

**Half Yearly Examination 2017 – 18****Time: 3:00 Hrs.****M. M. 80**

- Q1- A group 40 people wants to form a partnership firm. They want your advice regarding the maximum number of persons that can be there in a partnership firm and the name of the Act under whose provision it is given. 1
- Q2- P Q and R were partners in a firm sharing profits in the ratio 3:2:1. They admitted S as a new partner for 1/8 share in the profits which he acquired 1/16 from P and 1/16 from Q. Calculate new profit sharing ratio of P,Q, R and S. 1
- Q3- Distinguish between 'Dissolutions of Partnership' and 'Dissolution of Partnership Firm' on the basis of Economic Relationship. 1
- Q4- Nusrat and Sonu were partners in a firm sharing profits in the ratio of 3:2. During the year ended 31-3-2015, Nusrat had withdrawn 15,000. Interest on her drawings amounted to 300. Pass necessary journal entry for charging interest on drawings assuming that the capitals of the partners were fixed. 1
- Q5- Akshat Bilal and Charu are partners dealing in the sale of sports equipment. Akshat without the knowledge of Bilal and Charu is also running the business of supplying sports equipment to a few sports clubs in which his son is a member. He is earning good profits from this business but did not inform Bilal and Charu about this. Was Akshat correct in doing so? Indicate a value which he did not follow. 1
- Q6- P Q and R are partners in a firm. Q retired and his capital balance after adjustments for Reserves, Accumulated profit/losses and profit on revaluation was Rs 2,00,000. Q was paid 2,50,000 in full settlement. Thereafter, S was admitted as a partner in the new firm for 1/4 share. Compute the amount of goodwill share brought in by S. 1
- Q7- X Y and Z have been sharing profits in the ratio of 2:2:1 respectively, Z wants that he should be given equal share in profits with X and Y and he further wants that the change in the profits sharing ratio should come into effect retrospectively for the last three years. X and Y have no objection to this. The profit for last three years were 52,000; 44,200; 51,610. Show the adjustment of profit for the last three years by means of a Journal entry. 3
- Q8- State any three circumstances other than  
[a] admission of a new partner  
[b] retirement of a partner and  
[c] death of a partner, when need for valuation of goodwill of a firm may arise. 3
- Q9- From the following Balance Sheet of A and B, calculate interest on capital @8% p.a. for the year ended 31<sup>st</sup> March 2015 3
- Balance Sheet as at 31<sup>st</sup> March 2015
- | Liabilities       | Amount   | Assets       | Amount   |
|-------------------|----------|--------------|----------|
| A's Capital       | 1,60,000 | Fixed Assets | 3,00,000 |
| B's Capital       | 1,40,000 | Drawings –A  | 40,000   |
| P&L A/c [2014-15] | 1,00,000 | Other Assets | 60,000   |
- Drawing the year, A drawings were 40,000 and B drawings were 50,000. Profit for the year was 1,50,000.
- Q10- Vikash and Vivek were partners in a firm sharing profits in the ratio of 3:2. On 1-4-2016, they admitted Vandana as a new partner for 1/8 share in the profits with a guaranteed profit of 1,50,000. The new profit sharing ratio between Vivek and Vikash will remain the same but they decided to bear any deficiency on account of guarantee to Vandana in the ratio 2:3. The profit of the firm for the year ended 31.3.17 was 9,00,000. Prepare Profit and Loss Appropriation Account of Vikash, Vivek and Vandana for the year ended 31-3-17. 3

Q11- Ajay, Binay and Chetan were partner sharing profits in the ratio of 3:3:2. The partnership deed provided for the following:

- 1- Salary of 2,000 per quarter to Ajay and Binay
- 2- Chetan was entitled to a commission of 8,000
- 3- Binay was guaranteed a profit of 50,000 per annum

The profit of the firm for year ended 31<sup>st</sup> March 2015 was 1,50,000 which was distributed among Ajay, Binay and Chetan in the ratio of 2:2:1, without taking into consideration the provisions of partnership deed. Pass necessary rectifying entry for the above adjustments in the books of the firm. Show your workings clearly. 4

Q12- A and B contribute 20,00,000 and 12,00,000 respectively by way of capital on which they agree to allow interest at 6% p.a. Their respective share of profit is 3:2 and the profit the year is 1,60,000 before allowing interest on capital, Prepare the necessary account to allocate interest on capitals :

- [1] When partnership deed is silent in treating interest as a charge or appropriation and
- [2] When interest is to be allowed irrespective of profit. 4

Q13- On 31<sup>st</sup> March 2017 the Balance Sheet of Punit, Rajul and Seema was as follow:

Balance Sheet as at March 31, 2015

Liabilities	Amount	Assets	Amount
Capital		Building	40,000
Punit	60,000	Machinery	60,000
Rahul	50,000	Patents	12,000
Seema	30,000	Stock	20,000
Reserves	20,000	Cash	42,000
Creditors	14,000		
	1,74,000		1,74,000

They were sharing Profit and Loss in the ratio 5:3:2. Seema died on October 1, 2015 It was agreed between her executors and the remaining partners that :

- [1] Goodwill be valued at 2 year's purchase of the average profits of the previous five years, which were 2010-11 30,000; 2011-12 26,000; 2012-2013 24,000; 2013-14 30,000 and 2014-15 40,000
- [2] Patents be valued at 16,000; Machinery at 56,000; Building 60,000
- [3] Profit for the year 2015-16 be taken as having been accrued at the same rate as that in previous year.
- [4] Interest on capital be provided at 10% p.a.
- [5] A sum of 15,500 was paid to her executors immediately . 6

Prepare Revaluation Account, Seema's Capital Account and Seem'a Executors Account.

Q14- Asha and Gomti are partners in a firm sharing profits and losses in the ratio of 2:1. Their capital accounts as on 1<sup>st</sup> April 2011 stand at 70,000 and 30,000 respectively. The partners are allowed interest on capital @10%p.a. The drawings of the partners during the year ended 31<sup>st</sup> March 2012 amounted to 4800 and 3600 respectively. Interest is charged on drawings at the rate of 10%p.a. Asha has given a loan to firm as on 1<sup>st</sup> November 2011 of 20,000.

The profit of the firm before above adjustment was 80,000. 10% of this profit is to be kept in Reserve Account.

Current A/c balances on 1<sup>st</sup> April 2011 were Asha 5,000[Cr] and Gomti 25,000[Dr]

Prepare Profit and Loss Appropriation Account and Partners Current Account. 6

Q15- X and Y are partners sharing profit in the ratio 2:1. Their Balance Sheet as at 31<sup>st</sup> March 2016.

Liabilities	Amount	Assets	Amount
Creditors	60,000	Cash and Bank	10,000
P& L	36,000	Debtors	30,000
Capital		Stock	20,000
X	1,50,000	Investments	16,000
Y	1,24,000	Typewriter	10,000
		Building	2,74,000
		Advertisement Suspense	10,000
	3,70,000		3,70,000

They admit Z into partnership on the same date on the following terms

- 1- Z brings in 80,000 as his capital and he is given 1/4<sup>th</sup> share in profit
- 2- Z brings in 30,000 for goodwill, half of which is withdrawn by old partners.
- 3- Investments are valued 20,000, X takes over Investments at this value.
- 4- Typewriter is to be depreciated by 10% and Building by 10%
- 5- An unrecorded stock of Stationery on 31<sup>st</sup> March 2016 is Rs 2,000
- 6- By bringing in or withdrawing cash, the Capital of X and Y are to be made proportionate to that of Z on their profit sharing basis

Pass necessary Journal entries , prepare Revaluation Account,. Capital Account and Balance sheet. 6

Q16- A B and C are partners in a firm sharing profits and losses in the ratio of 3:2:1. Their Balance Sheet as 31<sup>st</sup> March 2016

Liabilities	Amount	Assets	Amount
Creditors	15,000	Cash and Bank	9,000
Reserve Fund	8,000	Debtors 12,500 Less PDD 1,500	11,000
Bills Payable	6,000	Stock	9,000
Capital A	20,000	Furniture	15,000
B	20,000	Machinery	35,000
C	15,000	Goodwill	5,000
	84,000		84,000

B retires on 1<sup>st</sup> April 2016 on the following terms

- 1- Provision for Doubtful Debts be raised by 500
- 2- Stock to be depreciated by 10% and Furniture appreciated by 5%
- 3- There is an outstanding claim of damages of 550 and it is to be provided
- 4- Creditors will be written back by 3,000
- 5- Goodwill of the firm is valued at 11,000
- 6- B is paid in full with the cash brought in by A and C in such a manner that their capitals are in proportion to their profit sharing ratio and Cash in hand remains at 5,000 .

Prepare Revaluation Account, Partners Capital Accounts and the Balance sheet of A and C 8

**OR**

Alfa and Beta were partners in a firm. They were trading in artificial limbs. On 1<sup>st</sup> April, 2013 they admitted Gama, a good friend of Beta into the partnership. Gama lost his one hand in an accident and Alfa and Beta decided to give one artificial hand free of cost to Gama. The Balance Sheet of Alfa and Beta as at 31<sup>st</sup> March, 2013 was as follows:

**Balance Sheet of Alfa and Beta as at 31<sup>st</sup> March, 2013**

Liabilities	Amount	Assets	Amount
Provision for Doubtful Debts	40000	Cash	100000
Workmen's Compensation Fund	56000	Debtors	800000
Outstanding Expenses	30000	Stock	200000
Capital		Machine	386000
Alfa 500000		Profit & Loss A/c	40000
Beta 600000	1100000		
<b>Total</b>	<b>1526000</b>	<b>Total</b>	<b>1526000</b>

Gama was admitted in the firm on the following terms:

- (i) Gama will bring in Rs. 4,00,000 as his share of capital, unable to bring any amount for goodwill.
- (ii) The new profit sharing ratio between Alfa, Beta and Gama will be 3:2:1
- (iii) Claim on account of workmen compensation was Rs. 30,000.
- (iv) To write off bad debts amounted to Rs. 40,000.
- (v) Creditors were paid Rs. 20,000 more.
- (vi) Outstanding expenses be brought down to Rs. 12,000.
- (vii) Rs. 20,000 be provided for an unforeseen liability.
- (viii) Goodwill of the firm was valued at Rs. 1,80,000.

Prepare Revaluation Account, Capital Accounts of Partners and the opening Balance sheet of the new firm.

Also identify any value which the partners wanted to communicate to the society.

Q 17- A B and C were partners sharing profits in the ratio of 2:2:1 They decided to dissolve their firm on 31<sup>st</sup> March 2016 when the Balance Sheet was

Liabilities	Amount	Assets		Amount
Creditors	40,000	Cash		40,000
Bills Payable	46,000	Debtors	70,000	
Employees Provident Fund	32,000	Less PDD	6,000	64,000
Mrs. A's Loan	38,000	Stock		50,000
C's Loan	30,000	Investments		60,000
Investments Fluctuation Reserve	16,000	Furniture		42,000
Capital A/c A	1,20,000	Machinery		1,36,000
B	100000	Land		1,00,000
C	100000	Goodwill		30,000

Following transactions took place

- 1- A took over stock at 36,000. He also took over his wife's loan
- 2- B took over half of Debtors at 28,000
- 3- C took over Investments at 54,000 and half of creditors at their book value
- 4- Remaining Debtors realized 60% of their books value, Furniture sold for 30,000; Machinery 82,000 and Land 1,20,000
- 5- An unrecorded assets was sold for 22,000
- 6- Realisation expenses amounted to 4,000

Prepare necessary Ledger accounts to close the books of the firm.

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OR

P,Q and R are partners sharing profit and losses in the ratio of 2: 2: 1. Their Balance sheet as at 31<sup>st</sup> March 2017 stood as follows:

Liabilities		Amount	Assets	Amount
Capital A/cs:			Land and Building	3,00,000
P	2,50,000		Machinery	1,70,000
Q	2,00,000		Stock	70,000
R	1,50,000	6,00,000	Sundry Debtors	90,000
Workmen Compensation Reserve		50,000	Cash in Hand	30,000
Sundry Creditors		95,000	Cash in Bank	90,000
Outstanding Expenses		5,000		
<b>Total</b>		<b>750,000</b>	<b>Total</b>	<b>750000</b>

The partners decided to share profit and losses equally wef. 1<sup>st</sup> April 2017. They also agree that.

- Value of Land and Building be increased by 5%.
- Value of machinery be decreased by Rs.10,000.
- Stock to be valued at Rs.80,000.
- A Provision for Doubtful Debts be created for Rs. 5,000
- Outstanding expenses are to be written back, being not payable.
- A provision for Workmen compensation Claim be made for Rs.20,000
- The firm assigned the work of reconstitution to its auditors. They were paid Rs.5,000.

Pass necessary Journal entries and prepare Revaluation Account.

Q18- What is meant by Cash Flow Statement? 1

Q19- State with reason whether 'Short term deposits in Bank' will result in inflow outflow or no flow of cash 1

Q20- [a] State any two limitations of financial statements analysis 4

[b] Identify the major heads under which the following items will be shown in the Balance Sheet of a company as per Schedule III of Companies Act 2013

1- Provision for Tax 2- Loan payable on demand 3- Computer 4- Goods acquired for trading

Q21- From the following information, calculate the following ratio

[1] Liquid Ratio [2] Proprietary Ratio

Net Revenue from Operations 5,00,000 Share capital 4,00,000 Gross profit 1,50,000 Reserve and Surplus 50,000 Total Current Assets 3,00,000 Fixed Assets 6,00,000 Closing stock 25,000 Prepaid Insurance 5,000 Total Current Liabilities 1,50,000 . 4

Q22 Prepare a Comparative Income Statement of Amit Ltd. With the help of the following 4

Particular	31 <sup>st</sup> March 2016	31 <sup>st</sup> March 2015
Revenue from Operations	4,00,000	2,50,000
Cost of Material Consumed	70% of Revenue from Operation	60% of Revenue from operation
Other Expenses	12,000	10,000
Income Tax	50% of net Profit before Tax	50% of net Profit before Tax

Particular	2013-14	2012-13
<b>I Equity And Liabilities</b>		
[1] Shareholder's Fund		
[a] Share capital	150,000	1,40,000
[b] Reserves and Surplus	25,000	11,000
[2] Non Current Liabilities		
Long term Borrowing	20,000	12,500
[3] Current Liabilities		
Short term Borrowing	1,200	1,000
Trade Payables	1,500	8,300
Short Term Provision	1,800	1,100
<b>Total</b>	<b>1,99,500</b>	<b>1,73,900</b>
<b>II Assets</b>		
[1] Non Current Assets		
Fixed Assets		
Tangible Assets	1,86,000	1,61,000
Intangible Assets	5,000	3,000
[2] Current Assets		
Current Investments	800	5,00
Inventories	3,700	5,900
Trade Receivables	2,600	2,300
Cash and Cash Equivalents	1,400	1,200
<b>Total</b>	<b>1,99,500</b>	<b>1,73,900</b>

	2013-14	2012-13
1- Reserve and Surplus		
a. Surplus [Balance in statement of P&L]	25,000	11,000
2- Short Term Borrowing		
a. Bank Overdraft	1,200	1,000
3- Short term Provision		
a. Provision for Tax	1,800	1,100
4- Tangible Assets		
a. Machinery	2,00,000	1,70,000
Accumulated Depreciation	[14,000]	[9,000]
5- Intangible Assets		
a. Patents	5,000	3,000

Additional Information :-

1- Tax paid during the year amounted to 1600

2- Machine with a net book valued or 1000 [Accumulated Depreciation 400] was sold for 200.

Prepare Cash Flow Statement.

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Roll. No.

Code No. 12/English/NLCS/95

## Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 100

### SECTION A-READING

Q.1 Read the following passage and answer the questions given below:

1. In today's fiercely competitive business environment, companies need to communicate information pertaining to a whole range of issues in a lucid and precise manner to their customers.
2. This is a partner so in the case of companies which do business in area such as manufacturing, information technology (IT), engineering products and services may not be understood by customer not familiar with its technical aspects.
3. These communication materials are prepared in a company these days by technical writers – people who can effectively communicate to an intended audience.
4. The skills of technical writer are being increasingly sought for preparing marketing documents such as brochures, case studies, website content and media kits and for the preparation of a whole range of manuals. Though technical writers in company do a good portion of such work, the trend now is to outsource technical writing to free-lancers.
5. Technical writing and writing text-books are poles apart. The former is aimed at those who do not have an in-depth knowledge about a product and hence should be direct and lucid. An overdose of technical terms and jargon would only add to the confusion of the customer.
6. The basic requirement for being a technical writer is near –total mastery over English language. A technical writer should be natural in creative writing and needs to be experts in using Business English.
7. The simply means that those with a Bachelors degree in English Literature along with a diploma degree in Journalism and having a Post Graduate Diploma in Computer Applications (PGDCA) are ideal candidates for being employed as technical writers.
8. According to Joe Winston, Chief Executive Officer of I-manager, speaking ability is not imperative for a technical writer. All that one needs is the talent to write in a simple and effective manner. Many have inhibition in speaking English but their writing skills would be very sharp.
9. Technical writing would be a good option of such people. If a candidate to be assigned the task of preparing high-end technical manuals, he/she is required to have higher qualification such as an M.A./M.Phil in English Literature and a degree such as M.C.A.
10. Companies look for such qualifications because technical writers first need to understand the technical information themselves, before trying to communication it in de-jargonized language to potential customers.
11. However, it is also true that many companies provide rigorous on-the-job training to fresh technical writers before allowing them to graduate to high-end-products.
12. Though the demand for good technical writers has risen sharply over the years, the emphasis is never on number but on skills.
13. They point out that even graduates of English Literature are often found wanting when it comes to creative and effective writing.
14. Merely having the right mix of writing and comprehension skills is not sufficient. A technical writer should keep his writing blades constantly sharpened. It means untold hours of reading up the latest in the technological trends and ceaseless honing of his expressive powers in each piece of writing he produces.
15. A career in technical writing is seen as a good choice for mainly because it is widely held that women are more adept at creative writing than men and the job does not entail graveyard shifts or arduous travelling.
16. A beginner can expect to be paid anywhere between 8000 to 15000 a month. Technical writers usually join as executive technical writers and then go on become senior technical writers, team

leaders, documentation heads and some even management job within a decade. As in most private sector jobs, merit is the main criterion for rise in job and not necessarily the number of years one has put in.

**1.1 On the basis of your reading the passage answer the following questions by choosing the most appropriate option. 4**

- 1) Who prepare the communication material in a company in the present stage?  
(a) novelists (b) story writers  
(c) Technical writers (d) essayists
- 2) Technical writing should be.....  
(a) clear (b) brief (c) direct (d)clear and direct
- 3) Technical writing that includes technical terms and jargon.....  
(a) helps the customer (b) helps the seller  
(c) confuses the customer (d) helps the advertiser

**1.2 Answer the following questions as briefly as possible. 6**

- 1) What is the relation between a customer and the companies in the modern age?
- 2) Why is technical writing needed in today's world?
- 3) What is the nature of the job of a technical writer?
- 4) According to Joe Winston, who could be a technical writer?
- 5) What should be the academic qualification of a technical writer?
- 6) What can be the wages of a beginner per month?

**1.3 Find words from the passage which are similar in meaning to the following (a) clear (para 1) (b) essential (para 8) 2**

**Q.2 Read the passage carefully and answer the questions given below:**

- 1) I was born the 30<sup>th</sup> of November, in 1835, in the almost invisible village of Florida, Monroe County, Missouri. I suppose Florida had less than three hundred inhabitants. It had two streets, each a couple of hundred yards long; the rest of the avenues mere lanes, with rail fences and cornfields on either side. Both the streets and the lanes were paved with the same material-tough black mud in wet times, deep dust in dry.
- 2) Most of the houses were of logs –all of them, indeed, except three or four; these latter were frame ones. There were none of brick, and none of stone. There was a log church, with puncheon floor and slab benches. A puncheon floor is made of logs whose upper surfaces have been chipped flat with the adz. The cracks between the logs were not filled; there was no carpet; consequently, if you dropped anything smaller than a peach, it was likely to go through. The church was perched upon short sections of logs, which elevated it services; the minister had to wait till the disturbance was over. In winter there was always a refreshing breeze up through the puncheon floor; in there fleas enough for all.
- 3) A slab bench is made of the outside cut of a saw-log, with the bark side down; it is supported on four sticks driven into auger holes at the ends; it has no back and no cushions. The church was twilighted with yellow tallow candles in tin sconces hung against the walls. Week days, the church was a schoolhouse.
- 4) There were two stores in the village. My uncle, John A. Quarles, was proprietor of one of them. It was a very small establishment , with a few rolls of “bit ” calices on half a dozen shelves; a few barrels of salt mackerel, coffee , and New Orleans sugar behind the counter ; stacks of brooms ,shovel ,axes, hoes, rakes, and such things here and there ; a lot of cheap hats ,bonnets , and tin ware strung on strings and suspended from the walls ; and at the other end of the room was another counter with bags of shot on it, a cheese or two , and a keg of powder; in front of it a row of nail keys and a few pigs of lead, and behind it a barrel or two of New Orleans molasses and native corn whiskey on tap . if a boy bought five or ten cents worth of anything he has entitled to half a handful of sugar from the barrel; if a woman bought a few yards of calico she was entitled to a spool of thread in addition to the usual gratis ‘trimmins’; if a man bought a trifle, he has at liberty to draw and swallow as big a drink of whisky as he wanted.



**5)** Everything was cheap ; apples ,peaches ,sweet potatoes, Irish potatoes , and corn ,ten cents a bushel ; chickens, ten cents apiece; butter , six cents a pounds ;eggs , three cents a dozen ; coffee and sugar , five cents a pounds ; whisky , ten cents a gallon. I do not know how prices are out there in interior Missouri now, but I know what they are here in Hartford, Connecticut. To wit; apples, three dollars a bushel; peaches, five dollars; Irish potatoes (choices Bermudas), five dollars; chickens a dollar to a dollars and a half apiece, according to weight; butter, forty five to sixty cents a pounds.

**2.1 On the basis of your reading answer the following questions by choosing the best of the given choices:** **2**

(a) The streets of Mark twain in summer were coated with.....

(a) wet earth (b) black mud in wet times and deep dust in dry months

(c) black mud in wet times and dry mud I dry times d) dry mud in wet times and wet mud in dry times

(b) During weekdays the local church served as a.....

(a) bazaar (b) pilgrim spot (c) school house (d)priest lodging

**2.2 Answer the questions in brief** **6**

(a) Mention two facts abouts the writer early life.

(b) How were the houses built in his village?

(c) What bonus was offered to customers at the local store?

(d) Write four aspects of the local church in the writer's village?

(e) What was the cost of a bushel of apples in Hartford Cost?

(f) Explain: "Everything was cheap"

**2.3 Find words/phrases from the passage which mean the same as:** **2**

a) as a result (para 2)

b) free (para 4)

**Q.3 Read the passage carefully**

The day the child is born, the parents dream of making it a doctor, engineer, architect, or an IAS. As the child develops, the hopes and aspirations of parents also develop. They want to see their children earning a handsome amount of money.

Having an ideal career is dream for all and as parents of a teenager; thoughts of your child's career may not be far from your mind. Most of youngster s at the age, however, wrongly believes that they are at the beginning of their career path. But they have been on that road for years – their school studies, recreational activities and hobbies help a child gravitate towards its interests. These interests must drive their ambitions. Gone are the days when one began and ended ones professional career path-one that promises more personal satisfaction and growth , and of course earnings that will let them live a good life. So making a wise choice becomes all the more important. Developing a keen self-knowledge is essential to making the right career decisions. But the entire youngsters are not so self-aware. In fact many of them admit that the need help in planning their careers. Inexperienced, unsure and ill-informed, young people must turn to other for help. And though career counsellors at school are helpful, expert agree that parents are the number one influence on child's choice of career. Sadly many parents are not themselves very sure about how best they can help. Many parents mistakenly try to "tell" kids-directly or indirectly-about the kind of expectations they have with regard to the child's choice of career. The chances are that the child ends up following its parents dream, not its own, will not be a happy, satisfied professional in its adult life. 'A child relies on information from peers when it comes to career options. Parents must guide their wards and allow them to make an informed decision,' says S.C.Moha, executive director of the All India Management Association (AIMA).

-- MARK TWAIN --

**3.1** On the basis of your reading of the above passage, make notes using heading and sub-heading. Use recognizable abbreviations m wherever necessary (minimum 4). Also supply an appropriate title to it. Write a summary of the above passage in 80words. **8**

## **SECTION B-WRITING**

- Q.4 You are Srinivas of D.P.School, Nagpur. As a student Editor of your school magazine, draft a NOTICE in not more than 50 words for your school notice board inviting articles, sketches from students of all classes. **4**

**OR**

Principal, Sunrise Global School, Agra requires receptionists for her school. Draft a suitable ADVERTISEMENT in about 50 words to be published in the national newspaper giving necessary details of qualifications and experience required in the receptionist.

- Q.5 Meera is a resident of Kerala. She writes a LETTER TO THE EDITOR of a local newspaper giving her strong views on the disadvantages of setting up a chemical factory project and makes an appeal to Central Government to reconsider its decision, as it will worsen the environment of the city. Add your own ideas and write this letter. **6**

**OR**

You have bought a flat from PQR Builders, sector 56, NOIDA. Within a period of two months you have started facing a lot of problems like seepage in the walls and ceiling, wall paint peeling off, leaking sanitary fittings life getting stalled etc. write a LETTER OF COMPLAINT in 120-150 words to the Works Manager. You are Karun, A9D Apoorva Apts, and NOIDA.

- Q.6 Write a SPEECH in 150-200 words on BENEFITS OF EARLY RISING to be delivered by you in the morning assembly of your school. You are Karina, head girl.

**OR**

You are Retish .you are very much concerned about the changing attitude of politicians who are using religion for political gains. Write an ARTICLE in 150-200 words for publication in a local daily suggesting to these people to separate religion from politics and work for the betterment of society. **10**

- Q.7 In certain states of India there is a great imbalance in the male –female ratio. This is the result of special treatment given to boys in the family. Why is it so? How can we change this mindset? Write an ARTICLE in 150-200 words on GENDER DISCRIMINATION IN SOCIETY. You are Karun.

**OR**

You are Susan. You have been asked to participate in DEBATE contest to be held in your school. Prepare your speech against the motion EVERYTHING IS PRE DESTINED IN THIS WORLD. (150-200 Words). **10**

**SECTION C LITERATURE**

**Q.8 Read the extract given below and answer the question that follows. 4**

It would be an exotic moments  
Without rush, without engines,  
We would all be together  
In a sudden strangeness.

- (a) What does "it" here refer to?
- (b) Who is the poet of the poem?
- (c) What would be the moment like?
- (d) Explain: sudden strangeness.

**OR**

Surely Shakespeare is wicked, the map a bad example,  
With ships and sun and love tempting them to steal—  
For lives that slyly turn in their cramped holes  
From fog to endless night?

- (a) Why is Shakespeare wicked?
- (b) Why is the map a bad example?
- (c) What is the condition of these children as described in these lines?
- (d) Explain: From fog to endless night.

**Q.9 Answer any four of the following questions in about 30-40 words: 12**

- a) How did Douglas feel under water of the pool in which he was thrown?
- b) Why did Jo think Roger Skunk was better off with the new smell?
- c) What does the writer mean when she says, SAHEB IS NO LONGER HIS OWN MASTER?
- d) Why did General spare the American soldiers?
- e) The crofter can be called a good host. Why?
- f) What would be the result of quietude?

**Q.10 Answer the following in about 120-150 words. 6**

In INDIGO Gandhiji's attitude is flexible and compromising. What value does it bring out? Write a paragraph on it.

**OR**

The rattrap seller says that the whole world about him.....was nothing but a big rattrap. When did the rattrap-seller himself get out of?

**Q.11 Answer the following in about 120-150 words. 6**

What forces conspires to keep the workers in bangle industry of Firozabad in poverty?

**OR**

Bring out the theme of ON THE FACE OF IT?

**Q.12 Discuss Griffin's behavior with Dr.Kemp as opposed to his behavior with 6**

- (a) Mrs. Hall
- (b) Marvel

**Q.13 What did people in the town think about the identity of the stranger? 6**

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# Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 80

**Question No. 1 to 8 carry One Mark each :**

- Q.1 At which level of management are the managers responsible for maintaining the quality of output and the safety standards?
- Q.2 What does the principle of Initiative indicate?
- Q.3 The government of a country is worried about its slow economic growth. For this problem to be solved the Government prepared a team of 10 management specialists. After a month's investigations, the team of specialists submitted its report. In the report it was said that the main reason for the slow economic growth was establishing no new industries. And the reason for this was the inability of the businessmen to arrange finance easily. The team of specialists suggested that there was a need for immediate measures of economic reforms to be taken.  
To which type of economic reforms is the above stated case related?
- Q.4 A company needs a detailed plan for its new project "construction of a shopping mall." What type of plan is it?
- Q.5 What is organizational manual?
- Q.6 Name the first two stages of the evolution of HRM.
- Q.7 Maruti Vega Ltd. entered into the market with coloured television and have now introduced products like audio system, air conditioners, washing machine etc. The company is not only offering the products but also handling complaints and offering after sales services. Identify the element of marketing mix discussed here.
- Q.8 Harshit after completing his graduation started working with a multinational company in Delhi, but due to ill health of his parents he had to go back to his village. There he noticed that the villagers were illiterate but ignorant about their rights. Many vegetable vendors were using stones as weights to sell their vegetables. Some shopkeepers were selling food items without having "FPO Mark". Villagers did not find anything wrong with these practices. So to create awareness among villagers Harshit decided to publish a weekly journal "Jan Jagriti". State the "right" which Harshit has exercised by doing so?

**Question No. 9 to 13 carry Three Marks each :**

- Q.9 Is management a profession on the basis of "Ethical code of conduct"?
- Q.10 What do you understand by the "Flexibility" of principles of management?
- Q.11 What is market orientation concept?
- Q.12 How "costs" create hurdle in planning?
- Q.13 The marketing manager of X Ltd. an organization manufacturing generators has been asked to achieve a target sale of 150 generators per day. He delegates the task to 15 sales managers working under him. Five of the sales managers could not achieve their respective targets.  
Is the marketing manager responsible? Explain in brief the relevant principle in support of your answer.

**Question No. 14 to 19 carry Four Marks each :**

- Q.14 Explain that technique of scientific management which is the strongest motivator for a worker to reach standard performance?
- Q.15 The MD of IKK construction Limited, Delhi Mr. Mishra got the information from a business magazine that the Govt. was worried about Rural development, with this aim in mind, the Govt. has announced to give some exemptions for setting up industrial units in the rural area. Mr. Mishra presented this matter in the meeting of the Board of Directors. In the meeting this proposal was granted approval. The chairperson of the Board of Directors said that through such decision the company will get a lot of profit and the rural area employment.  
After a few days, Mr. Mishra read another news in the business magazine that the construction company had been earning a lot of profit for the last many years. Now attracted by

the profit in the business some MNC's were going to enter the market. Mr. Mishra once again, presented this information before the meeting of the Board of Director's. In the meeting it was decided that in order to face this situation they should concentrate on Quality and Advertisement. By doing so, on the one hand, they would be able to compete with full force and on the other hand, the society will get better service.

(a) Which points of the importance of business Environment have been talked about in the paragraph give above? Identify them by quoting the relevant lines?

(b) Which two values are being provided to the society by the company? 3+1=4

Q.16 Clarify the difference between standing plans and single use plans? 1×4=4

Q.17 "Authority can be delegated but Accountability cannot". Explain this statement.

Q.18 Green Heavens Ltd. Purchased a new hi-tech machine from Germany for manufacturing high quality Auto components in a cost effective manner, But during the production process, the manager observed that the quality of production was not as per standard. On Investigation it was found that there was lack of knowledge amongst the employees of using these hi-tech machines. So, frequent visit of engineers was required from Germany. This resulted in high overhead charges.

(i) Suggest what can be done to develop the skills and abilities of employees for producing high quality products by using these hi-tech machines.

(ii) Also state how the employees or the organization will benefit from your suggestion. 1+3=4

Q.19 Reena found a worn crawling out of newly opened tetra pack of juice manufactured by a reputed company, Zest Ltd. she went back to the shopkeeper from whom the pack was purchased who directed her to call up the customer care centre. When all her efforts failed, she went to consumer activist group to seek help. The group decided to help Reena and take measures to impose restrictions on the sale of the firm's products of the particular batch and urge customers to refrain from buying the products of the company. Zest Ltd. lost its image in the market. The CEO gives the responsibility of bringing back the lost image of the company to a manager.

(i) Identify the concept of marketing management which will help the manager getting the firm out of the above crisis.

(ii) Also explain the role of above identified concept by stating any two points. 1+1½+1½=4

Q.20 Mrs. Renu, the principal of "Prince Public School" appointed Mr. Ravi as the coach for Football Team which was to play the final match in the state level Tournament. During training the coach inspired the players to make up their mind to win the match in all circumstances. Also he stressed that they had to win the match with the difference of at least five goals from the losing team. He explained special methods to the player for playing both offensive and defensive game. Also he told them how after beating the opponents, football would be passed from one player to the other until it reached the goal box of the opposite team. At the end of the training the coach warned all the players against misbehaving with any of the players of the opposite team, otherwise, they could be punished. 1+4=5

(i) Identify the concept of the functions of mgt. described in the paragraph given above.

(ii) Explain the four types of concept identified in point "i" by quoting the relevant lines.

Q.21 "I hope Foods Ltd." is a famous company making different food materials. Mr. Yashraj is the MD of the company. He is fully attached to the Employees of his company. This is the very reason that before taking every decision he consults all the concerned employees. A suggestion box has also been provided in the company. It is opened once a week. The employees giving positive suggestions are rewarded. Besides, all the Employees of the company also enjoy full freedom to communicate with any senior officer any time, concerning matters of both types related to their jobs or their personal lives. 3+2=5

(i) Identify the form of organization described in the paragraph given above and write about two of its advantages.

(ii) Which values have been highlighted in this paragraph? Write about any two of them.

Q.22 Sejal is a student of 10+2 (Commerce) Class. She listened attentively and understood the lecture on consumer protection Act delivered by the teacher. Her teacher remarks that currently consumers enjoy several rights. In case, goods purchased by him causes harm to list her health and property. There is a provision for compensation him / her purchases he / she should keep certain things in mind. Briefly, provisions of the Act can protect the consumer only when he / she has complied with certain fundamental things.

The very next day of this lesson, Sejal purchased on ISI marked heater from Bharti Appliances. She made cash payment, but failed to get cash memo. While making use of the heater she observed that it was not working properly. She contacted the shopkeepers immediately and told him / her problem. Shopkeeper paid no heed to her complaint. Rathor he remarks that the good in question was not bought from his shop. 2+2+1=5

- (i) Identify and explained the right and responsibility of the consumer as refers to in the above paragraph.
- (ii) In addition to the right and responsibility of the consumer identified in point (i) write one more right and one responsibility.
- (iii) Can Sejal lodge a complaint against the shopkeeper?

**Question No. 23 to 25 carry Six Marks each :**

Q.23 Discuss the difference between the contribution of Taylor and Fayal.

Q.24 "Mayank Riceland Limited" is known as the king of rice trade. The company has large market share. Company's internal environment is exceeding pleasant. Chief executive officer of the company has delegated most of the decision making Authority to departmental managers. For instance, all departmental managers have the authority to appoint any employee getting a salary up to Rs. 50,000 per month. They need not obtain prior permission from the CEO for this propose. It is the practice of the company to entrust to one person the responsibility of performing identical activities. It increase the efficiency of organization.

Since everything is positive in the company, all person are keen to seek employment there. Some of the employees are conversing with one another as to how they got appointment in the company.

Deepak Miglani told that he applied for the job after reading an advertisement in the newspaper. He was called for interview. He was selected on this basis.

Deepak Sharma told that he was introduced by the existing finance manager. Deepak Pathak told that he had neither seen any advertisement in the newspaper nor was he introduced to the company by any person, rather he was directly appointed on the basis of intervies conducted in the University where he was about to finish his M.A. Economic course.

Answer the following questions on the basis of the above paragraph : 1+2+1+2=6

- (i) Which factor of the organizing function of the management has been referred to here?
- (ii) Which principle of mgt. has been highlighted here? Clarify the same.
- (iii) Which factor of the staffing function of the management has been referred to here?
- (iv) Described the above mentioned three methods concerning the sources of recruitment as identifies vide point (C).

Q.25 "Bending the customer according to the product and developing the product according to customer needs" are the two important concepts of marketing management.

Identify the concepts and differentiate between the two. 1+1+4=6

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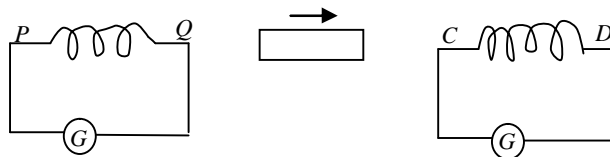
# Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 70

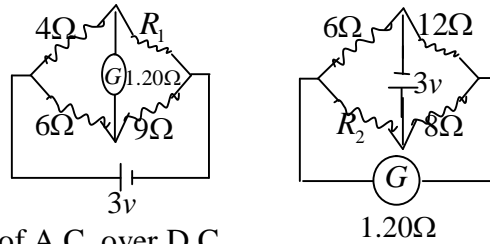
Question No. 1 to 5 carry One Mark each Question No. 6 to 10 carry Two Marks each, Question No. 11 to 22 carry Three Marks each, Question No. 23 Value based Question carry Four Marks only, Question No. 24 to 26 carry Five Marks each.

- Q.1 A spherical rubber balloon carries a charge that is uniformly distributed over its surface. How does the total electric flux coming out of the surface change? Give reason.
- Q.2 A comb run through one's dry hair attract small bits of paper. Why?
- Q.3 Can  $V=IR$  define ohm's law? Explain.
- Q.4 A beam of  $\alpha$  particle projected along +  $x$  axis, experience a force due to a magnetic field along the +  $y$  axis. What is the direction of the magnetic field?
- Q.5 Welder wear special goggles or face masks with glass windows to protect their eyes from electromagnetic radiations. Name the radiation and write the range of frequency.
- Q.6 A bar magnet moved in the direction indicated by the arrow between two coils PQ and CD. Predict the directions of induced current in each coil.



- Q.7 Repulsion is the surer test of magnetism. Comment.
- Q.8 What is meant by wattless current?
- Q.9 Prove that the Induce charge does not depends upon rate of change of magnetic flux.
- Q.10 Deduced ohm's law in terms of drift velocity.
- Q.11 A long straight wire of circular cross section (radius  $a$ ) carrying steady current  $I$ . The current  $I$  is uniformly distributed across this cross section. Calculate the magnetic field in the region  $r < a$  and  $r > a$ .
- Q.12 Three capacitors each capacitance  $9 \text{ pF}$  are connected in series
- (a) What is the total capacitance of the capacitor.
- (b) What is the potential difference across each capacitor of the combination is connected to  $120 \text{ V}$  Supply.
- Q.13 Define mutual inductance. Obtain the mutual inductance of the two concentric circular coils, one of small radius  $r_1$  and other of large radius  $r_2$  ( $r_1 \ll r_2$ ) are placed co-axially with centre coinciding.
- Q.14 Define all three element of earth magnetism with suitable diagram.
- Q.15 A circular coil of wire consisting of 100 turns, each of radius  $8.0 \text{ cm}$  carries a current of  $0.40 \text{ A}$ . what is the magnitude of the magnetic field  $B$  at the center of the coils. (Use  $\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$ )
- Q.16 Define three mode of propagation of Electromagnetic waves with suitable diagram.

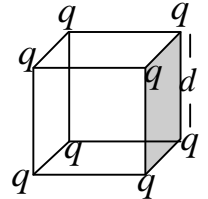
- Q.17 Figure shows two circuits each having a galvanometer and a battery of 3V. When the galvanometers in each arrangement do not show any deflection. Obtain the ration  $R_1/R_2$ .



- Q.18 Write the advantage of A.C. over D.C.

- Q.19 Find electric field intensity due to a dipole on equator point.

- Q.20 8 charges are arranged at the corners of a cube of side  $d$  as shown in fig. Find the work required to put together this arrangement.



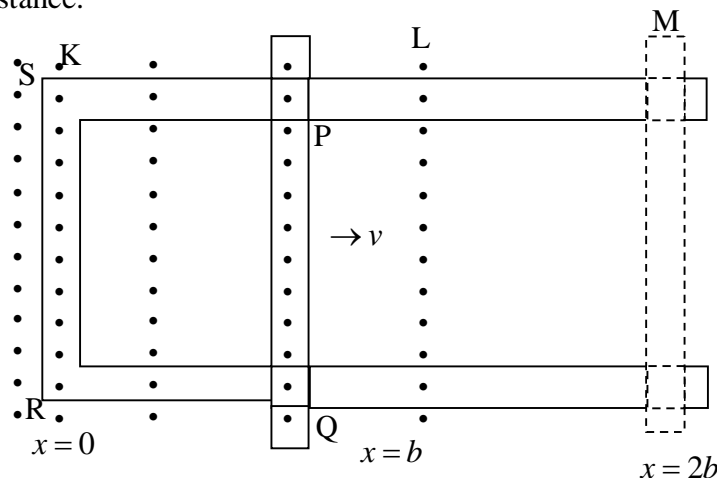
- Q.21 State ohm's law and write its limitation.

- Q.22 Define Eddy current and write its practical use?

- Q.23 **One day Suhana was celebrating her birthday along with some of her friends at home. All of sudden the ceiling fan of the room stopped working. Out of sheer enthusiasm, Suhana first switched off the power supply of the fan then opened the cap of the fan to look for the problem. Her friend Avika tried to stop her but she did not pay any attention. As soon as she touched upon the interior parts of the fan she received a severe electric shock and fell down. All her friends were scared as to what had happened because the power supply had been already switched off.**

- (i) **What negative trait has been shown by Suhana?**
- (ii) **What could be the possible cause of electric shock?**
- (iii) **Write expression for current and emf of the component used in fan with proper phase difference.**

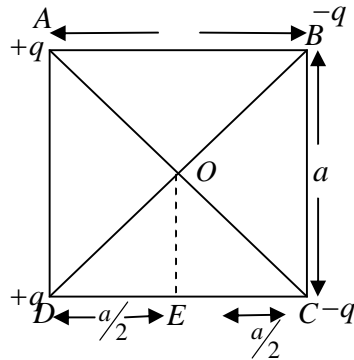
- Q.24 Form fig. the air PQ of the rectangular conductor is moved from  $x=0$ , outwards. The uniform magnetic field is perpendicular to the plane and extends from  $x=0$  to  $x=b$  and is zero for  $x>b$ . Only the arm PQ possesses substantial resistance  $r$ . Consider the situation when the arm PQ is pulled outwards from  $x=0$  to  $x=2b$  and is then moved back to  $x=0$  with constant speed  $v$ . Obtain expression for the flux. The induced emf, the force necessary to pull the arm and the power dissipated as joule heat. Sketch the variation of these quantities with distance.





OR

Four charges  $+q, +q, -q, -q$  are placed at the corners. A, B, C and D of a square of side “a” arrange in the given order. Calculate the electric potential at the centre O. If E is the mid points of sides BC, what be the work done in carrying a charge “e” from o to E?



Q.25 Write is a cyclotron. Discuss the principle, construction, and working of cyclotron. Also find cyclotron frequency.

OR

Describe the principle, construction and working of a moving coil galvanometer. Find its current sensitivity and voltage sensitivity.

- Q.26 (i) Find Electric potential due to an electric dipole at any generated point P at angle  $\theta$ .
- (ii) Draw electric field lines for two isolated negative charge  $q_1$  &  $q_2$  ( $q_1 > q_2$ ). Also mention the neutral point.

OR

- (i) Define Gauss law, use it to find electric field intensity due to spherical shell of radius R. at outside point, at inside point and on the surface of shell.
- (ii) Draw equipotential surface for uniform electric field.

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Roll. No.

Code No. 12/Biology/NLCS/14

# Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 70

## Important Points :

All Questions are compulsory. Internal choice is given in Section B, C, E.

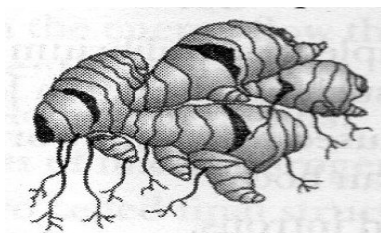
Section – A consist of 5 Questions One Mark each., Section - B consist of 5 Questions Two Marks each.,

Section - C consist of 12 Questions Three Marks each., Section - D consist of 1 Question Four Marks.,

Section - E consist of 3 Questions Five Marks each giving internal choice in each Question.

## Section – A

- Q.1 Name the interaction that exists between Cuscuta and show – flower plant.  
Q.2 Name the enzyme that transcribes hn RNA in eukaryotes.  
Q.3 Identify the picture and mention the vegetative part that helps it to propagate.



- Q.4 Mention how do bears escape from stressful time in winter?  
Q.5 Name the alternate Australian marsupial of lemur?

## Section – B

- Q.6 Beside acting as ‘conduits’ for energy transfer across trophic levels, predators play other important roles. Justify.  
Q.7 Explain the significance of meiosis in diploid organism.  
Q.8 Why the plants that inhabit a desert are not found in a mangrove? Give reasons.  
Q.9 Why are sacred groves highly protected?

OR

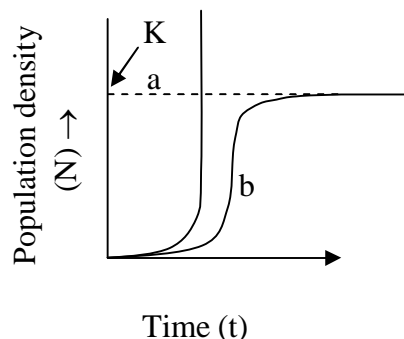
What do you mean by Ramasar convention?

- Q.10 Write the difference between the tender coconut water & the thick, white kernel of a mature coconut & their ploidy?

## Section – C

- Q.11 DDT content in the water of a lake that supplies drinking to the nearby villages, is found to be 0.003ppm. The kingfishers of that area were reported to have 3ppm of DDT. Why has the concentration increased in these birds. What harm will this cause to the bird population? Name the phenomenon.  
Q.12 Alien species are highly invasive & are a threat to indigenous species. Substantiate this statement with any three examples.  
Q.13 Construct an age pyramid which reflects a stable growth status of human population?  
Q.14 Study the population growth curves shown alongside :

- (a) Identify curves ‘a’ & ‘b’.  
(b) Mention the conditions responsible for the curves ‘a’ & ‘b’ respectively.  
(c) Give the necessary equation for the curve ‘b’. which one of them is more realistic one and Why\



- Q.15 Since the origin on earth, there were five episodes of mass extinction of species.  
 (a) How is the 6<sup>th</sup> extinction presently in progress, different from the previous episodes?  
 (b) Who is mainly responsible for the 6<sup>th</sup> extinction?  
 (c) List any four points that can help to overcome this disaster?
- Q.16 (a) How does the Hardy – weingerg’s expression ( $p^2+2pq+q^2=1$ ); explain that genetic equilibrium is maintained in a population?  
 (b) List any two factors that can disturb the genetic equilibrium .



- Q.17 Study the mRNA segment given above which is completed to be translated into a polypeptide chain :  
 (a) Write the codons ‘a’ & ‘b’.  
 (b) What do they code for?  
 (c) How is peptide bond formed between two amino acids in the ribosome?
- Q.18 Colour blindness in humans is a sex – linked trait. Explain with the help of cross.
- Q.19 (a) Expand IUD.  
 (b) Why is hormone releasing IUD considered a good contraceptive to space children?
- Q.20 Describe how the changing levels of FSH, LH & progesterone during menstrual cycle induce changes in the ovary & the uterus in human female.
- Q.21 Fertilization is essential for production of seed, but in some angiosperms, seeds develop without fertilization.  
 (a) Give an example of angiosperm that produces seeds without fertilization. Name the process.  
 (b) Explain the Two ways by which seeds develop without fertilization.
- Q.22 The cell division involved in gamete formation is not of the same type in different organism. Justify.

#### Section – D

- Q.23 Pankaj studies in a town but his family lives in a remote village. In vacations when he visited his home, he found out that his father has arranged the marriage of his 13 years old sister. Pankaj objected to the marriage & convinced him against it.**  
 (i) **What values are shown by Pankaj?**  
 (ii) **What considerations made Pankaj object the marriage?**  
 (iii) **What steps have been taken by the Government to stop child marriages?**

#### Section – E

- Q.24 (i) Draw a simplified model of phosphorous cycling in a terrestrial ecosystem.  
 (ii) Write the importance of such cycles in ecosystems.
- OR
- (i) Taking an example of small pond, explain how the four components of an ecosystem function as a unit.  
 (ii) Name the type of food chain that exists in a pond.
- Q.25 Schematically represent a comparison between gametogenesis in males and females.

OR

Explain the post pollination events leading to seed production in angiosperms.

- Q.26 Schematically explain Lac operon with diagram?

OR

Describe Miller & Urey’s experiment, along with the product obtained. What is the significance of this experiment?

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Roll. No.

Code No. 12/Chemistry/NLCS/32

# Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 70

## General Instructions :

Question No. 1 to 5 **One** Mark each. Question No. 6 to 10 **Two** Marks each.

Question No. 11 to 22 **Three** Marks each. Question 23 Value based **Four** Marks.

Question 24 to 26 **Five** Marks.

- Q.1 Name an element which is doped with silicon to give N – type semiconductor.
- Q.2 What is meant by “order of reaction being one”?
- Q.3 Define Lyophobic colloids.
- Q.4 Which is stronger reducing agent  $\text{Cr}^{2+}$  OR  $\text{Fe}^{2+}$  and why?
- Q.5 Write IUPAC name of  $(\text{CH}_3)_3 - \text{C} - \overset{\text{O}}{\parallel} \text{C} - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{H}$
- Q.6 The density of chromium metal is  $7.2\text{g}/\text{cm}^3$ . If the unit cell is a cubic with an edge length of 289pm, determine the type of the unit cell Atomic mass of Cr=52u.
- Q.7 Write two difference between order of a reaction and its molecularity.
- Q.8 Explain roasting & calcinations with the help of example.
- Q.9 Draw the structure of (i)  $\text{XeF}_4$  (ii)  $\text{H}_2\text{SO}_4$
- Q.10 How would you differentiate between  $\text{SN}^1$  and  $\text{SN}^2$  mechanism of substitution reactions.
- Q.11 Explain the term : (i) Schottky defect (ii) Frenkle defect (iii) Ferro magnetism
- Q.12 A solution is made by dissolving 30g of a non-volatile solute in 90g of water. It has a vapour pressure of 2.8Kpa at 298K. At 298K, vapour pressure of pure water is 3.64Kpa. Calculate the molar mass of the solute.
- Q.13 Determine the values of  $K_c$  and  $\Delta G^\circ$  for the following reaction :  
$$\text{Ni}(s) + 2\text{Ag}^+(aq) \rightarrow \text{Ni}^{2+}(aq) + 2\text{Ag}(s); E^\circ = 1.05\text{V}. 1F = 96500\text{c}/\text{mol}$$
- Q.14 The rate of most reactions doubles when their temperature is raised from 298K, to 308K. Calculate their activation energy. [ $R=8.134\text{J}/\text{molK}$ ,  $\log 2=0.3010$ ].
- Q.15 Give reasons :
- Leather gets hardened after tanning.
  - Addition of alum purifies the water.
  - It is necessary to remove CO when  $\text{NH}_3$  is prepared by Haber’s process.
- Q.16 Explain : (i) emulsion (ii) Dialysis (iii) Zeolites
- Q.17 Explain : (i) Iodine in the refining of titanium  
(ii) Silica in the extraction of copper  
(iii) Mond’s process of refining nickel
- Q.18 Give reason : (i)  $\text{SnCl}_4$  is more covalent than  $\text{SnCl}_2$   
(ii)  $\text{H}_3\text{PO}_2$  is stronger reducing agent than  $\text{H}_3\text{PO}_3$   
(iii)  $\text{NH}_3$  is a stronger base than  $\text{PH}_3$
- Q.19 Account for the following :
- Zn is not considered as a transition element.
  - The  $E^\circ$  value for the  $\text{Mn}^{3+} / \text{Mn}^{2+}$  couple is more positive than  $\text{Cr}^{3+} / \text{Cr}^{2+}$  couple.
  - Actinoids elements show wide range of oxidation states.
- Q.20 Write the hybridization, shape & magnetic behavior of the following complex.
- $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$  (ii)  $[\text{CO}(\text{en})_3]\text{Cl}_3$  (iii)  $\text{K}_2[\text{Ni}(\text{CN})_4]$

- Q.21 (i) Write IUPAC name : (a)  $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]^+$  (b)  $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})\text{Cl}]\text{Cl}_2$   
 (ii) Explain splitting d-orbital in an octahedral crystal field.

Q.22 How the following conversion take place :

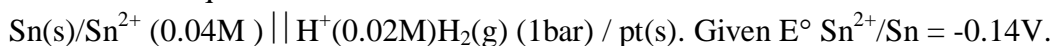
- (i) Ethanol to propane nitrite  
 (ii) Chloroethane to butane  
 (iii) Benzyl alcohol to 2-phenyl ethanoic acid

**Q.23 In winter season, aqueous solution of NaCl is sprinkled along road side of hill stations, to clear the roads after heavy snow fall on the, other hand, freezing mixture of salt and ice is used in the manufacture of ice-cream. Answer the following :**

- (i) **What is the principle behind the clearance of road after snow fall?**  
 (ii) **Why the liquid material of ice-cream freezes soon when the can containing the material is dipped in freezing mixture?**

Q.24 (i) Write the anode & cathode reactions in a lead storage battery.

(ii) Write Nernst equation and calculate the e.m.f. of the cell



OR

- (i)  $\wedge^\circ\text{m}$  for NaCl, HCl and NaAc are 126.4, 425.9 and  $91.05\text{cm}^2 \text{mol}^{-1}$  respectively. Calculate  $\wedge^\circ$  for HAC.  
 (ii) Calculate the standard cell potential of galvanic cell in which the following reaction takes place :  
 $\text{Fe}^{2+}(\text{aq}) + \text{Ag}^+(\text{aq}) \rightarrow \text{Fe}^{3+}(\text{aq}) + \text{Ag}(\text{s})$  Calculate  $\Delta G^\circ$  & equilibrium constant for the reactions.  
 $E^\circ \text{Fe}^{3+}/\text{Fe}^{2+} = 0.77\text{V}$  and  $E^\circ \text{Ag}^+ / \text{Ag} = 0.80\text{V}$ .

Q.25 How would you account for the following :

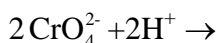
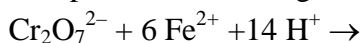
1×5=5

- (i) Transition metals exhibit variable oxidation states.  
 (ii) Zr (Z=40) and Hf (Z=72) have almost identical radii.  
 (iii)  $\text{Mn}^{2+}$  is much more resistant than  $\text{Fe}^{2+}$  towards oxidation.  
 (iv) Zinc is not regarded as a transition element.  
 (v) Transition elements have great tendency for complex formation.

OR

(i) Complete the following reactions :

3+2=5



(ii) What is lanthanide contraction? Name an important alloy which contains some of the lanthanoid metals?

Q.26 (i) Draw structure of : (a)  $\text{H}_3\text{PO}_2$  (b)  $\text{ClF}_3$

(ii) Give reason Why?

(a) N-N single bond is weaker than P-P single bond

(b)  $\text{NH}_3$  is stronger base than  $\text{PH}_3$ .

(c) Oxygen has less electron gain enthalpy with negative sign than sulphur.

OR

(i) Draw structure of : (a)  $\text{XeOF}_4$  (b)  $\text{SF}_4$  2

(ii) Explain : (a) The stability of +5 oxidation state decrease, down the group in group 15. 3

(b) Bond enthalpy of  $\text{F}_2$  is lower than  $\text{Cl}_2$ .

(c) All the bonds in  $\text{PCl}_5$  molecular are not equivalent.

\*\*\*\*\*

Roll. No.

Code No. 12/Physical Ed./NLCS/53

## Half Yearly Examination 2017 – 18

**Time: 3:00 Hrs.**

**M. M. 70**

**Very short Answer Questions carrying One Mark. [Word limit 20 to 20 words]**

- Q.1 Explain the procedure forgiving 'Bye'.
- Q.2 What are 'Specific Sports Programmes'?
- Q.3 What do you mean by 'Asana'?
- Q.4 What do you mean by 'Obesity'?
- Q.5 Define balanced diet.
- Q.6 Define Nutrition.
- Q.7 Define 'disability'?
- Q.8 What do you mean by 'disorder'?
- Q.9 What do you mean by Motor-development?
- Q.10 State food-Supplement.
- Q.11 What do you mean by 'Manarche'?
- Q.12 What is 'Oosteoporsis'?
- Q.13 What do you mean by 'Test'?
- Q.14 What do you mean by 'Measurement'?

**Short Answer Questions carrying Three Marks. [Word limit 80 to 90 words]**

- Q.15 Draw a Fixture of 11 team's on Knock-out basis.
- Q.16 What is 'DIABETES' and how do prevention of DIABETES?
- Q.17 What do you mean by Macro and Micro Nutrients?
- Q.18 What is the 'ADHD' and mention the symptoms of ADHD in children?
- Q.19 Mention any three Advantages of weight training.
- Q.20 Discuss any three psychological traits of women athlete.
- Q.21 Discuss about 'Rili and Jones' Senior Citizen Fitness Test.

**Long Answer Questions carrying Five Marks. [Word limit 150 to 20 words]**

- Q.22 What do you mean by planning? Elucidate the objectives of planning in sports in detail.
- Q.23 Discuss the benefits of Asanas for prevention of diseases in brief.
- Q.24 What do you mean by Healthy weight? Discuss bout the method to control healthy body weight for life time.
- Q.25 Explain the types of disability and write of causes of disability.
- Q.26 Discuss the factors affecting Motor-Development in detail.
- Q.27 Elucidate the Reasons of low participation of women in sports and games.
- Q.28 What do you mean by 'AAPHER' Fitness Test. Explain Administration of items of this Test.

\*\*\*\*\*

Roll. No.

Code No. 12/Economics/NLCS/68

## Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 80

### General Instructions :

1. All Questions are compulsory.
2. Marks are indicated against each Question.
3. Answer should be brief and to the point.

- Q.1 Why Economic problems arise? 1
- Q.2 Define production function? 1
- Q.3 Value of output = ----- . 1
- Q.4 Budget show monetary policy of the Govt. (True / False) 1
- Q.5 When will balance of trade shows a surplus? 1
- Q.6 Why PPC concave? 1
- Q.7 How does the availability of close substitutes of a good affect the price elasticity of demand of that good? 1
- Q.8 Explain the relationship between AP and MP with the help of diagram. 1
- Q.9 A 15% rise in the price of a commodity raises its supply from 300 units to 345 units. Calculate its price elasticity of supply. 3

OR

How is price elasticity of demand affected by – (i) Nature of the commodity (ii) Cost of production

- Q.10 “Saving is both a virtue as well as vice. Explain how? 3
- Q.11 What is credit creation? 3
- Q.12 How can budgetary policy be used to reduce inequalities of income? 3
- Q.13 If balance of trade is showing a deficit of ₹ 20,000/- and value of export is ₹ 30,000 then the value of import will be ₹ 1,00,000/-. Give reason in support of answer. 4
- Q.14 What is “devaluation of currency”? How will it affect domestic and foreign market? 4
- Q.15 Explain consumer’s equilibrium with help of indifference curve analysis. 4
- Q.16 While estimating NI, how will the following be treated? 4
- (i) Imputed rent of self occupied houses.
  - (ii) Interest received on debentures.
  - (iii) Financial help received by flood victims.
  - (iv) Prize won in lottery.
- Q.17 Draw a structure of Government Budget. 4

OR

Do you think Banking structure in India is able to provide benefits to the needy & the poor?

Q.18 By spending his entire income only on two goods  $x$  and  $y$ , a consumer finds that  $\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$ .

Explain how will the consumer react.

4

Q.19 Explain the factors that changes supply of commodity.

6

Q.20 Calculate National Income ( ₹ in crore )

6

Net current transfers to ROW	10
Private final consumption expenditure	600
National debt interest	15
Net exports	(-) 20
Current transfer from Govt.	5
Net domestic product at factor cost accruing to Govt.	25
Govt. final consumption expenditure	100
Net indirect Taxes	30
Net domestic capital formation	70
Net factor income from abroad	10

OR

Explain the precautions required to be taken in estimating NI by value added.

Q.21 Explain central problem of an economy and there solutions by different economy.

6

Q.22 Explain briefly the various instruments of monetary policy.

6

OR

Explain function of Central Bank.

Q.23 Explain the reason for inverse relationship between price of a foreign currency and its demand.

6

Q.24 From the following data about Govt. budget. Find :

6

(i) Revenue Deficit	(ii) Fiscal Deficit	(iii) Primary Deficit
Items	( ₹ in crore )	
Plan capital expenditure	13000	
Revenue expenditure	11000	
Non plan capital expenditure	9000	
Revenue Receipts	8000	
Capital receipts net of borrowing	15000	
Interest payments	4000	

\*\*\*\*\*



# Half Yearly Examination 2017 – 18

**Time: 3:00 Hrs.****M. M. 70**

- Q.1 (i) Find the correct identifiers out of the followings, which can be used for naming variables, constants or functions in a C++ program.  
For, while, INI, New, delete, 1<sup>st</sup> Name, Add + subtract, name 2
- (ii) Observe the following program very carefully and write the names of those header file (s) which are essentially, needed to compile and execute the following program successfully. 1
- ```

typedef char STRING [80]
void main ( )
{
    STRING Txt [ ] = "we love peace",
    int count =0;
    while (Txt [count]!='\0')
    if (isalpha (Txt[count]))
    Txt[count++]= '@';
else
    Txt [count++]= '#';
    puts (Txt);
}

```
- (iii) Observe the following C++ Code very carefully and rewrite it after removing any / all syntactical errors with each correction underlined. 2
- ```

# Define float Maxspeed=60.5;
void main ( )
{
    int Myspeed
    char Alert = 'N';
    cin >>Myspeed;
    IF Myspped>Maxspeed
    Alert= 'y';
    cont << Alert <<endl;
}

```
- (iv) Write the output of the following C++ program code : 2
- ```

void Location (int &x, int y=4)
{
    y+=2;
    X+=y;
}

void main ( )
{
    int PX=10, PY=2;
    Location (PY);
    cont<<PX<< " "<<PY<<endl;
    Location (PX, PY);
    cont <<PX<< " "<< PY<<endl;
}

```

- (v) Write the output of the following C++ program code :

```

class Eval
{
    char level;
    int point;
public
    Eval () { Level = 'E'; point =0;}
    void sink (int L)
{
    Level - = L; }
    void Float (int L)
{
    Level += O;
    point ++;
}
    void show ( )
{
    cont << Level << “#”<< point << endl;
}};

Void main ( )
{
    Eval E;
    E. Sink (3);
    E. Show ( );
    E. Float (7);
    E. Show ( );
    E. Sink (2);
    E. Show ( );
}

```

- (vi) Study the following program and select the possible output (s) from the options (i) to (iv) following it. Also, write the Max and the min values that values that can be assigned to the variable VAL. 2  
 → Assume all required header files are already being included in the program.  
 → Random (n) function generates an integer between ( ) and n-1.

```

void main ( )
{
    randomize ( );
    int VAL;
    VAL = random (3)+2;
    char GUESS [ ] “ABCDEFGHGIJK”;
    for (int I=1; I<=VAL; I++)
{
    for (int J=VAL; J <=7;J++)
    cont <<GUESS[J];
    cont <<endl;
    {
}
}

```

- |             |            |
|-------------|------------|
| (a) BCDEFGH | (b) CDEFGH |
| BCDEFGH     | CDEFGH     |
| (c) EFGH    | (d) FGHI   |
| EFGH        | FGHI       |
| EFGH        | FGHI       |
| EFGH        | FGHI       |

(vii) What do you understand by default arguments and constant argument? Write a short note on their usefulness. 4

(viii) Give the output of the following program 3

```
# include <iostream.h>
# include <conio.h>
{ clrscr ( );
  char s G( )= "CALIFORNIA";
  for (int i=0; S tr [i] != '\0;i++)
  { for (int J=0; J<=I;J++)
    cout<<str [J];
    cont <<endl;
  }
}
```

Q.2 (i) What is a copy constructor? Give a suitable example in C++ to illustrate with its definition within a class and a declaration of an object with the help of it. 2

(ii) Observe the following C++ code and answer the questions (i) and (ii)

```
class passenger
{ long PNR;
  char Name [20];
public :
  passenger ( )
  { cont << "Ready" << endl; }           || F1
  void Book (long P, char N [ ])       ||F2
  { PNR = p; strcpy (Name, N); }
  void print ( )                       || F3
  { cont << PNR << Name << endl; }
  ~Passenger ( )                       || F4
  { cont << "Booking cancelled";}
};
```

(a) Fill in the blank statements in line 1 and line 2 to execute Function 2 and function 3 respectively in the following code :

```
void main ( )
{ Passenger P;
  _____ ||Line 1
  _____ || Line 2
} || Ends here
```

(b) Which function will be executed at } // Ends here? What is this function referred as? 2

(iii) Write the definition of a class photo in C++ with the following description. 4

private members :

→ P no - an integer

→ Category - a string

→ Exhibit - a string

→ Fix Exhibit- A member function to assign Exhibit Gallery as per category as shown in the following table

| Category | Exhibit  |
|----------|----------|
| Antique  | Zaveri   |
| Modern   | Johnsen  |
| Classic  | Terenida |

Public Members:

→ Register ( ) || A function to allow user to enter values for Pno, category and call Fixexhibit ( ) function

→ View All ( ) → A function to display all the data members.

(iv) Answer the question (i) to (iv) based on the following :

5

```

class Interior
{
    int OrderId;
    char Address (20);
protected :
    float Advance;
public :
    Interior ( );
    void Book ( ); void view ( );
};

class Painting : public Interior
{
    int wallArea, colourcode;
protected :
    char Type;
public :
    painting ( );
    void PBook ( );
    void Pview ( );
};

class Billing : public Painting
{
    float charges;
    void calculate ( );
public :
    Billing ( );
    void Bill ( );
    void Billprint ( );
};

```

(a) Which type of inheritance out of the following is illustrated in the above example

→ Single level

→ Multi level

→ Multiple

(b) Write the names of all the data members, which are directly accessible from the member function of class painting.

(c) Write the names of all the member function, which are directly accessible from an object of class Billing.

(d) What will be the order of execution of the constructors, when an object of class Billing is declared?

(e) What will be the size of object belongs to class Billing.

(v) What is Inheritance? Explain its kinds.

Q.3 (i) Write the definition of a function change (int P[ ], int N) in C++, which should change all the multiples of 10 in the array to 1 and rest of the elements as 1, for example, if an array of 10 integers is as follows :

(a) J=100, 43, 20, 56,32, 91, 80, 40, 45, 21, after execution array should be 10, 1, 10, 1, 1, 1, 10, 10, 1, 1. 3

(b) A two dimensional array ARR [50] [20] is stored in the memory along the row with each of its element occupying 4 bytes. Find the address of the element ARR [10] [5] is stored at the memory location 15000. 3

(c) Write a function REVROW (int P[ ][5], int N, int M ) in C++ to display the content of a two dimensional array with each row content in reverse order. 3

Eg.

|    |    |    |    |    |
|----|----|----|----|----|
| 15 | 12 | 56 | 45 | 51 |
| 13 | 91 | 92 | 87 | 63 |
| 11 | 23 | 61 | 46 | 81 |

The function should display output

As

|    |    |    |    |    |
|----|----|----|----|----|
| 51 | 45 | 56 | 12 | 15 |
| 63 | 87 | 92 | 91 | 13 |
| 81 | 46 | 61 | 23 | 81 |

Q.4 (i) Write function, definition for TOWER () in C++ to read the content of a text file WRITEUP.TEXT, count the presence of word TOWER and display the number of occurrences of this word.

→ Tower of Hanoi is an interesting problem Mobile phone tower is away from here, views from EIFFEL TOWER are amazing.

The function should display. 3

(ii) Write a definition for functions COSTLY () in C++ to read each record of a binary file GIFTSDAT, find and display those items. Which are priced more than 2000. Assume that the file GIFTSDAT is created with the help of objects of class GIFTS, which is defined below : 3

```
class GIFTS
{
    int CODE; char ITEM [20]; float price;
public :
    void procure ( )
    {
        cin>>CODE; gets (ITEM);
        cin>>PRICE; }
    void view ( )
    {
        cout << CODE<< ; << ITEM << “ :”<<
        PRICE <<endl;      {
        float GetPrice ( ) { return PRICE;}
    }
};
```

- (iii) Find the output of the following C++ code considering that the binary file MEMBER.DAT exists on the hard disk with records of 100 members 1

```

class MEMBER
{
    int Mno; char Name [ 20];
public :
    void In ( ); void Out ( );
};

void main ( )
{
    ifstream MF;
    MF.open ("MEMBER . DAT", ios::binary|ios ::in);
    MEMBER M;
    MF.read ((char*) &M, sizeof(M));
    MF.read ((char*) &M, sizeof(M));
    MF.read ((char* )&M,sizeof(M));
    int POSITION = MF. Tellg( ) / sizeof(M);
    cout<<"PRESENT RECORD:"<<POSITION<<endl;
    MF. close ( ) ; }

```

- Q.5 (a) Observe the following table carefully and write the names of the most appropriate columns, which can be considered as (a) candidate keys and (b) primary key. 2

| Code | Item               | Qty. | Price | Transaction date |
|------|--------------------|------|-------|------------------|
| 1001 | Plastic Folder 14" | 100  | 3400  | 2014-12-14       |
| 1004 | Pen stand standard | 200  | 4500  | 2015-01-31       |
| 1005 | Stapler Mini       | 250  | 1200  | 2015-02-28       |
| 1009 | Punching Machine   | 200  | 1400  | 2015-03-12       |
| 1003 | Stapler Big        | 100  | 1500  | 2015-02-02       |

- (b) Consider the following DEPT and EMPLOYEE table, write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii).

| DEPT  |                |          |
|-------|----------------|----------|
| DCODE | DEPARTMENT     | LOCATION |
| D01   | INFRASTRUCTURE | DELHI    |
| D02   | MARKETING      | DEHLI    |
| D03   | MEDIA          | MUMBAI   |
| D05   | FINANCE        | KOLKATA  |
| D04   | HUMAN RESOURCE | MUMBAI   |

| EMPLOYEE |              |            |            |        |       |
|----------|--------------|------------|------------|--------|-------|
| WNO      | NAME         | DOJ        | DOB        | GENDER | DCODE |
| 1001     | Geroge K.    | 2013-09-02 | 1991-09-01 | MALE   | DO1   |
| 1002     | Ryma Sen     | 2012-12-11 | 1990-12-15 | FEMALE | DO3   |
| 1003     | Mohitesh     | 2013-20-03 | 1987-09-04 | MALE   | DO5   |
| 1007     | Anil Jha     | 2014-01-17 | 1984-10-19 | MALE   | DO4   |
| 1004     | Manila Sahai | 2012-12-09 | 1986-11-14 | FEMALE | DO1   |
| 1005     | R. Sahay     | 2013-11-18 | 1987-03-31 | MALE   | DO2   |
| 1006     | Jaya Priya   | 2014-06-09 | 1985-06-23 | FEMALE | DO5   |

Note : DOJ refers to date of joining and DOB refers to date of birth of employee :

- (i) To display Eno, Name, Gender, from the table EMPLOYEE in ascending order of Eno.
- (ii) To display the name of all the MALE employees form the table EMPLOYEE.
- (iii) To display the Eno and Name of those workers from the table EMPLOYEE who are born between 1987-01-01 and 1991-12-01.
- (iv) To count and display FEMALE employees who have joined after 1986-01-01.
- (v) SELECT COUNT (\*), DCODE from EMPLOYEE GROUP BY DCODE HAVING COUNT (\*)>1;
- (vi) SELECT DISTINCT DEPARTMENT FROM DEPT;
- (vii) SELECT NAME, DEPARTMENT FROM EMPLOYEE E, DEPT D where E DCODE = D. DCODE AND ENO<1003;
- (viii) SELECT MAX(DOJ), Min (DOB) From EMPLOYEE;

- Q.6 (i) Verify the following using Boolean Laws : 2  
 $U' + U = U$  'V' + U' V+ UV
- (ii) Draw the logic circuit for the following Boolean Expression : 2  
 $(X' + Y). Z + W'$
- (iii) Derive a canonical pos expression for a Boolean function F, represented by the following truth table : 1

| P | Q | R | F(P,Q,R) |
|---|---|---|----------|
| 0 | 0 | 0 | 1        |
| 0 | 0 | 1 | 0        |
| 0 | 1 | 0 | 0        |
| 0 | 1 | 1 | 1        |
| 1 | 0 | 0 | 1        |
| 1 | 0 | 1 | 0        |
| 1 | 1 | 0 | 0        |
| 1 | 1 | 1 | 1        |

- (iv) Reduce the following Boolean Expression to its simplest form using K Map : 3+3=6  
 $F(X,Y,Z,W) \Sigma = (0,1,4,5,6,7,8,9,11,15)$  obtain both POS and SOP.

\*\*\*\*\*

Roll. No.

Code No. 12/Mathematics/NLCS/32

## Half Yearly Examination 2017 – 18

Time: 3:00 Hrs.

M. M. 100

Question No. 1 to 4 carry One Mark each, Question No. 5 to 12 carry Two Marks each.

Question No. 13 to 22 carry Four Marks each, Question No. 23 carry Four Mark Value Based Question.

Question No. 24 to 29 carry Six Marks each.

### Section – A

Q.1 Evaluate :  $\cot^{-1}\left(\frac{-1}{\sqrt{3}}\right)$ .

Q.2 Find the slope of normal to the curve  $y = x^3 - x$  at  $x = 2$ .

Q.3 Find  $\vec{a} \times \vec{b}$ , if  $\vec{a} = 2\hat{i} + \hat{j} + 3\hat{k}$  and  $\vec{b} = 3\hat{i} + 5\hat{j} - 2\hat{k}$ .

Q.4 Let  $\vec{a} = 2\hat{i} + 3\hat{j} + 2\hat{k}$  and  $\vec{b} = \hat{i} + 2\hat{j} + \hat{k}$ . Find the projection of  $\vec{b}$  on  $\vec{a}$ .

### Section – B

Q.5 Write the following functions in the simplest form  $\tan^{-1}\left(\frac{\cos x - \sin x}{\cos x + \sin x}\right)$ .

Q.6 If  $y = \tan^{-1}\left(\frac{\sin x}{1 + \cos x}\right)$  then show that  $y' = \frac{1}{2}$ .

Q.7 The radius of an air bubble is increasing at the rate of 2cm./s. At what rate is the volume of the bubble increasing when the radius is 3cm.?

Q.8 Find the point at which the tangent to the curve  $y = \sqrt{4x - 3}$  has its slope  $\frac{2}{3}$ .

Q.9 Evaluate :  $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$ .

Q.10 Find the integrating factor of differential equation :  $(x^2 + 1)y' + 2xy = x^2 + 4$ .

Q.11 If  $p(A)=0.3$ ,  $p(B)=0.6$  and  $p(B/A)=0.5$ ; find  $p(A/B)$ .

Q.12 Given that events A and B are independent events and  $P(A) = \frac{1}{2}$ ;  $P(A \cup B) = \frac{3}{5}$ ;  $P(B) = x$ . Find  $x$ .

### Section - C

Q.13 Prove that :  $2 \tan^{-1}\left(\frac{1}{2}\right) + \tan^{-1}\frac{1}{7} = \tan^{-1}\frac{31}{17}$ .

Q.14 Prove that :  $\cos^{-1}\frac{12}{13} + \sin^{-1}\frac{3}{5} = \sin^{-1}\frac{56}{65}$ .

OR

Prove that :  $\tan^{-1}\left[\frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1+x} + \sqrt{1-x}}\right] = \frac{\pi}{4} - \frac{1}{2}\cos^{-1}x$ . Where  $x \in [0,1]$ .

Q.15 If  $y = \sin^{-1}\left[\frac{2^{x+1}}{1+4^x}\right]$  find  $\frac{dy}{dx}$ .

OR

If  $y = (\tan^{-1}x)^2$  then show that :  $(x^2 + 1)^2 y_2 + 2x(x^2 + 1)y_1 = 2$ .

Q.16 Find the intervals in which the function  $f$  given by  $f(x) = \sin x + \cos x, x \in [0, 2\pi]$  is strictly increasing or strictly decreasing.



Q.17 Evaluate :  $\int_0^1 \frac{\log(1+x)}{1+x^2} dx$ .

OR

Evaluate :  $\int_{\pi/6}^{\pi/3} \frac{1}{1+\sqrt[3]{\tan x}} dx$ .

Q.18 Evaluate :  $\int \frac{dx}{5+4} \cos x$

Q.19 Evaluate :  $\int \frac{x+3}{x^2-2x-5} dx$ .

Q.20 Solve the differential equation :  $\tan y dx + \sec^2 y \tan x dy = 0$

Q.21 If the vectors satisfy the condition that  $\vec{a} + \vec{b} + \vec{c} = 0$  and  $|\vec{a}| = 2, |\vec{b}| = 4$  and  $|\vec{c}| = 3$  then find the value of  $\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}$ .

OR

Let  $\vec{a} = \hat{i} + 4\hat{j} + 2\hat{k}$ ;  $\vec{b} = 3\hat{i} - 2\hat{j} + 7\hat{k}$  and  $\vec{c} = 2\hat{i} - \hat{j} + 4\hat{k}$ . Find a vector  $\vec{d}$ , which is perpendicular to both  $\vec{a}$  and  $\vec{b}$  and  $\vec{c} \cdot \vec{d} = 15$ .

Q.22 The two adjacent sides of a parallelogram are :  $2\hat{i} - 4\hat{j} + 5\hat{k}$  and  $\hat{i} - 2\hat{j} - 3\hat{k}$ . Find a unit vector parallel to its diagonal. Also find area of parallelogram.

**Q.23 Four defective oranges are mixed with 16 good oranges and by looking at them it is not possible to differentiate between them. Three oranges are drawn at random from the lot. Find the probability distribution of X ( the number of defective oranges in the sample of 3 oranges taken out).**

**Section - D**

Q.24 If  $x = a[\cos \theta + \theta \sin \theta]$  and  $y = a[\sin \theta - \theta \cos \theta]$  find  $\frac{d^2y}{dx^2}$ .

OR

If  $y = x^{\sin x} + (\sin x)^{\cos x}$  then find  $\frac{dy}{dx}$ .

Q.25 Prove that the volume of the largest cone that can be inscribed in a sphere of radius R is  $\frac{8}{27}$  of the volume of the sphere.

Q.26 Find the area included between the curves  $y^2 = 4ax$  and  $x^2 = 4ay$  (Here  $a > 0$ ).

OR

Find the area of the region included between parabola  $y^2 = x$  and the line  $x + y = 2$

Q.27 Find the particular solution of differential equation :  $(x + y)dy + (x - y)dx = 0$  given that  $y = 1$  at  $x = 1$ .

Q.28 A man is known to speak the truth 3 out of 5 times. He throws a die and reports it is a number greater than 4. Find the probability that it is actually a number greater than 4. Write your views about "Truth is the basis of all virtues".

Q.29 A diet for sick person must contain at least 4000 units of vitamins, 50 units of minerals and 1400 units of calories. Two foods A and B are available at a cost of ₹ 5 and ₹ 4 per unit respectively. One unit of A contains 200 units of vitamins, 1 unit of minerals 40 unit of calories, while 1 unit of B contains 100 units of vitamins, 2 units of minerals and 40 units of calories. Find what combination of the foods A and B should be used to have least cost but it must satisfy the requirements of the sick persons. Form the question as LPP and solve it graphically.