

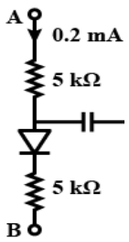
10. Between the primary and secondary rainbows there is a dark band known as Alexander's dark band. This is because

(a) Light compacted into this region interfere destructively
(b) There is no light scatter into this region
(c) Light is absorbed in this region
(d) Angle made at the eye by the scattered rays with respect to the incident light of the sum lies between approximately $42°$ and $50°$

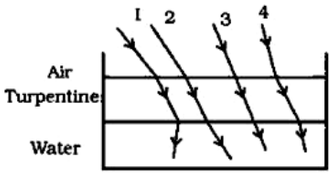
11. Two identical current carrying co axial loop, carry current I in an opposite sense. A simple ampearen loop passes through both of them once calling the loop as C

(a) $\oint B\ .\ dl = \pm 2\ \mu_0\ I$
(b) the value of $\oint B\ .\ dl$ is independent of sense of C
(c) there is may be a joint on C where B and dl are parallel
(d) B vanishes everywhere on C

12. An electromagnetic wave travelling along $z-$ axis is given as $E = E_0 \cos[kz - \omega t]$. Choose the correct options from the following.
    (a) The associated magnetic field is given as $\overrightarrow{B} = \frac{1}{C}\left(\widehat{k} \times \overrightarrow{E}\right) = \frac{1}{e}\left(\widehat{k} \times \overrightarrow{E}\right)$
    (b) The associated magnetic field is given as $\overrightarrow{E} = C\left[\overrightarrow{B} \times \widehat{k}\right]$
    (c) $\widehat{k} \cdot \overrightarrow{E} = 0$, $\widehat{k} \cdot \overrightarrow{B} = 0$
    (d) All of the above
13. Consider sunlight incident on a slit of width $10^4\ A°$. The image seen through the slit shall.
    (a) be a fine sharp slit white in colour at the centre
    (b) a bright slit white at the centre diffusing to zero intensities at the edges
    (c) a bright slit white at the centre diffusing to regions of different colours
    (d) only be a diffused slit white in colour
14. In the circuit shown in figure, if the diode forward voltage drop is $0.3\ V$,



    the voltage difference between A and B
    (a) $1.3\ V$
    (b) $2.3\ V$
    (c) $0\ V$
    (d) $0.5\ V$
15. The optical density of turpentine is higher than that of water while its mass density of lower. Figure shows a layer of turpentine floating over water in a container. For which one of the four rays incident on turpentine in figure, the path shown is correct?



    (a) 1 (b) 2 (c) 3 (d) 4

Two statements are given – one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a) , (b) , (c) and (d) as given below.

(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true and R is not the correct explanation of A
(c) A is true but R is false
(d) A is false and R is also false

16. Assertion (A) : An election and a proton moving with same velocity enters a magnetic field. The force experienced by the proton is more than the force experienced by the election
    Reason (R) : The mass of proton is more than the mass of the electron
17. Assertion (A) : Gauss's theorem is not applicable in magnetism
    Reason (R) : Magnetic monopole does not exist
18. Assertion (A) : Kinetic energy of photoelectrons emitted by a photosensitive surface depends upon the intensity of incident photon
    Reason (R) : The ejection of electrons from metallic surface is possible with frequency of incident photon above the threshold frequency

SECTION – B **(7 X 2 = 14)**

19. In a series LCR circuit, obtain the conditions under which
    (i) impedance of the circuit is minimum
    (ii) Wattless current flows in the circuit
20. (a) Why a pure semiconductor behaves like an insulator at $0\ K$?
    (b) Why is the energy gap much more in silicon than in germanium?
21. A long straight current carrying wire passes normally through the centre of circular loop. If the current through the wire increases, will there be an induced emf in the loop? Justify.

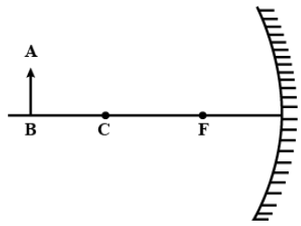
    (or)

    State the underlying principle of a transformer. How is the large scale transmission of electric energy over long distances done with the use of transformers?
22. Two electric bulbs P and Q have their resistances in the ratio of $1:2$. They are connected in series across a battery. Find the ratio of the power dissipation in these bulbs.
23. Using Bohr's postulates derive the expression for the total energy of the election in hydrogen atom. What is the significance of total negative energy possessed by the electron?

    (or)

    Write Einstein's photoelective equation. Expalin the terms (i) Threshold frequency (ii) Stopping potential
24. An $\propto$ – particle and a proton are accelerated through the same potential. Find the ratio of their de – Broglie wavelengths

25. An object AB is kept infront of a concave mirror as shown in figure.

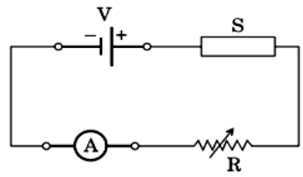


(i) Complete the ray diagram showing the image formation of the object.

(ii) How will the position and intensity of the image be affected if the lower half of the mirror's reflecting surface is painted black?

SECTION – C **(5 X 3 = 15)**

26. (a) In the following diagram 'S' is a semiconductor. Would you increase the value of R to keep the reading of the ammeter A constant when S is heated? Give reason for your answer.



(b) Is Ohm's law obeyed for semiconductor?

27. (a) Identify the part of electromagnetic spectrum used in (i) radar (ii) eye surgery. Write their frequency range

(b) Draw the energy band diagram of N type and P type semiconductor at temperature $T > 0\ K$. Mark the donor and acceptor energy levels with their energies.

28. Draw the circuit diagram of a full wave rectifier and explain the working. Also give the input and output waveforms

(or)

State Gauss's law – Using Gauss's law in electro statics, deduce an expression for electric field intensity due to a uniformly charged wire

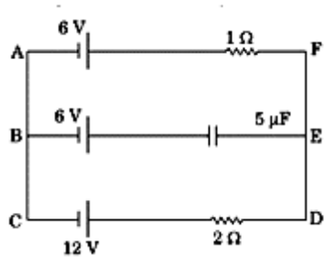
29. (a) Define wave front

(b) In a simple slit diffraction experiment, the width of the slit is made double the original width. How does this affect the size and intensity of the central diffraction band? Explain.

(c) When a tiny obstacle is placed in the path of light from a distant source, a bright spot is seen at the centre of the obstacle. Explain why?

(or)

In the given circuit with the steady current, calculate the potential difference across the capacitor and the charge stored in it.



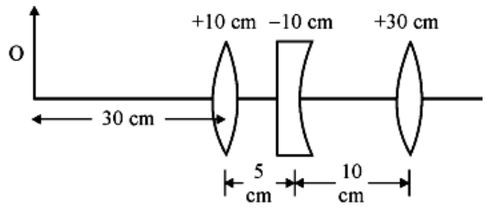
30. (a) If the atomic number of an element is 11 and the atomic mass is 24, how many electrons does it have?

(b) Show that the density of nucleus over a wide range of nuclei is constant and independent of mass number.

SECTION – D **(3 X 5 = 15)**

31. (a) under what condition is the phenomenon of total internal reflection of light observed? Obtain the relation between the critical angle of incidence and the refractive index the of the medium.

(b) Three lenses of focal lengths + 10 cm. – 10 cm and + 30 cm are arranged coaxially as in the figure given below. Find the position of the final image formed by the combination.



(or)

(a) With the help of a diagram, explain the principle and working of a device which produces current that reverses its direction after regular intervals of time.

(b) If a charged capacitor C is short circuited through an inductor of inductance L, the charge and current in the circuit oscillate simple harmonically.

(i) In what form the capacitor and the inductor stores energy ?

(ii) Write two reasons due to which the oscillations become damped

32. An AC voltage $V = Vo \sin \omega t$ is applied to a pure inductor L. Obtain an expression for the current in the circuit. prove that the average power supplied to an inductor over one complete cycle in zero

(or)

A coil of inductance $0.50\ H$ and resistance $100\ \Omega$ is connected to a $240\ V, 50\ Hz\ ac$ supply

(i) What is maximum current in the coil?

(ii) What is the time lag between the maximum voltage and the maximum current?

33. (a) State four distinguishing features of nuclear force

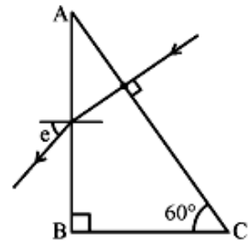
(b) Calculate the energy in fusion reaction ${}_1H + {}_1H \rightarrow {}_2He + n$ where binding energy $B.E$ of ${}_1H = 2.23\ MeV$ and ${}_2He = 7.73\ MeV$

(c) Write a note an proton – proton cycle

(or)

(a) Define the term focal length of a mirror. Give the relation between focal length and radius of curvature

(b) Calculate the angle of emergence (e) of the ray of light incident normally on the face AC of glass prism ABC of refractive index $\sqrt{3}$. How will the angle of emergence change qualitatively, if the ray of light emerges from the prism into a liquid of refractive index 1.3 instead of air ?



SECTION – E **(2 X 4 = 8)**

CASE – BASED QUESTIONS

34. Read the following passage and answer the question that follows: Case Study : Photometry

The measurement of light as perceived by human eye is called photometry.Photometry is measurement of a physiological phenomenon, being the stimulus of light as received by the human eye, transmitted by the optic nerves and analysed by the brain. The main physical quantities in photometry are (i) the luminous intensity of the source, (ii) the luminous flux or flow of light from the source and (iii) illuminance of the surface. The SI unit of luminous intensity (I) is candela (cd). The candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency $540 \times 10^{12}\ Hz$ and that has a radiant intensity in that direction of $1/683$ watt per steradian. If a light source emits one candela of luminous intensity into a solid angle of one steradian, the total luminous flux emitted into that solid angle is one lumen (lm). A standard 100 watt incandescent light bulb emits approximately 1700 lumens.

(i) Give the unit of luminous flux.

(ii) What intensity of light is emitted by a standard 100 Watt incandescent light bulb?

(iii) Which part of human eye received light?

(or)

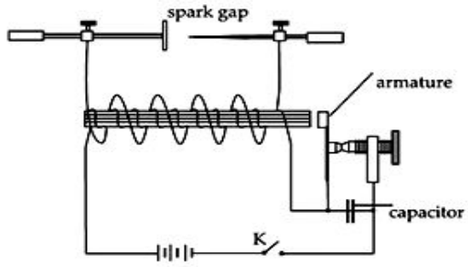
Define Photometry

35. Read the following passage and answer the question that follows: Case Study : Spark coil

The principle of electromagnetic induction was discovered by Michael Faraday in 1831. Induction coils were used widely in electrical experiments and for medical therapy during the last half of the 19th century, eventually leading to the development of radio in the 1890's. The spark coil designed on the principle of electromagnetic induction was the heart of the earliest radio transmitters. Marconi used a spark coil designed by Heinrich Rhumkorff in his early experiments.

An induction coil or "spark coil" is a type of electrical transformer used to produce high-voltage pulses from a low-voltage $(d.c.)$ supply. To create the flux changes necessary to induce voltage in the secondary coil, the direct current in the primary coil is repeatedly interrupted by a vibrating mechanical contact called interrupter.

The spark scoil consists of two coils of insulated wire wound around a common iron core. One coil, called the primary coil, is made from relatively few (tens or hundreds) turns of coarse wire. The other coil, the secondary coil typically consists of up to a million turns of fine wire (upto 40 gauge).



An electric current is passed through the primary, creating a magnetic field. Because of the common core, most of the primary's flux couples with the secondary. When the primary current is suddenly interrupted, the magnetic field rapidly collapses. This causes a high voltage pulse to be developed across the secondary terminals due to electromagnetic induction. Because of the large number of turns in the secondary coil, the secondary voltage pulse is typically many thousands of volts. This voltage is sufficient to create an electric spark, to jump across an air gap separating the secondary's output terminals. For this reason, this induction coils are also called spark coils.

To operate the coil continually, the $d.c.$ supply current must be repeatedly connected and disconnected. To do that, a magnetically activated vibrating arm called an interrupter is used which rapidly connects and breaks the current flowing into the primary coil. The interrupter is mounted on the end of the coil next to the iron core. When the power is turned on, the produced magnetic field attracts the armature. When the armature has moved far enough, contacts in the primary circuit breaks and disconnects the primary current. Disconnecting the current causes the magnetic field to collapse and create the spark. A short time later the contacts reconnect, and the process repeats.

An arc which may form at the interrupter contacts is undesirable. To prevent this, a capacitor of 0.5 to 15 μF is connected across the primary coil:

(i) Which was the heart of the radio transmitters of Marconi?

(ii) What do you think about Spark coil?

(iii) Why most of the primary's flux couples with the secondary in spark coil?

(or)

What is the function of interrupter in a spark coil?

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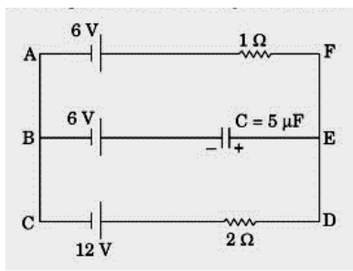

6 V
1 Ω
A
F
6 V
C = 5 μF
B
E
C
D
12 V
2 Ω

JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

DATE: 02.01.2023 **FULL PORTION EXAMINATION – (2022 – 2023)** **MARK: 70**

CLASS: XII **CHEMISTRY – CODE – I** **TIME : 3hrs**

GENERAL INSTRUCTIONS:

(a) There are 35 questions in this question paper with internal choice
(b) Section – A consists of 18 multiple choice questions carrying 1 mark each
(c) Section – B consists of 7 very short answer questions carrying 2 marks each
(d) Section – C consists of 5 short answer questions carrying 3 marks each
(e) Section – D consists of 2 case – based questions carrying 4 marks each
(f) Section – E consists of 3 long answer questions carrying 5 marks each
(g) All questions are compulsory
(h) Use of log tables and calculators are not allowed.

SECTION – A

The following questions are multiple choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section

1. The order of reactivity of following alcohols with halogen acids is (A) $CH_3 - CH_2 - CH_2 - OH$

(B) $CH_3\ CH_2 - CH - OH$ (C) $CH_3 - CH_2 - \overset{CH_3}{\underset{CH_3}{C}} - OH$

(a) $A > B > C$ (b) $C > B > A$ (c) $B > A > C$ (d) $A > C > B$

2. Atomic number of Mn , Fe and Co are 25 , 26 and 27 respectively. Which of the following inner orbital octahedral complex ions are diamagnetic?

(a) $[\,Co\,(NH_3)_6]^{3+}$ (b) $[\,Mn\,(CN)_6]^{3-}$ (c)$[\,Fe\,(Cl)_6]^{4-}$ (d) Both a and c

3. Amine that cannot be prepared by Gabriel phthalimide synthesis is

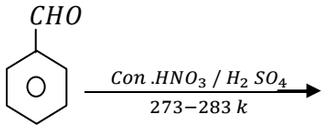
(a) ethylamine (b) aniline (c) benzylamine (d) isobutyl amine

4. Which of the following is not correct about order of a reaction?

(a) The order of a reaction can be a fractional number
(b) The order of a reaction is experimentally determined quantity
(c) Order of a reaction is always equal to the sum of the stoichiometric coefficients of reactants in the balanced chemical equation for a reaction
(d) The order of a reaction is the sum of the powers of molar concentration of the reactants in the rate law expression

5. The pair $[\,Co\,(NH_3)_4\,Cl_2]\,Br_2$ and $[\,Co\,(NH_3)_4\,Br_2\,]\,Cl_2$ will show

(a) Linkage isomerism (b) Hydrate isomerism
(c) Ionisation isomerism (d) Coordinate isomerism

6. The product formed by the reaction 

product is

(a) o – nitro benzaldehyde (b) p – nitro benzaldehyde
(c) m – nitro benzaldehyde (d) mixture of o and p –benzaldehyde

7. Identify the law which is stated as “For any solution, the partial vapour pressure of each volatile component in the solution is directly proportional to its mole fraction”.

(a) Henry’s law (b) Raoult’s law (c) Dalton’s law (d) Gay – Lussac’s law

8. Which of the following statement is correct?

(a) Fibrous proteins are generally soluble in water
(b) Albumin is an example of fibrous proteins
(c) In fibrous proteins, the structure is stabilised by hydrogen bonds and disulphide bonds
(d) pH does not affect the primary structure of protein.

9. In a lead storage battery

(a) PbO_2 is reduced to $Pb\,SO_4$ at the cathode
(b) Pb is oxidised to $Pb\,SO_4$ at anode
(c) Both electrodes are immersed in same aqueous solution of H_2SO_4
(d) All the above are true

10. The correct sequence of steps involved in the mechanism of cannizzaro’s reaction is

(a) transfer of H^-, transfer of H^+ , nucleophilic attack
(b) nucleophilic attack, transfer of H^- , transfer of H^+
(c) electrophilic attack by OH^-, transfer ofH^+ , transfer of H^-
(d) transfer of H^+nucleophilic attack and transfer of H^-

11. The IUPAC name of the organic compound which gives propanamine by Hoffmann degradation reaction is

(a) Butanamide (b) Butanoic acid (c) Butanamine (d) ethyl butanoate

12. Identify the order of the reaction of $K = 5 \times 10^{-5} S^{-1}$
(a) First order (b) Pseudo first order (c) Second order (d) Third order

13. 0 – hydroxy benzyl alcohol when reacted with PCl_5 gives the product (IUPAC name)
(a) o- hydroxy benzyl chloride (b) 2- chloromethylphenol
(c) o-chloromethylchlorobenzene (d) 4-hydroxymethylphenol

14. Transition elements show magnetic moment due to spin and orbital motion of electrons. Which of the following metallic ions have almost the same spin only magnetic moment?
(i) CO^{2+} (ii) Cr^{2+} (iii) Mn^{2+} (iv) Cr^{3+}
(a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iv) (d) (iii) and (iv)

In the following question Q.no 15 – 18 a statement of Assertion followed by a statement of Reason is given. Choose the correct answer out of the following choice

(a) Assertion and Reason both are correct statements and Reason is correct explanation for assertion
(b) Assertion and Reason both are correct statements but reason is not correct explanation for Assertion.
(c) Assertion is correct but Reason is wrong
(d) Assertion is wrong but Reason is correct

15. Assertion (A) : Cu^{2+} salts are green in colour
Reason (R) : Cu^{2+} one unpaired e^- which cause d-d transitions

16. Assertion (A) : Treatment of anisole with HI at $373\ k$ gives phenol and methyl iodide
Reason (R) : Due to resonance $0 - C_6H_5$ bond is stronger than $0 - CH_3$ bond

17. Assertion (A) : $\propto$ – amino acids have zwitter ion structure
Reason (R) : $\propto$ – amino acids have least conductivity at isoelectric point

18. Assertion (A) : The rate of reaction increases with increase in temperature
Reason (R) : The reactant molecules colloide less frequently

SECTION – B

This section contains 7 questions with internal choice in two questions. The following questions are very short answer type and carry 2 marks each.

19. The rate constant for a first order reaction is $60\ S^{-1}$. How much time will it take to reduce the initial concentration of reactant to $\frac{1}{10}$**th** of its initial value?

20. Define the following terms : (a) Invert sugar (b) Oligosaccharides
(or)
Differentiate between globular and fibrous proteins

21. What will be the product formed when chlorobenzene reacts with magnesium in presence of dry ether? Give equation also.
(or)
Give reason for the following : (a) Benzyl chloride is highly reactive towards the SN^1 reaction
(b) 2-Bromobutane is optically active but 1-Bromobutane is optically inactive

22. Using Valence Bond Theory explain the $[Co\ (NH_3)_6]^{3+}$ in relation to the terms given below.
(i) Type of hybridization (ii) Inner or outer orbital complex
(iii) Magnetic behaviour (iv) Spin only magnetic moment value.

23. Conductivity of $2.5 \times 10^{-4}\ M$ methanoic acid is $5.25 \times 10^{-5}\ S\ cm^{-1}$. Calculate its molar conductivity and degree of dissociation. [Given $\lambda^0\ H^+ = 349.5\ S\ cm^2\ mol^{-1}$, $\lambda^0\ H\ coo^- = 50.5\ S\ cm^2\ mol^{-1}$

24. The rate constant for the first order decomposition of N_2O_5 is given by the following equation :
$$K = (2.5 \times 10^{14} S^{-1})\ e^{(-25000\ k)/T}$$
Calculate Ea for this reaction and rate constant of its half life period be 300 minutes

25. Write the major product (s) in the following : (a) $CH_3 - CH = CH - CH_2\ \ CN \xrightarrow[H_3O^+]{DIBAL-H}$
(b) $CH_3 - CH_2 - OH \xrightarrow{Cr\ O_3}$

SECTION – C

This section contains 5 questions with internal choice in two questions. The following questions are short answer type and carry 3 marks each.

26. Write the equations for the following reaction :
(a) Salicylic acid is treated with acetic anhydride in the presence of con $H_2\ SO_4$
(b) Tertiary butyl chloride is treated with sodium ethoxide
(c) Phenol is treated with chloroform in the presence of $Na\ OH$
(or)

Illustrate the following reactions giving a suitable example for each

(a) Cross Aldol condensation (b) Decarboxylation

27. (a) On the basis of central field theory, write the electronic configuration of d-orbitals of Ti in $[Ti(H_2O)_6]^{3+}$ ion in an octahedral crystal field

(b) Why is this complex coloured? How does the colour change on heating $[Ti(H_2O)_6]^{3+}$ion?

28. At $300\ k$, $30\ g$ of glucose present in a litre of its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of a glucose solution is 1.52 bar at the same temperature. What would be its concentration?

29. Arrange the following in increasing order of property specified :

(a) C_2H_5OH , $(CH_3)_2NH$, $C_2H_5NH_2$ (Boiling print)

(b) $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ (Basic strength in aqueous phase)

(c) $C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$ (Solubility in water)

(or)

(a) Give one chemical test to distinguish between the compounds in the following pairs

(i) Methylamine and dimethylamine (ii) Ethylamine and aniline

(b) Convert Aniline into p-nitroaniline

30. Answer the following:

(a) Write equation for preparation of 1-iodo butane from 1-chlorobutane

(b) Out of 2-bromopentane, 2-bromo-2-methyl butane and 1-bromopentane, which compound is most reactive towards elimination and why?

(c) Give IUPAC name of $CH_3-CH=CH-\underset{Br}{\overset{CH_3}{C}}-CH_3$

SECTION – D

The following questions are case – based questions. Each question has an internal choice and carries 4 (1+1+2) marks each. Read the passage carefully and answer the questions that follow:

31. Some liquids on mixing form azeotropes which are binary mixtures having the same composition in liquid and vapour phase and boil at a constant temperature. In such cases, it is not possible to separate the components by fractional distillation. There are 2 types of azeotropes, minimum boiling azeotrope and maximum boiling azeotrope.

(a) What type of azeotrope is formed by negative deviation from Raoults' law?

(b) Why pure ethanol cannot be obtained by rectified sprit even by fractional distillation?

(c) Why is an increase in temperature observed on mixing chloroform and acetone?

(or)

On mixing liquid X and Y, volume of resulting solution decreases. What type of deviation from Raoult's law is shown by the resulting solution? What change in temperature would you observe after mixing liquids X and Y?

32. The most abundant biomolecules of the living system are proteins. They are polymers of $\propto -$ amino acids connected to each other by peptide linkage. Amino acids contain amino $(-NH_2)$ and carboxyl $(-COOH)$ group. Amino acids are classified as acidic, basic or neutral depending on the number of amino and carboxylic groups. In aqueous solution, the carboxyl group can lose a proton and amino group can accept a proton giving rise to dipolar ion known as zwitter ion.

(a) Name the alpha amino acid which is optically inactive

(b) Name two essential amino acids

(c) The Ka and Kb values of $\propto -$ amino acids are very low. Why?

(or)

Draw the structure of Zwitter ion.

SECTION – E

The following questions are long answer type and carry 5 marks each. Two questions have an internal choice.

33. For the hydrolysis of methyl acetate in aqueous solution, the following results were obtained.

$t/_S$	0	30	60
$[CH_3COOCH_3]/mol\ L^{-1}$	0.60	0.30	0.15

(a) Show that it follows pseudo first order reaction, as the concentration of water remains constant.

(b) Calculate the average rate of reaction between the time interval 30 to 60 seconds.

$(\log 2 = 0.3010, \log 4 = 0.6021)$

(or)

(a) Show that in a first order reaction, time required for completion of 99.9% is 10 times that of half life $(t_{1/2})$ of the reaction

(b) (i) For a reaction $A + B \rightarrow P$, the rate law is given by, $r = k\,[A]^{1/2}\,[B]^2$. What is the order of this reaction?

(ii) A first order reaction is found to have a rate constant $k = 5.5 \times 10^{-14} S^{-1}$. Find the half life of the reaction.

34. (a) How will you carry out the following conversation : (i) Propanoic acid to lactic acid
(ii) Benzoic acid to Benzaldehyde
(iii) Acetylene to Acetaldehyde

(b) Give a chemical test to distinguish between Butanal and Butan-2-one

(or)

An orgnic compound (A) has characteristic odour. On treatment with $NaOH$ it forms compounds (B) and (C). Compound (B) has molecular formula $C_7\,H_8\,O$ which on oxidation gives back (A). The compound (C) is a sodium salt of an acid. When (C) is treated with soda lime it yields an aromatic compound (D). Deduce the structures of $A\,, B\,, C\,, D$. Write the sequence of reactions invoved.

35. (a) Account for the following: (i) Transition elements form interstitial compounds
(ii) $Mn^{3+}\ (3d^4)$ is strongly oxidising whereas $Cr^{2+}\ (3d^4)$ is strongly reducing
(iii) Transition metals have high melting points

(b) (i) Is the variability in oxidation number of transition elements different from that of non transition elements. illustrate with example.

(ii) $2n^{2+}$ salts are white while Cu^{2+} salts are coloured. Why?

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JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

CLASS: XII **FULL PORTION EXAMINATION – (2022 – 2023)** **MARK: 70**

DATE: 25.01.2023 **CHEMISTRY – CODE – II** **TIME : 3hrs**

GENERAL INSTRUCTIONS:

(a) There are 35 questions in this question paper with internal choice
(b) Section – A consists of 18 multiple choice questions carrying 1 mark each
(c) Section – B consists of 7 very short answer questions carrying 2 marks each
(d) Section – C consists of 5 short answer questions carrying 3 marks each
(e) Section – D consists of 2 case – based questions carrying 4 marks each
(f) Section – E consists of 3 long answer questions carrying 5 marks each
(g) All questions are compulsory
(h) Use of log tables and calculators are not allowed.

SECTION – A

The following questions are multiple choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section

1. Calculate the emf of the following cell at
$298\,k\;\; Mg(s)/\, Mg^{2+}\,(0.1\,M)//Cu^{2+}(1.0\times10^{-3}M)/Cu\,(s)\;\; Eo = 2.71\,V$
(a) $1.426\,V$ (b) $2.503\,V$ (c) $2.651\,V$ (d) $1.8\,V$

2. Peptide linkage:
(i) is a bond formed between – $COOH$ and NH_2 group
(ii) is a bond between two amino acids
(iii) is a connection between two proteins
Which statement is false about peptide linkage?
(a) only (i) (b) only (iii) (c) (i) and (ii) (d) All the above

3. Lanthanide contraction is caused due to
(a) Atomic number (b) size of $4\,f$ orbitals
(c) Effective nuclear charge (d) poor shielding of $4\,f$ electrons

4. The increase in temperature of the aqueous solution will result in its
(a) Molarity to increase (b) Molarity to decrease
(c) Mole fraction to increase (d) Mass % to increase

5. Which of the following compounds will give butanone on oxidation with alkaline $KMn\,O_4$?
(a) Butan –1–ol (b) Butan– 2–ol (c) Both of these (d) None of these

6. What happens when glucose reacts with bromine water?
(a) glucose gets reduced to gluconic acid (b) it forms oxime
(c) glucose gets oxidised to gluconic acid (d) it forms oxalic acid

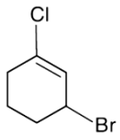
7. The formula of the coordination compound tetra ammine aquachlorido cobalt III chloride is
(a) $[\,Co\,(NH_3)_4\,(H_2O)Cl\,]\,Cl_2$ (b) $[\,Co\,(NH_3)_4\,(H_2O)Cl\,]\,Cl_3$
(c) $[\,Co\,(NH_3)_2\,(H_2O)Cl\,]\,Cl_2$ (d) $[\,Co\,(NH_3)_4\,(H_2O)Cl\,]\,Cl$

8. The correct order of increasing acid strength is
(a) Phenol < ethanol < chloroacetic acid < acetic acid
(b) Ethanol < phenol < chloroacetic acid < acetic acid
(c) Ethanol < phenol < acetic acid < chloroacetic acid
(d) Chloroacetic acid < acetic acid < phenol < ethanol

9. What kind of compounds undergo cannizaro reaction?
(a) Ketones with no α –hydrogen (b) Aldehydes with α –hydrogen
(c) Carboxylic acids with α – hydrogen (d) Aldehydes with no α –hydrogen

10. The amount of electricity required to produce one mole of Zn from $Zn\,SO_4$ solution will be
(a) $3\,F$ (b) $1\,F$ (c) $4\,F$ (d) $2\,F$

11. The IUPAC name of the compound shown below is
(a) 2-bromo-6-chlorocyclohex-l-ene
(b) 6-bromo-2-chlorocyclohexene
(c) 3-bromo-l-chlorocyclohexene
(d) l-bromo-3-chlorocyclohexene



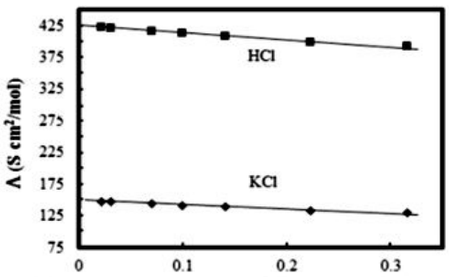
12. Which of the following method is most suitable for determination of molecular mass of polymers?
(a) Vapour Pressure (b) Boiling point (c) Osmotic pressure (d) Freezing point

13. For a reactions $A \rightarrow B$, the rate of reaction becomes three times when the concentration of A is increased by nine times. What is the order of reaction?
(a) $^1/_2$ (b) 1 (c) 2 (d) 0

14. The molar conductivity of $CH_3\ COOH$ at infinite dilution is $390\ S\ cm^2/mol$. Using the graph and given information, the molar conductivity of $CH_3\ COOK$ will be

(a) $100\ S\ cm^2/mol$ (b) $115\ S\ cm^2/mol$

(c) $150\ S\ cm^2/mol$ (d) $125\ S\ cm^2/mol$



In the following question Q.no 15 – 18 a statement of Assertion followed by a statement of Reason is given. Choose the correct answer out of the following choice

(a) Assertion and Reason both are correct statements and Reason is correct explanation for assertion

(b) Assertion and Reason both are correct statements but reason is not correct explanation for Assertion.

(c) Assertion is correct but Reason is wrong

(d) Assertion is wrong but Reason is correct

15. Assertion (A) : When $Nacl$ is added to water, a depression in freezing point is observed
Reason (R) : The lowering of vapour pressure of a solution causes depression in the freezing point

16. Assertion (A) : The two strands of DNA are complementary to each other
Reason (R) : The hydrogen bonds are formed between specific pairs of bases

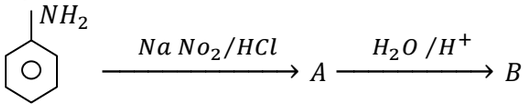
17. Assertion (A) : An ether is more volatile than an alcohol of comparable molecular mass
Reason (R) : Ethers are polar in nature

15. Assertion (A) : Ecell should have a positive value for the cell to function
Reason (R) : Ecathode < Eanode

SECTION – B

This section contains 7 questions with internal choice in two questions. The following questions are very short answer type and carry 2 marks each.

19. (a) Identify A and B .



(b) Aniline does not undergo Friedel crafts reaction – Reason out

20. Corrosion is an electrochemical process. The oxygen in moist air reacts as follows.

$$\underset{(g)}{O_2} + 2\ \underset{(l)}{H_2O} + 4e^- \rightarrow 4\ \underset{(aq)}{OH^-}$$

Write down the possible reactions for corrosion of zinc occurring at anode, cathode and overall reaction to form a while layer of zinc hydroxide.

21. For a reaction, the rate law expression is represented as follows: Rate $= K\ [A]\ [B]^{1/2}$

(a) Interpret whether the reaction is elementary or complex. Give reason.

(b) Write the units of rate constant for this reaction if concentration of A and B is expressed in moles $/L$.

(or)

The following results have been obtained during the kinetic studies for the reaction

$$P + 2Q \rightarrow R + 2\ S$$

Exp.	Initial P	Initial Q	Formation of R
1	0.10	0.10	3.0×10^{-4}
2	0.30	0.30	9.0×10^{-4}
3	0.10	0.30	3.0×10^{-4}
4	0.20	0.40	6.0×10^{-4}

Determine the rate law expression for the reaction

22. Write the mechanism of acid dehydration of ethanol to yield ethene

23. Account for the following:

(a) $O_2\ N - CH_2 -\ COOH$ has lower pka value than $CH_3\ COOH$

(b) $(CH_3)_2\ CH - CHO$ undergoes aldol condensation whereas $(CH_3)_2\ C - CHO$ does not.

(or)

Write chemical equation for the following reactions:

(a) Propanone is treated with dilute $Ba(OH)_2$

(b) Acetophenone is treated with $zn\ (Hg)/con.\ Hcl$

24. Give reason:
(a) Transition metals have high enthalpies of atomisation
(b) Manganese has lower melting point even though it has a higher number of unpaired electrons for bonding

25. (a) Predict the geometry of $[Ni\ (CN)_4]^{2-}$
(b) Calculate the spin only magnetic moment of $[Cu\ (NH_3)_4]^{2+}\ ion$

SECTION – C

This section contains 5 questions with internal choice in two questions. The following questions are short answer type and carry 3 marks each.

26. What happens when
(a) $N-$ ethyl ethanamine reacts with benzene sulphonyl chloride
(b) benzylchloride is treated with ammonia followed by the reaction with chloromethane
(c) Aniline reacts with chloroform in the presence of alcoholic potassium hydroxide

(or)

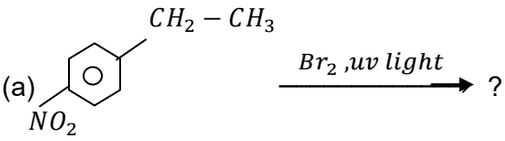
How do you convert : (a) Nitrobenzene into aniline
(b) Ethanoic acid into methanamine
(c) Aniline to $N-$phenyl ethanamide

27. (a) Write the product when $D-$glucose reacts with $con\ .HNO_3$
(b) Amino acids show amphoteric behaviour. Why?
(c) Name the products obtained after the hydrolysis of lactose

28. What happens when (a) Chlorobenzene is treated with $C\ l_2/Fe\ Cl_3$
(b) Ethyl chloride is treated with $Ag\ No_2$
(c) $2-$ bromopentane is treated with alcoholic KOH?
Write the chemical equations in support of your answer.

(or)

Write the major product in the following

(a) 

(b) $2\ CH_3-\underset{\underset{Cl}{|}}{CH}-\ CH_3 \xrightarrow[dry\ ether]{Na}$?

(c) $CH_3-CH_2-Br \xrightarrow{Ag\ CN}$?

29. The rate constant for the first order decomposition of $H_2\ O_2$ is given by the following equation

$$\log k = 14.2 - \frac{1.0\times10^4}{T}\ k$$

Calculate Ea for this reaction and rate constant k if its half life period be $200\ min.$ $[\ R = 8.314\ JK^{-1}\ mol^{-1}]$

30. Give reason: (a) E^o value for $M\ n^{3+}/Mn^{2+}$ couple is much more positive than that for $F\ e^{3+}/Fe^{2+}$
(b) Sc^{3+} is colourless in aqueous solution whereas Ti^{3+} is coloured
(c) Transition elements act as a catalyst

SECTION – D

The following questions are case – based questions. Each question has an internal choice and carries 4 (1+1+2) marks each. Read the passage carefully and answer the questions that follow:

31. Read the passage given below and answer the following questions:

The cell constant is usually determined by measuring the resistance of the cell containing a solution whose conductivity is already known. For this purpose, we generally use KCl solutions whose conductivity is known accurately at various concentrations and at different temperatures. Consider the resistance of a conductivity cell filled with 0.1 M KCl solution is $200\ \Omega$. If the resistance of the same cell when filled with $0.02\ M$ KCl solution is $420\ \Omega$.

(a) State the relation between cell constant, resistance of the solution in the cell and conductivity of the solution
(b) How is cell constant determined experimentally?
(c) What is the conductivity of $0.02\ M\ kcl$ solution and state $S.I$ unit for conductivity of solution?

(or)

Write about conductance and conductivity.

32. Read the passage given below and answer the following questions:

Nucleotides and aminoacids are vital building Blocks in Biology, but although nature has mastered their synthesis and polymerisation their synthesis under mild, prebiotically plausible and simple conditions, without activation, in the laboratory is challenging. Orgel and co – workers synthesised small amounts of adenosine and guanosine nucleotides by dehydration reactions of ribose together with the corresponding purine base, adenine or guanine, in the presence of inorganic polyphosphate salts

(a) Is nucleolide and nucleoside are same?
(b) Write one point of difference between nucleotide and nucleoside.
(c) What are purines and pyrimidines?

(or)

What kind of linkage is present between the two units in a dinucleotide? Between which carbon atom of pentose sugars of nucleotides are these linkages present?

SECTION – E

The following questions are long answer type and carry 5 marks each. Two questions have an internal choice.

33. An organic compound $'A'$ $C_8\,H_6$ on treatment with dilute $H_2\,SO_4$ containing mercuric sulphate gives compound 'B'. This compound 'B' can also be obtained from a reaction of benzene with acetyl chloride in presence of anhydrous $Al\,Cl_3$. 'B' on treatment with I_2 in $aq.KOH$ gives 'C' and a yellow compound 'D'. Identify A, B, C and D. Give the chemical reactions involved.

(or)

(a) Write the reaction for cross Aldol condensation of acetone and ethanal
(b) How will you carry out the following conversions
  (i) Benzyl alcolol to phenyl ethanoic acid
  (ii) Propanone to propene
  (iii) Benzene to m – Nitroacetophenone

34. (a) State Kohlrausch law

(b) Calculate the emf of the following cell at $298\,k$

$Al\,(s)/\,Al^{3+}(0.15\,M)\,//\,Cu^{2+}\,(0.025\,M)/\,Cu\,(s)$

(Given $E^o(Al^{3+}/Al) = -1.66\,V, E^o(Cu^{2+}/Cu) = 0.34\,V$, $log\ 0.15 = -0.8239$, $\log 0.025 = -1.6020$

35. (a) Write the formula of Tetraammine aqua chlorido cobalt (III) nitrate
(b) Write the $IUPAC$ name of the following complex: $[\,pt\,(NH_3)_2\,Cl_2\,]$
(c) How is stepwise stability constant and overall stability constant formed are related?
(d) What is crystal field splitting energy?

(or)

(a) Write the $IUPAC$ name of the ionisation isomer of the coordination compound $[\,Co\,(NH_3)_5\,Br\,]\,SO_4$. Give one chemical test to distinguish between the two compounds
(b) How is double salt different from a complex?
(c) How is the denticity of coordination compound used for treatment of lead poisoning?
(d) Which of the following is more stable complex and why? $[\,Co\,(NH_3)_6\,]^{3+}$ and $[\,Co\,(en)_3\,]^{3+}$

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JAWAHAR HIGHER SECONDARY SCHOOL, CBSE – NEYVELI

CLASS: XII **FIRST PORTION EXAM (2022 – 2023)** **MARKS: 70**

DATE: 04.01.2023 **BIOLOGY (CODE – II)** **TIME: 3Hrs**

General Instructions:

(i) All questions are compulsory

(ii) The question paper has five sections and 33 questions. All questions are compulsory

(iii) Section-A has 16 questions of 1 mark each, Section-B has 5 questions of 2 marks each; Section-Chas 7 questions of 3 marks each Section-D has 2 case-based questions of 4 marks each and Section-E has 3 questions of 5 marks each.

(iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(v) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section -A

1. From among the sets of terms given below, identify those that are associated with the gynoecium.

(A) Stigma, ovule, embryo sac, placenta .(B) Thalamus, pistil, style, ovule.

(C) Ovule, ovary, embryo sac, tapetum (D) Ovule, stamen, ovary, embryo sac.

2. Match the following and choose the correct options

	Column I		Column II
a	Trophoblast	i	Embedding of blastocyst in the endometrium
b	Cleavage	ii	Group of cells that would differentiate as embryo
c	Inner cell mass	iii	Outer layer of blastocyst attached to the endometrium
d	Implantation	iv	Mitotic division of zygote

Options:

(A) a-ii, b-i, c-iii, d-iv (B) a-iii, b-iv, c-ii, d-i (C) a-iii, b-1, c-ii, d-iv (D) a-ii, b-iv, c-iii,d-i

3. Which of the following steps in transcription is catalysed by RNA polymerase?

(A) Initiation (B) Elongation (C) Termination (D) All of the above

4. With regard to mature mRNA in eukaryotes:

(A) exons and introns do not appear in the mature RNA.

(B) exons appear, but introns do not appear in the mature RNA

(C) introns appear but exons do not appear in the mature RNA.

(D) both exons and introns appear in the mature RNA.

5. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:

(A) the patient was not efficient at his work. (B) the patient was not economically prosperous.

(C)the patient shows behavioural and social maladjustment. (D) he does not take interest in sports

6. Transplantation of tissues/organs to save certain patients often fails due to rejection of such tissues/organs by the patient. Which type of immuneresponse is responsible for such rejections?

(A) Auto-immune response (B) Humoral immune response

(C) Physiological immune response (D) Cell-mediated immune response

7. Tobacco consumption is known to stimulate secretion of adrenaline and nor-adrenaline. The component causing this could be

(A) nicotine (B) tannic acid (C) curamin (D) catechin

8. Which of the following has popularised the PCR (Polymerase Chain Reaction)?

(A) Easy availability of DNA template (B) Availability of synthetic primers

(C) Availability of cheap deoxyribonucleotides (D) Availability of thermostable DNA polymerase.

9. If a population of 50 Paramecium present in a pool increases to 150 after an hour, what would be the growth rate of population?

(A) 50 per hour (B) 200 per hour (C) 5 per hour(D) 100 per hour

10 Biosphere is

(A) a component in the ecosystem.

(B) composed of the plants present in the soil.

(C) life in the outer space.

(D) composed of all living organisms present on earth which interact with the physical environment.

11. Match the animals given in column A with their location in column B.

	Column A (Animals)		Column B (Location)
a	Dodo	(i)	Africa
b	Quagga	(ii)	Russia
c	Thylacine	(iii)	Mauritius
d	Stellar's sea cow	(iv)	Australia

Choose the correct match from the following:

(A) a-(i), b-(iii), c-(ii), d-(iv) (B) a-(iv), b-(iii), c-(i),d-(ii)

(C) a-(iii), b-(i), c-(ii), d-(iv) (D) a-(iii), b-(i), c-(iv), d-(ii)

12. Which of the following is a partial root parasite?
(A) Sandal wood (B) Mistletoe (C) Orobanche (D) Ganoderma

Question No. 13 to 16 consist of two statements-Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

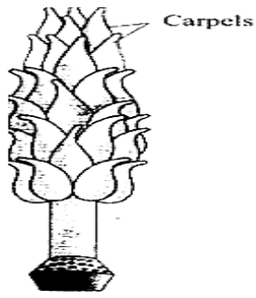
(A) Both (A) and (R) are true, (R) is the correct explanation of (A)
(B) Both (A) and (R) are truebut (R) is not the correct explanation of (A).
(C) (A) is true but (R) is false.
(D) (A) is false but (R) is true.

13. Assertion (A): Flowers are site of sexual reproduction.
Reason (R): Different type of embryological process occur inside the flower
14.Assertion (A): Haemophilia is an autosomal disorder.
Reason (R): A haemophilic father cannever pass the gene for haemophilia to his son.
15. Assertion (A): The enzyme involved in the continuous replication of DNA strand is DNA polymerase.
Reason (R): The polarity of the template strand is 3'→5'.
16. Assertion (A): Natality contributes to the increase in population density.
Reason (R): Natality refers to the number of births during a given period in the population which is added to
the initial density

SECTION - B

17. Identify the type of carpel with the help of diagrams given below. Give an example for each

a) 

b) 

18. Explain co-dominance with the help of one example.
19. On a visit to a Hill station, one of your friend, suddenly became unwell and felt uneasy
(a) List two symptoms you would look for, to term it to be due to allergy
(b) Explain the response of the body to an allergen.
(c) Name two drugs that can be recommended for immediate relief.
20. Explain the roles of the following with the help of an example each in recombinant DNA technology
(a) Restriction enzymes (b) Plasmids

21. 

(a) Label the three tiers 1,2,3 given in the above age pyramid.
(b) What type of population growth is represented by the above age pyramid?

(OR)

What will happen to an ecosystem if:
(a) All producers are removed,
(b) All organisms of herbivore level are eliminated; and
(c) All top carnivore population is removed

SECTION-C

22. Read the following statement and answer the questions that follow:
"A guava fruit has 200 viable seeds"
(a) What are viable seeds?
(b) Write the total number of
(i) Pollen grains (ii) Gametes in producing 200 viable guava seeds
(c) Prepare a flow chart to depict the post-pollination events leading to viable-seed production in a flowering plant.
23. (a) Geitonogamy and xenogamy, both require pollinating agents, yet they are very different from each other. Explain how
(b) Describe the characteristics of flowers that are pollinated by wind
24. (a) How does a test cross help to determine the genotype of an individual?
(b) What is the cross between the progeny of F_1, and the homozygous recessive parent called? How is it useful?
(c) A person has to perform crosses for the purpose of studying inheritance of a few traits/characters. What should be the criteria for selecting the organisms?

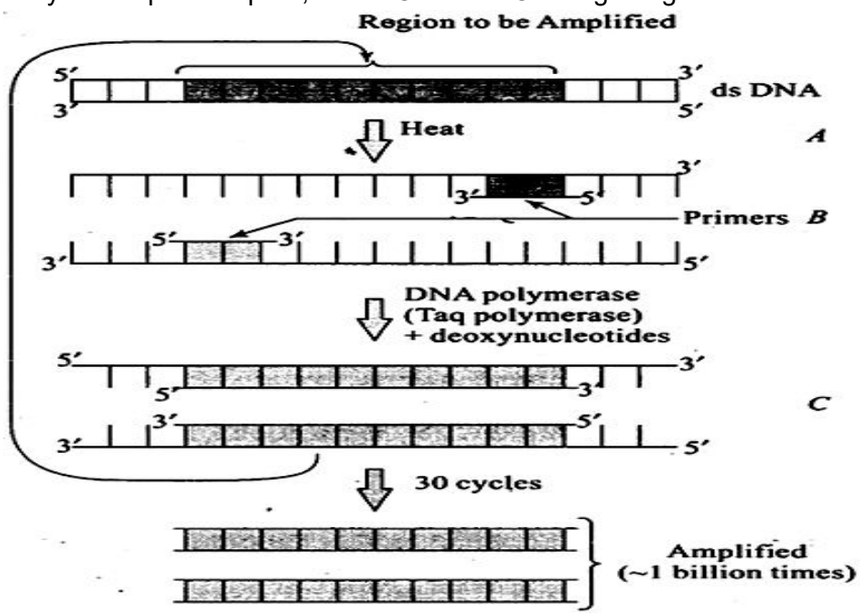
25. "The population of a metro city experiences fluctuations in it's population density over a period of time."
(A) When does the population in a metro city tend to increase?
(B) When does the population in a metro city tend to decline?
(C) If 'N' is the population density at the time‘t’, write the population density at the time 't+1’

26.Differentiate between active immunity and passive immunity.

(OR)

(a) What are interferons? How do interferons check infection of new cells?
(b) Why is mother’s milk considered the most appropriate food for a new born infant?

27. (a) Identify and explain steps A, B and C in the PCR diagram given below



(b) While doing a PCR, ‘denaturation’ step is missed. What will be its effect on the process?

28. (a) “In a food-chain, a trophic level represents a functional level, not a species”. Explain.
(b) Organisms at a higher trophic level have less energy available. Comment.

SECTION - D

Q No. 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart

29. Read the following passage and answer the questions given below:

Sutton, who was American, studied chromosomes and meiosis in grasshoppers. Boveri, who was German, studied the same things in sea urchins. In 1902 and 1903, Sutton and Boveri published independent papers proposing Chromosomal Theory of Inheritance. They state that genes are found at specific locations on chromosomes and the behaviour of chromosomes during meiosis can explain Mendel’s law of inheritance. TH Morgan, worked with tiny fruit flies, Drosophila melanogaster and provided the first strong confirmation of the chromosomal theory. He concluded that the eye color gene must be located on the X-chromosome.

(a) How do hereditary traits and chromosome behaviour pass from one generation to the next?
(b) Is it true with respect to chromosomal theory of inheritance that both chromosomes as well as genes segregate at the time of gamete formation such that complete pair is transmitted to a gamete?
(c) What does the Chromosomal theory of inheritance explains?

(OR)

How chromosomal theory of inheritance is different from Mendel’s theory?

30. Read the following passage and answer the questions given below:

AIDS is considered as a ‘syndrome’ rather as a disease. It is so because AIDS causing virus (HIV) enters the body of a healthy person generally through sexual organs or through blood transfusion. It damages body’s Immune system and therefore, body no longer is able to fight off minor infections. Thus, there are no specific disease symptoms for AIDS and the patient develops complex diseases and symptoms.

(a) What are the common symptoms of AIDS?
(b) Mention two diseases that spread through sexual contact.
(c) Name any three preventive measurer of AIDS disease.

(OR)

(c) How AIDS can be diagnosed?

SECTION - E

31. What is polyembryony and how can it be commercially exploited?

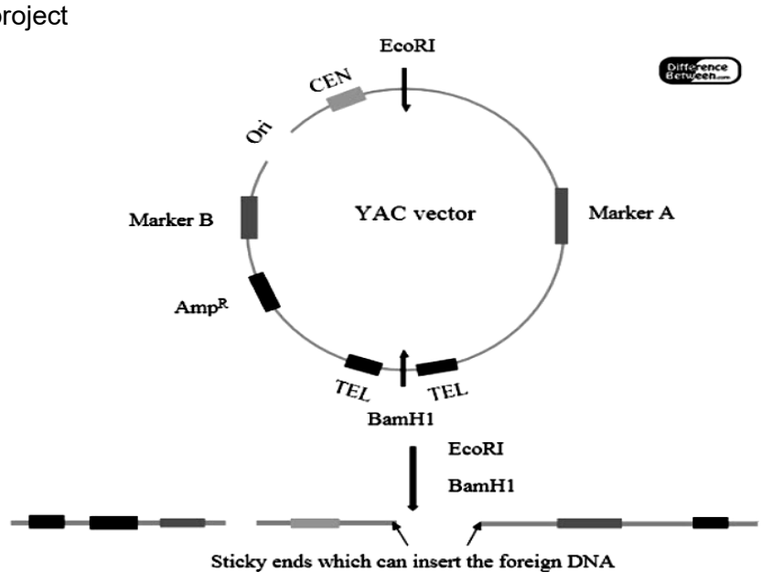
(OR)

Are parthenocarpy and apomixis different phenomena? Discuss their benefits.

32. (a) State the ‘Central dogma’ as proposed by Francis Crick. Are there any exceptions to it? Support your answer with a reason and an example.
(b) Explain how the biochemical characterisation (nature) of ‘Transforming Principle’ was determined, which was not defined from Griffith’s experiments.

(OR)

(a) What do ‘Y’ and ‘B’; stand for in ‘YAC’ and ‘BAC’ used in Human Genome Project (hGP).Mention their role in the project



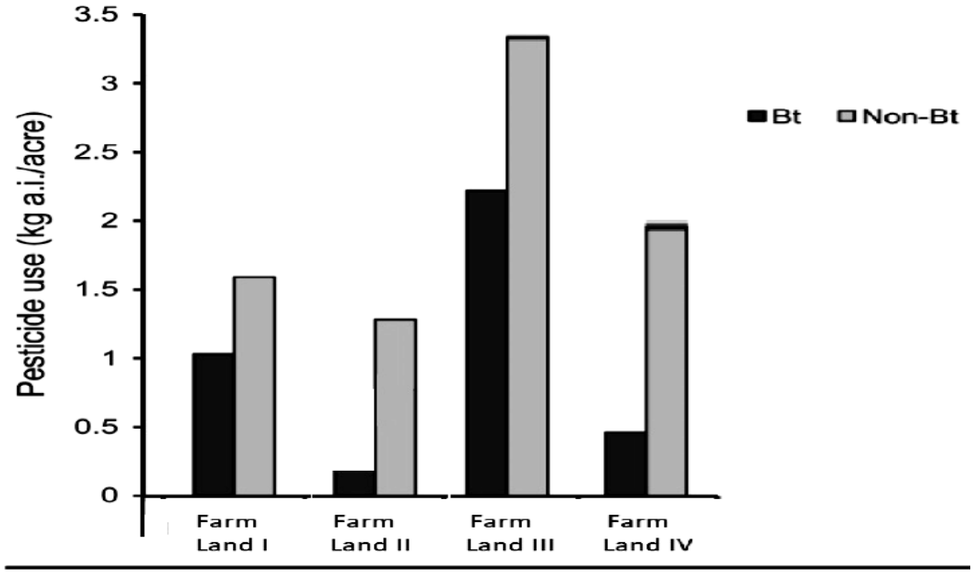
(b) Write the percentage of the total human genome that codes for proteins and the percentage of discovered genes whose functions are known as observed during hGP.

(c) Expand ‘SNPs’ identified by scientists in hGP

33. Define an operon. Explain the role of different genes in a lac operon, when in a ‘ Switched On ‘ state?

(OR)

GM crops especially Bt crops are known to have higher resistance to pest attacks. To substantiate this, an experimental study was conducted in 4 different farmlands growing Bt and non Bt-Cotton crops. The farm lands had the same dimensions, fertility and were under similarclimatic conditions. The histogram below shows the usage of pesticides on Bt crops and non-Btcrops in these farm lands



(a) Which of the above 4 farm lands has successfully applied the concepts of Biotechnology to show better management practices and use of agrochemicals? If you had to cultivate, which crop would you prefer (Bt or Non-Bt) and why?

(b) Cotton Bollworms were introduced in another experimental study on the above farm lands wherein no pesticide was used. Explain what effect would a Bt and Non Bt crop have on the pest.

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JAWAHAR HIGHER SECONDARY SCHOOL – NEYVELI

DATE : 25.01.2023 **I FULL PORTION EXAM (2022-2023)** **MARK : 70**

CLASS : XII **BIOLOGY - CODE – II** **TIME : 3 hrs**

.

General Instructions:

i) All questions are compulsory

ii) The question paper has five sections and 33 questions. All questions are compulsory

iii) Section-A has 16 questions of 1 mark each, Section-B has 5 questions of 2 marks each;

Section-Chas 7 questions of 3 marks each Section-D has 2 case-based questions of 4 marks each and Section-E has 3 questions of 5 marks each.

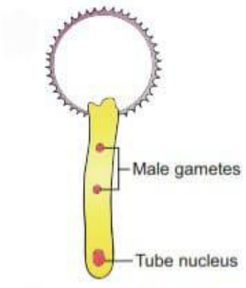
iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

v) Wherever necessary, neat and properly labelled diagrams should be drawn.

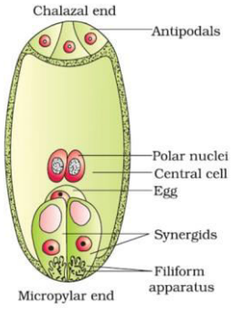
Section – A

1. which of the following is of haploid nature?
   a) Microspores and embryosac
   b) Pollen mother cell and microspores
   c) Megaspore mother cell and embryosac
   d) Nucellus and egg apparatus

2. Identify the incorrect match for (i) and (ii):



(i)



(ii)

	(i)	(ii)
(a)	It is 3-celled	It is 7-celled
(b)	All cells are functional	Antipodals and one of the two synergids do not perform any function.
(c)	It has a single phase of growth	It has two phases- pre and post fertilization.
(d)	Derived from the microspore	Derived from a megaspore.

3. Identify the incorrect statement:
   a) Oxytocin released from posterior pituitary gland.
   b) Prolactin is released from the posterior lobe of the pituitary gland.
   c) LH is responsible for ovulation.
   d) FSH causes the development of graafian follicles.

4. Which of the following is not an example of homologous organs?
   a) Mouth parts of insects
   b) Human arm and forelimb of cow
   c) Thom of Bougainvillea and tendrils of cucurbits
   d) Trunk of an elephant and hand of chimpanzee.

5. What are the possibilities of blood group of father, when the child's group is 'A' and blood group of mother is "A"?
   a) A,B, AB,O b) AB, O c) A,B d) B, O

6. identify the incorrect difference between aneuploidy and polyploidy.

	Aneuploidy	Polyploidy
(a)	More common in humans	Rare in humans
(b)	Abnormal number of chromosomes. Can be extra or fewer	Usually more than 2 in a diploid organism.
(c)	Types include monosomy, trisomy	Types include triploidy, hexaploidy etc
(d)	Triploid and tetraploid types are lethal	Leads to chromosomal disorders.

7. Dinesh studied genetic codes in his class recently but he has some doubts. Predict the effect if, the codon UAU coding for an amino acid at the 25th position of a polypeptide of 50 amino acids, is mutated to UAA.
   a) A polypeptide of 24 amino acids
   b) A polypeptide of 20amino acids

c) Termination is done d) None of the above

8. Identify the incorrect difference between pro-insulin and mature insulin.
   a) Insulin consists of two short polypeptide chains: chain A and chain B.
   b) Pro-insulin contains an extra stretch called the C peptide which is not present in the mature insulin.
   c) Two chains are linked together by peptide linkages.
   d) Like a pro-enzyme, the pro-hormone also needs to be processed before it becomes a fully mature and functional hormone.
9. ------ is the commonly used vector for cloning genes into higher organisms.
   a) Retrovirus b) Adenovirus c) Both (a) and (b) d) None of the above
10. Which of the following forests is more vulnerable to invasion by outside animals and plants?
   a) Temperate b) Mangroves c) Tropical evergreen d) Evergreen forests
11. What do Lantana, Eichhornia, and African catfish have in common?
   a) All are Indian endangered species.
   b) All are key stone species.
   c) All are mammals that can be found in India.
   d) None of the species are native to India or in danger of extinction.
12. Match the following:

	Column (1)	Column (11)
(A)	Dodo	(i) Africa
(B)	Thylacine	(ii)Africa
(C)	Steller's sea cow	(iii)Australia
(D)	Quagga	(iv)Mauritius

   a) (A)-(i), (B)-(iii), (C)-(ii), (D)-(iv) b) (A)-(iv), (B)-(iii), (C)-(i), (D)-(ii)
   c) (A)-(i), (B)-(iv), (C)-(ii), (D)-(iii) d) (A)-(i), (B)-(iv), (C)-(iii), (D)-(ii)

Question No.13 to 16 consist of two statements- Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:
   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true and R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.
13. Assertion (A): Primary transcripts in eukaryotes are non-functional.
   Reason (R): Methyl guanosine triphosphate is attached to 5'-end of mRNA.
14. Assertion (A): E. coli having pBR322 with DNA insert at BamH1 site cannot grow in medium containing tetracycline,
   Reason (R): Recognition site for BamH1 is present in tet^R region of pBR322.
15. Assertion (A): A community with more species is more stable than that with less species.
   Reason (R): More the number of species, lesser the variation in the total biomass production year after year.
16. Assertion (A): Keshav was experiencing high fever and chills from last few days
   Reason (R):Hoemozoin is released from ruptured RBC's in case of Plasmodium infection.

Section –B

17. State the composition and principle of oral pills as a contraceptive measure taking the example of the medicine shown in the image.

18. Karyotype of a child look like this. Identify the disorder and state the symptoms which are likely to be exhibited in this case.

19. Explain four advantages of mycorrhizal association to plants.
20. Explain the method to increase the competency of the bacterial cell membrane to take up recombinant DNA?

OR

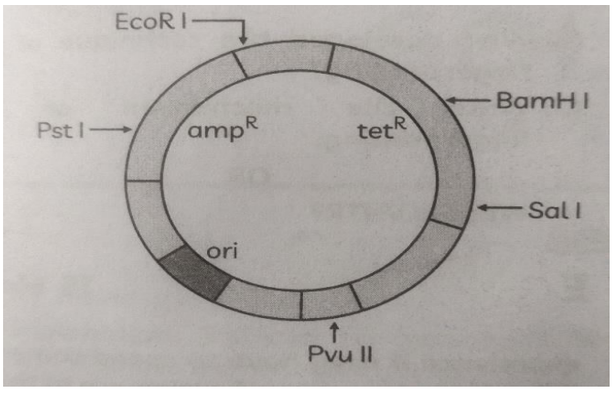
Bioreactors are also known as fermentors in the food industry because they are primarily used for fermentation. A fermentor is essentially a particular kind of bioreactor that is used for fermentation. In this case, the products are complex and made up of numerous different biomolecules. Kefir, kombucha, and beer are a few examples of products that have undergone fermentation. What are bioreactors? How are large volumes of cultures maintained and processed in them.

21. Explain the role of enzymes in the extraction of DNA from Rhizopus in its purest form.

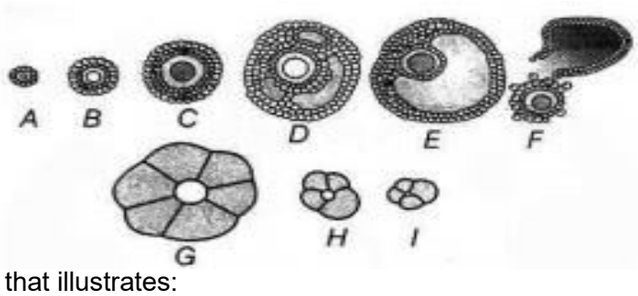
Section –C

22. A fully developed foetus initiates its delivery from the mother's womb. Justify the statement.
23. How would you find out the genotype of a pea plant with violet flowers? Explain with the help of Punnett's square showing crosses.
24. Define flocs and state their importance in biological treatment of waste water.
25. Give reasons:
    A) Spleen is a major lymphoid organ.
    B) Contact inhibition is an important property of normal human cells.

OR

Give reasons:
    A) BOD is an important indicator of water pollution.
    B) Biofertilisers form an important part of the organic farming.
26. A) Describe the levels of biodiversity.
    B) Define the term co-extinction.
27. 

    A) What is the name of the plasmid shown above?
    B) Name any two selectable markers.
    C) Which portion of the figure is responsible for the copy number of the linked DNA?
28. The following is the illustration of the sequence of ovarian events "A" to "I" in a human female:



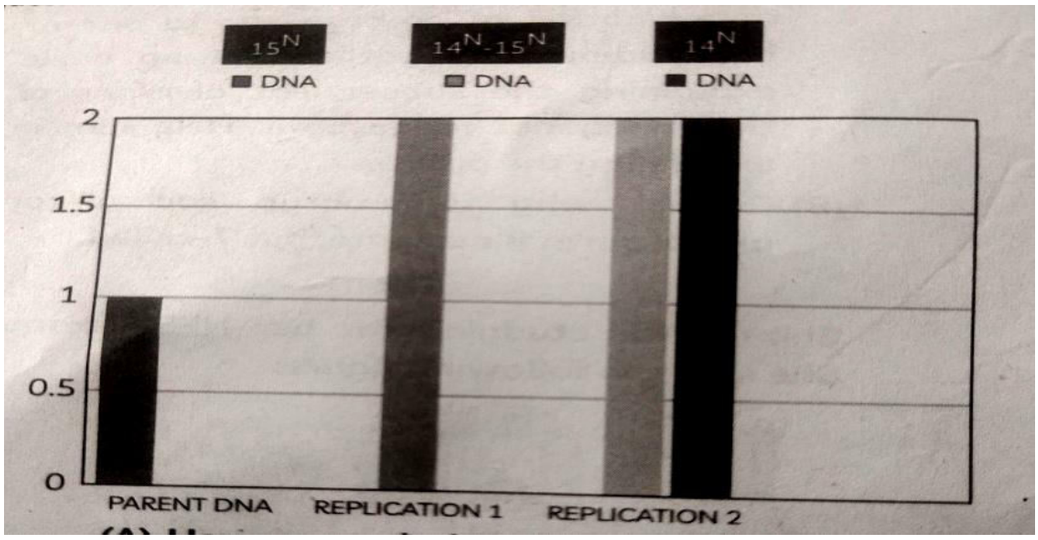
(A) Identify the figure that illustrates:
    i) corpus luteum (ii) ovulation
(B) Name the pituitary hormone that influences corpus luteum formation.
(C) What is the difference between (D) and (E) ?

Section –D

29. Messelson and Stahl conducted experimentsusing radioactive Nitrogen to determine whether the concept of semiconservative replication of DNA is correct. They used caesium chloride ($CsCl_2$) gradient centrifugation technique for thispurpose.. They created DNA molecules of different densities by using normal nitrogen (^{14}N) and its heavy isotope (^{15}N). For this purpose, E. coli, a bacterium was grown, in the (^{15}N) rich culture till nitrogen in the bacterial DNA was only (^{15}N). The bacteria were later transferred to a culture medium

containing only normal nitrogen that is (^{14}N). The change in density was observed by periodic sample taking exercise.

^{15}N ^{15}N ^{14}N ^{14}N

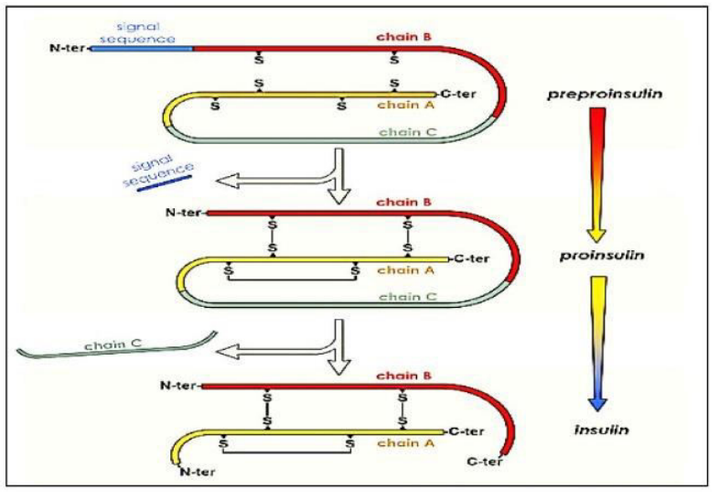


(A) How many hybrid DNA molecules could be seen after the second replication?
(B) Messelson and Stahl provided confirmation to whose model of DNA ?
(C) The density of which DNA molecules increased after second round of replication?

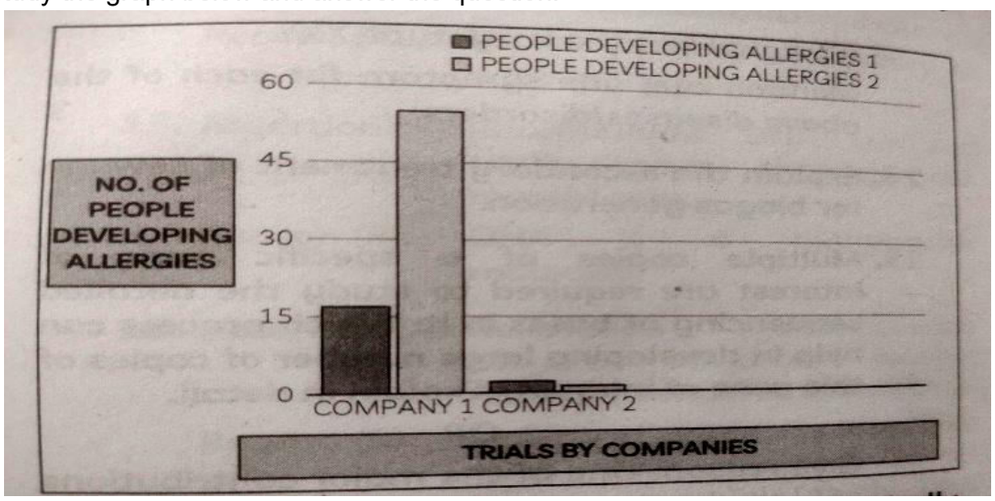
OR

What is the change in the density of the DNA in the first round of replication?

30. Insulin, synthesised from an animal source needed to be processed before reaching a mature stage to be utilised by human subjects. The creation of Insulin by biotechnological interventions proved to be a boon for the diabetic patients.



(A) Study the graph below and answer the question:



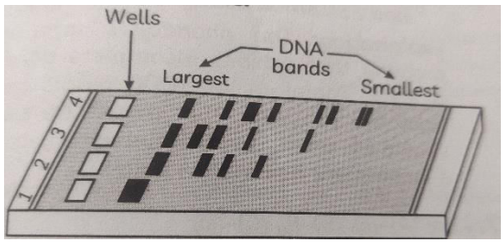
Two companies conducted Genetically Engineered Insulin trials on a group of people. By

observing the graph, identify the company which might have used pro-insulin/animal sourced insulin in their trials. Explain the reason also.
(B) The two short polypeptide chains are linked together by what kind of bridges?
(C) Explain the structure of mature insulin.

OR

Describe the insulin production using recombinant DNA techniques through figure.

31. (A) Molecular marker genotyping with gel electrophoresis is frequently used in plant breeding and genomics, but there are many other applications as well. For instance, the polymerase chain reaction (PCR) is used to amplify specific DNA fragments that are used as markers and isolated from individual plants. The amplified DNA fragments are then loaded onto a gel. Describe the theory that underlies the separation of DNA fragments during the following process.



(B) How and why does recombinant DNA technology use the bacterium Thermusaquaticus? Explain.
(C) Identify the benefits of Taq polymerase and its origin.

(OR)

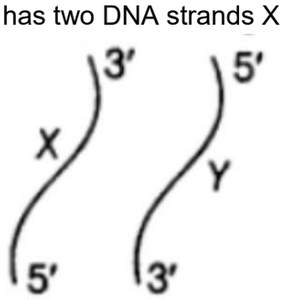
(A) Define recombinant proteins. How do bioreactors assist in their manufacture?
(B) By joining a gene to a plasmid vector, you have produced a recombinant DNA molecule. Your friend accidentally adds an exonuclease enzyme to the tube that contains the recombinant DNA. How would your experiment be impacted if you proceed with the shift right away?
(C) Why and how do bioreactors sustain a continuous culture system?

32. The female gametophyte's embryo sac is a structure with seven cells and eight nuclei. Justify the statement using a labelled diagram.

(OR)

(A) Can pollen from a flowering plant in Pune pollinate a plant in Noida that is of the same species? Give details to support your response.
(B) Create a diagram of a successful pollination-affected pistil. Label the components necessary to deliver the male gametes to their final location.

33. (A) Why is it impossible for an alien DNA to join a chromosome anywhere along its length and carry out regular replication?
(B) A structural gene has two DNA strands X and Y shown along side.



Identify the template strand.
(C) Describe the function of the DNA ligase enzyme in DNA replication.
(D) In a typical nucleus, some chromatin areas are stained lightly while others are stained darkly. What does it mean and why is it that way?

OR

(A) Explain where and how each of the following components fits into a transcription unit using a schematic diagram: structural gene, promoter, and terminator.
(B) How would the lac operon function if E. coli were to grow in a culture medium containing lactose as a source of sugar?
(C) Where and how do peptide bonds arise in a bacterial ribosome?

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JAWAHAR HIGHER SECONDARY SCHOOL, CBSE – NEYVELI

CLASS: XII FULL PORTION EXAM (2022 – 2023) MARKS: 70

DATE: 04.01.2023 COMPUTER SCIEMCE (CODE – I) TIME: 3Hrs

GENERAL INSTRUCTIONS:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each.

SECTION – A

1) Which of the following is a valid keyword?
a) For b) while c) IF d) else

2) Which of the following is not a valid data type of Python
a) Set b) Dictionary c) Real d) List

3) Identify the immutable data type from the following given options
a) Set b) List c) Dictionary d) Tuple

4) Python does not allow us to assign a value to multiple variables at once.
For example: a = b=c = 15. (True / False)

5) Read the following code carefully and predict the output:

```
a = {}
a[1] = 1
a['1'] = 2
a[1]= a[1]+1
count = 0
for i in a:
        count += a[i]
print(count)
```

a) Error b) 4 c) 3 d) None of these

6) Consider the following expression
Not false and true or true or false
Output will be
a) True b) false c) None d) Error

7) Which of the following network device is a broadcasting device:
a) Hub b) Switch c) Gateway d) Router

8) Which mode of file operation will allow to add new data in file?
a) Append Mode b) Writing Mode Reading mode d) Binary mode

9) Which command is used to modify infrastructure in a table:
a) update b) Alter c) Modify d) Change

10) Which command is used to create a new database in table?
a) Insert b) Create c) Add d) Select

11) What will be the output of the following python dictionary operation?

```
data = {'A':2000, 'B':2500, 'C':3000, 'A':4000}
print(data)
```

a) {'A':2000, 'B':2500, 'C':3000, 'A':4000} b) {'A':2000, 'B':2500, 'C':3000}
c) {'A':4000, 'B':2500, 'C':3000} d) It will generate an error.

12) Fill in the blanks:
_____ is a non – key attribute, whose values are derived from the primary key of some other table
a) Candidate key b) Foreign Key c) Alternate Key d0 Primary Key

13)…… is used to position the file object at a particular position in a file.
a) seekp () b) tellg () c) tell () d) seek ()

14)…… is used to display records without repetition.
a) DISTINCT b) UNIQUE c)PRIMARY KEY d) None of them

15) Write the output:-

```
myTuple = ("John", "Peter", "Vicky")
x = "#".join(myTuple)
print(x)
```

a) #John#Peter#Vicky b) John#Peter#Vicky
c) John#Peter#Vicky# d) #John#Peter#Vicky#

16) Output of following expression will be:

```
46.0 + 15 * 5 - (60*3)
```

a) -59.0 b) 59.0 c) 44.0 d) Error

Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choiceas

(a) Both A and R are true and R is the correct explanation for A
(b) Both A and R are true and R is not the correct explanation for A
(c) A is True but R is False
(d) A is false but R is True

17) Assertion (A): Function can take input values as parameters, execute them and return utput (if required) to the calling function with a return statement.
Reason (R): A function in Python can return multiple values

18)Assertion (A): Pickle in Python is primarily used in serializing and deserializing a Python object structure
Reason (R): pickle.dump() method is used to write the object in file and pickle.load() method is used to read the object from pickled file

SECTION – B

19) Master Samarjeet Singh Chandel is a student of Python programming language. He is trying to develop a code to reverse a given number. But system is showing some errors. Check and rewrite the code after removing all errors.

```
number = int(input("Enter the integer number: ")
        rev_number = 0
        while (number > 0)
        remainder = number % 10
        revs_number = (revs_number * 10) + remainder
         number = number / 10
        print("The reverse number is : {}".format(revs_number))
```

20)Write any two shortcomings of networking?

(or)

What is NIC and Repeater?

21) a) Write the output of: print(Mystring[: : 5])
If the given string is., Mystring = “Python Programming Language”

b) Write the output of the code given below:

```
player _ data = { “Name : “Master Bhanu Sharma”, “Stipend” :800}
player _data [“Stipend”] = 750
player _ data [“Game”] = “Chess”
print (player _data.items())
```

22)Explain the use of “Primary Key” in RDBMS. Justify your answer with an example.

23) Write the full forms of the following:
a) POP3 b) VoIP c) SLIP d) HTML

24)What do you mean by Arbitrary Arguments (*args) argument in python? Describe with example.

(or)

Predict the output of the Python code given below:

```
tup1 = (101, 220, 303, 44, 555 ,616)
list1 =list(tup1)
new_list = []
for i in list1:
    if i%2==0:
        new_list.append(i)
        new_tuple = tuple(new_list)
print(new_tuple)
```

25) Differentiate between DDL and DCL commands.

(or)

Categorize the following commands as DDL or DML:
INSERT, UPDATE, ALTER, DROP

SECTION –C

26 . a) Consider the following tables – students and course
Table – Students

Admn_No	Name	Course_Code
101	Anurag Sharma	C001
102	Bhanu Sharma	C002
103	Mahi Tilva	C003
104	Tvisha Solanki	C001
105	Yash Patil	C003

Table – Course

Course_Code	Name
C001	Core Python
C002	Python Pandas
C003	Python Matplotlib

i)What will be the output of following statement:

SELECT * FROM STUDENT NATURAL JOIN COURSE;

ii) what is the degree and cardinality of the student and the resultant relation.

b) Write the output of the queries (i) to (iv) based on the table TECH_COURSE given below:

Table – Garments

GCode	GName	Size	Colour	Price
111	Tshirt	XL	Red	1400.00
112	Jeans	L	Blue	1600.00
113	Skirt	M	Black	1100.00
114	Jacket	XL	Blue	4000.00
115	Trousers	L	Brown	1500.00
116	Ladies Top	L	Pink	1200.00

a) SELECT DISTINCT SIZE FROM GARMENTS;
b) SELECT SIZE, COUNT (*), MIN (PRICE) FROM GARMENTS GROUP BY SIZE;
c) SELECT GNAME FROM GARMENTS WHERE PRICE BETWEEN 1500 AND 2500;
d) SELECT GCODE, GNAME, PRICE, PRICE * 100 “AMOUNT FOT 100 ITEMS” FROM GARMENTS WHERE COLOUR IN (“RED”, “PINK”);

27) Write a function count_lines() in Python to read lines from a text file “My_Story.txt” and display how many lines are starting with a vowel.

(or)

Write a function display_words() in python to read lines from a text file "mydata.txt", and display those words which starts with “The”.

28)Write the outputs of SQL queries (i) to (iii) based on relations Movies:

Code	Name	Genres	Rent	Qty
101	Chennai Express	Comedy	60.00	10
102	Raaz	Horror	63.00	5
103	3 idiots	Drama	75.00	7
104	Ektha Tiger	Action	70.00	8
105	Badhaai ho	Comedy	65.00	8
106	1920 A love story	Horror	50.00	5
107	Swadesh	Drama	55.00	9
108	KhattaMeetha	Comedy	45.00	3
109	Bhoot	Horror	40.00	2
110	Andaz Apna Apna	Comedy	65.00	5
111	War	Action	60.00	7
112	Uunchai	Drama	50.00	6

a) SELECT CODE, AVG (RENT) FROM MOVIES GROUP BY GENRES;
b) SELECT MAX(RENT), MIN(RENT) FROM MOVIES;
c) SELECT CODE, NAME, RENT, SAL * QTY “TOTAL AMOUNT” FROM MOVIES WHERE QTY > 8 AND GENRES IN (“Comedy”, “Horror”);

29)Write a function first_list (N), where N is the list of elements passed as argument to the function. The function returns another list names selected_element that stores the all even values of first_list.

30) A list contains following data of a movie: [movie_id, movie_name, movie_price]
Write the following user defined functions to perform given operations on the stack named status:
i) Push_element() - To Push an object containing name and price of a new movie to the stack
ii) Pop_element() - To Pop the objects from the stack and display them.Also, display “Stack Empty” when there are no elements in the stack.

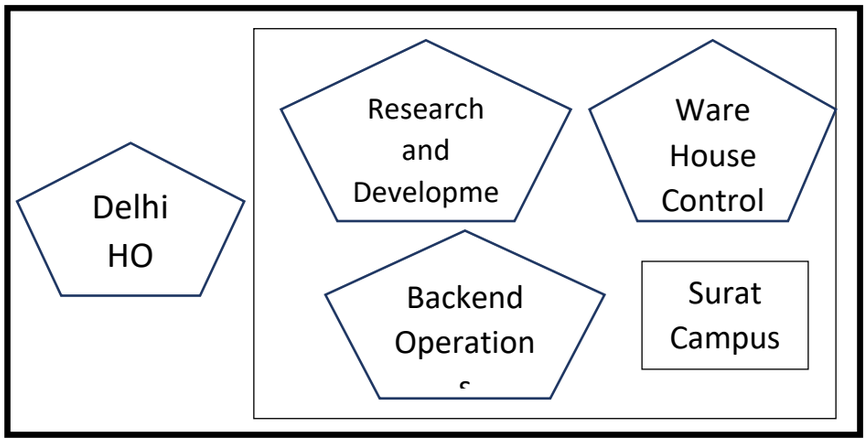
(or)

Write a function in Python, Push(Mdata) where Mdata is a dictionary containing the details of stationary items– {Mname:Rates}. The function should push the names of those movies in the stack who have rating more than 7. Also display the count of elements pushed into the stack.

For example: If the dictionary contains the following data:
Mdata={"Liger":6,"Hit":7,"RRR":5,"Jalsa":5}

SECTION -D

31) New Era online Shopping, a Delhi based IT Training company, is planning to set up operation centres in various cities in next 2 years. Their first campus is coming up in Surat district. At Surat campus, they are planning to have 3 different blocks for Research and Development Wing, Warehouse Control and Backend Operations. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters



Distance between various blocks / locations:

Block	Distance
Research and development to Warehouse control	150 m
Research and development to Backend Operations	85 m
Warehouse Control to Backend Operations	42 m
Surat Campus to Delhi HO	1250 km

No of Computers:

Block	**No of Computers**
Research and develop	65
Backend Operations	150
Warehouse Control	75

i) Suggest the most appropriate block/location to house the SERVER in the Surat campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.
ii) Suggest a device/software to be installed in the Surat Campus to take care of data security.
iii) Suggest the best wired medium and draw the cable layout (Block to Block) to economically connect various blocks within the Surat Campus.
iv) Suggest the placement of the following devices with appropriate reasons:
a) Switch /Hub b) Repeater
v)Define the term Protocol. Suggest the protocol that shall be needed to provide email facility.

32)a) Write the output of the following code:

```
import random
AR = [20,30,40,50,60,70];
FROM=random.randint(1,5)
TO=random.randint(2,8)
for K in range (FROM, TO+1):
        print (AR[K], end="#")
```

1. 10#40#70#10#20
2. 30#40#50#60#70
3. 50#60#70#30#40
4. 40#50#70#

b) The code given below inserts the following record in the table Friends:
sno – integer ,Name – string, code – integer, salary – integer
Note the following to establish connectivity between Python and MYSQL:

- Username is root
- Password is Window

The table exists in a MYSQL database named school.
The details (SNo, Name, Code and Salary) are to be accepted from the user.

```
import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost", user="root",password="Window",
                                                    database="mydata")
    mycursor=_____    #Statement 1
    sno = int (input ("Enter Serial Number:: "))
    name = input("Enter name :: ")
    code = int(input("Enter code :: "))
    salary = int(input("Enter Salary :: "))
    querry = "insert into friends values({},'{}',{},{})".format (sno, name, code,
        salary)
    _____          #Statement 2
    _____          # Statement 3
    print("Data Added successfully")
```

Write the following missing statements to complete the code:
Statement 1 – to form the cursor object
Statement 2 – to execute the command that inserts the record in the tableStudent.
Statement 3 - to add the record permanently in the database

33)a) What is the advantage of using a binary file for permanent storage?
b) Write a Program in Python that defines a function **ADD()** to accept and add data of a player to a CSV file 'student.csv'. Each record consists of a list with field elements as rollno, name and marks to store roll number, name and final marks obtained respectively.

(or)

a) Give any one point of difference between a binary file and a csv file.
b) Write a Program in Python that defines a function **search**() to display the record of those students who is having score more than 300.

SECTION – E

34) Ms Prapti creates a table "Players" with a set of records to maintain the data of movies. After creation of the table, she has entered data of 10 rows in the table

Table: Players

Code	Name	Games	Scrorpoint	Stipend
P101	Amarjeet Singh	Chess	125	25500
P102	Babita Kumari	Swimming	85	15750
P103	Chetan Goyal	Chess	110	18750
P104	David Thomas	Football	95	13500
P105	Ekta Singh	Swimming	110	28000
P106	Fazil Khan	Cricket	115	23750
P107	Gul Hamid	Football	75	13750
P108	Hukum Thakur	Cricket	65	8500
P109	Indra K Gujral	Football	83	11250
P110	Jaismen Khan	Swimming	135	35750

Based on the data given above answer the following questions:

i) Identify the most appropriate column, which can be considered as Primary key.
ii) If two columns are added and 2 rows are deleted from the table result, what will be the new degree and cardinality of the above table?
iii) Write the statements to:
   a) Insert the following record into the table –
      111, Kamal Arya, Chess, 63, 13750
   b) Increase the stipend amount by 5% for all the players where game is chess.

iv) Master Jatin is a Python programmer. He has written a code and created a binary file "result.dat" with stdid, sname and marks. The file contains 10 records. Now, he has to find a record based on the student id entered by the user and update the marks. The updated record is then to be written in the file "temp.dat." The records which are not to be updated also have to be written to the file "temp.dat". If the student id is not found, an appropriate message should to be displayed.

As a Python expert, help him to complete the following code based on the requirement given above:

```
import _______ #Statement 1
def update_data():
        rec={}
        fin=open("result.dat","rb")
        fout=open("_____________") #Statement 2
        found=False
        nid=int(input("Enter student id to update their marks:: "))
        while True:
            try:
                rec=_____________ #Statement 3
                    if rec["sid"]==nid:
                        found=True
                        rec["Marks"]=int(input("Enter new marks ::"))
                        pickle._____________ #Statement 4
                    else:
                        pickle.dump(rec,fout)
            except:
                break

if found==True:
        print("The marks of student id ",sid," has been updated.")
else:
        print("No student with such id is not found")
fin.close()
fout.close()
```

i) Which module should be imported in the program? (Statement 1)
ii) Write the correct statement required to open a temporary file named temp.dat for writing the updated data. (Statement 2)
iii) Which statement should Jatin fill in Statement 3 to read the data from the binary file, record.dat and in Statement 4 to write the updated data in the file, temp.dat?

****