Total No. of Printed Pages-3]

Roll No. _____

CC(M)
AGRICULTURE
(OPTIONAL)
PAPER - II
[07]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following instructions carefully before attempting the paper.

*i) There are eight questions divided in Two Sections and printed in English. Candidate has to attempt **Five** questions in All. Question **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least One question from each Section. The number of marks carried by a question/ part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

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v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page be left in between answer to various questions.

SECTION - A

1. **Answer the following in about 150 words each.** **(5×10=50)**

   a) Discuss self, cross and often cross-pollination. Describe the mechanisms that promote self and cross-pollination. **(10)**

   b) How do abiotic stress conditions influence the growth, development and quality of fruits and vegetables. **(10)**

   c) Describe cytoplasmic inheritance. What are sex-linked and sex-limited characters? **(10)**

   d) Enlist plant cell organelles and explain their functions. **(10)**

   e) Explain the pros and cons of promoting genetically modified crops. Discuss the prospects of resistance breeding through Bt gene in brinjal. **(10)**

2. a) Explain biological control of agricultural insect pests? Discuss the methods of biological control in agriculture. **(20)**

   b) Explain male sterility. List the types of male sterility found in plants. Discuss the cytoplasmic-generic male sterility. **(15)**

   c) What do you understand by inbreeding and inbreeding depression in crops? Why is inbreeding depression variable in cross pollinated crops? What is the significance of inbreeding in crop improvement? **(15)**

3. a) Discuss seed dormancy and its major causes. Explain the methods of breaking seed dormancy. **(20)**

   b) Write the principles of integrated plant disease management? Explain the factors affecting disease occurrence? Discuss disease preventive and control measures. **(15)**

   c) Explain the significance of protected cultivation for increasing agricultural production. Discuss the factors affecting greenhouse cultivation in India. **(15)**

4. a) What are the causes for post-harvest losses in horticultural crops? Discuss the strategies to reduce post-harvest losses in horticulture. **(20)**

   b) What is pesticidal formulation and why is it necessary to make such formulations? Discuss different types of pesticidal formulations used in agriculture. **(15)**

   c) Explain the current scenario of transgenic vegetables in India. **(15)**

SECTION - B

5. Answer the following in about 150 words each. **(5×10=50)**

a) Discuss the crops varietal testing and release procedures in India. **(10)**

b) Explain polyploidy and its types. Discuss the role of polyploidy in evolution of crop species. **(10)**

c) Discuss common fungicides used in agriculture in India. Classify fungicides on the basis of their chemical nature. **(10)**

d) What is the difference between public distribution system and targeted public distribution system? Discuss the policy of targeted public distribution system in India. **(10)**

e) What is the difference between photoperiodism and vernalization and how do they affect the process of flowering? **(10)**

6. a) Discuss the use of molecular markers in crop improvement. **(20)**

b) Explain plant quarantine and the quarantine regulations with respect to important pests and diseases of crops. **(15)**

c) Why fruits and vegetables are called protective foods? Explain the role of fruits and vegetables in human health. **(15)**

7. a) What is genetic linkage? Explain types of genetic linkages. **(20)**

b) What is biofortification of crops and its various types? Discuss the achievements and challenges of biofortification in vegetable crops. **(15)**

c) Differentiate between aneuploid, euploid and polyploid. Discuss the application of allopolyploidy in crop improvement. **(15)**

8. a) What are key determinants of malnutrition? Discuss major governmental initiatives being taken to improve nutritional status of the Indian population. **(20)**

b) Explain physiological and biochemical changes occurring during seed germination. **(15)**

c) Enlist important diseases of wheat along with their symptoms. Discuss the strategies for management of wheat diseases. **(15)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)
ANIMAL HUSBANDRY AND VETERINARY SCIENCE
(OPTIONAL)
PAPER - II
[09]

Time Allowed - Three Hours ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

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SECTION - A

1. a) Discuss in detail the occupational zoonoses, give examples. Explain anthrax and brucellosis reference to their occupation exposure. **(10)**

   b) Describe etiology of diarrhoea in calves and their differentiating features. **(10)**

   c) Discuss the sources of air, water and soil pollution in animal houses. **(10)**

   d) Explain the etiology and symptoms of colic in horse. **(10)**

   e) Enlist the names of cranial nerves and write about innervation of trigeminal nerve. **(10)**

2. a) Explain organophosphates toxicity, symptoms and treatments in animals. **(20)**

   b) What are the types of determinants of disease and what interactions could occur between them? **(15)**

   c) Discuss about nerve supply of pelvic limb in domestic animals. **(15)**

3. a) Enlist the chemotherapeutic agents used against ectoparasitic infestations, and write in brief about mode of action of ivermectin. **(20)**

   b) Describe in detail the process of rigor mortis. What are the factors affecting rigor mortis? Differentiate between dark firm dry and pale soft exudates. **(15)**

   c) Write clinical signs, treatment and prevention of milk fever in cattle. **(15)**

4. a) Describe the accessory sex glands in domestic animals and briefly enlist their presence or absence in different animal species. **(20)**

   b) Describe the following. **(3×5=15)**

      i) Cohort, cross-sectional and case-control studies.

      ii) Prevalence of a disease and sensitivity and specificity of a test.

      iii) Visceral larva migrans and Cutaneous larva migrans.

   c) Define immunity and write advantages and disadvantages of live and inactivated vaccines. **(15)**

SECTION - B

5. a) Enlist preanesthetic agents used in dogs and their indications. **(10)**

   b) What are the types of determinants of disease and what interactions could occur between them. **(10)**

   c) Enlist various diseases causing nervous signs in sheep and discuss briefly about scrapie. **(10)**

   d) How will you utilize the inedible by-products of slaughter houses? **(10)**

   e) Discuss about types of ketosis and how will you diagnose and manage a case of ketosis. **(10)**

6. a) Explain the methods of meat preservation & responsibilities of a meat inspector. **(20)**

   b) Discuss about skin structures made up of keratin. **(15)**

   c) Write various orthopaedic disorders of stifle joint in small animals and their management. **(15)**

7. a) Write about the following: **(4×5=20)**

      i. Pasteurization and standardization of milk

      ii. Role of FSSAI and BIS

      iii. Grading of eggs and wool

      iv. Role of veterinarian in wholesome meat production.

   b) Discuss in detail the preparation of indigenous fermented/coagulated milk products. Also, discuss the sources of contamination in these products. **(15)**

   c) Mechanism of action of opioids and different opioids used in animals. **(15)**

8. a) Define hernia and different hernias recorded in domestic animals. **(20)**

   b) Explain sanitary measures required to produce clean and safe milk. **(15)**

   c) Explain the deficiency of Poultry birds. Describe how will you investigate a disease outbreak. **(15)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)

BOTANY

(OPTIONAL)

PAPER - II

[13]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. (a) Principle of Priority and its limitations. **(10)**

   (b) Acetyl CoA is a hub of metabolic activity in the cell. Elaborate. **(10)**

   (c) How useful is the Test of Significance in Statistics. **(10)**

   (d) Lichens as indicator of pollution and their economic importance. **(10)**

   (e) Discuss structure and function of Lac-operon. **(10)**

2. (a) Discuss the role of Endoplasmic reticulum in folding, processing and quality control of proteins. **(20)**

   (b) Explain Polyembryony, Is Polyembryony beneficial for plants. **(15)**

   (c) Describe Environment Act, Briefly discuss the rules and regulations of Environment act and comment on it's merits and demerits. **(15)**

3. (a) Explain various phases of mitosis cycle with suitable diagrams. Explain, why it is equational in nature. **(20)**

   (b) Give a brief account about discovery of auxin. Also discuss how cytokinin regulates cell cycle. **(15)**

   (c) Write an explanatory note on the role of secondary metabolites in the plant defence. **(15)**

4. (a) Explain the role of microbes in bioremediation. **(20)**

   (b) Why Photorespiration is a necessary evil. **(15)**

   (c) What is the significance of knowing the centres of origin in cultivated plants? DiscussVavilov's work in relation to these. **(15)**

SECTION - B

5. (a) What is Red Data Book and it's significance. **(10)**

(b) GS-GOGAT system. **(10)**

(c) Phloem loading. **(10)**

(d) Explain the Role of Apomixis in Plant Breeding. **(10)**

(e) Explain Cytoplasmic Inheritance with suitable examples. **(10)**

6. (a) Rubisco is main Enzyme on Earth. Explain this role with suitable examples. **(20)**

(b) Mention the common name, botanical name, family and parts used of one crop of each- Spice, Beverage, Edible oil and Fiber. **(15)**

(c) What are invasive species. Explain their role in the Ecosystem with suitable examples. **(15)**

7. (a) Structure and function of cell wall. **(20)**

(b) Differentiate between C3, C4 and CAM plants with suitable examples. **(15)**

(c) Importance of various techniques i.e, PCR, DNA fingerprinting, FISH and Southern blotting. **(15)**

8. (a) Discuss the role of chromosomal aberrations in cancer. **(20)**

(b) What is sustainable Development. Highlight it's importance in the present context. **(15)**

(c) Draw the well labelled structure of Procaryotic cell and explain the mode of nutrition in bacteria. **(15)**

Total No. of Printed Pages-7] Roll No. _____

CC(M)

CHEMISTRY

(OPTIONAL)

PAPER - II

[15]

Time Allowed - Three Hours | *Maximum Marks-250*

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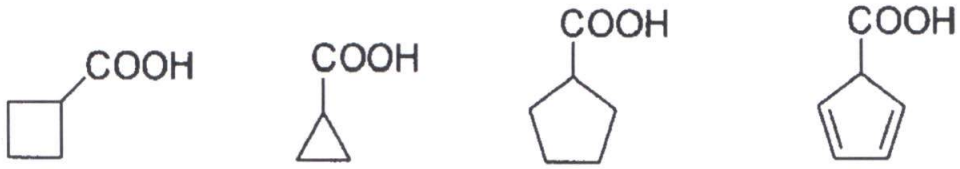
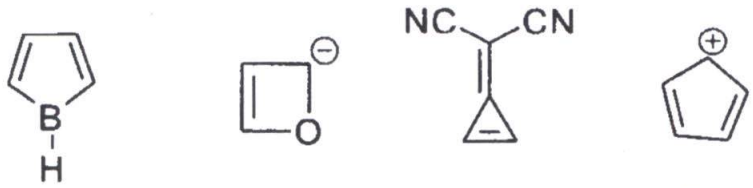
SECTION - A

1. a) Arrange the following carboxylic acid in decreasing order of their reactivity towards the decarboxylation reaction and justify your answer. **(10)**



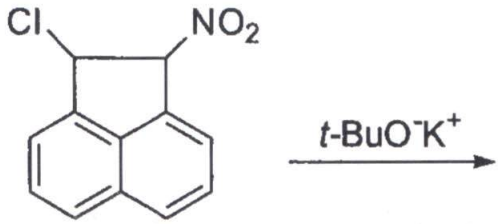
I II III IV

b) Classify the following molecules into aromatic, antiaromatic, and non-aromatic with explanations. **(10)**

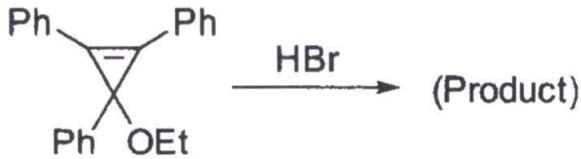


I II III IV

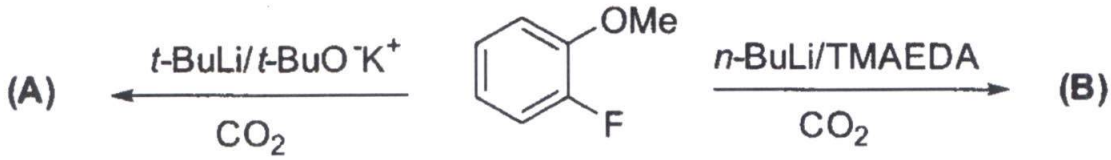
c) i) Complete the following reaction with a suitable mechanism: **(10)**



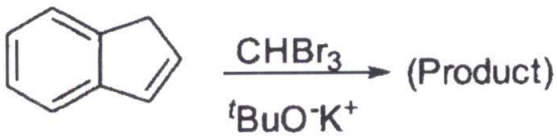
ii) Write the product of reaction given below with its mechanism:



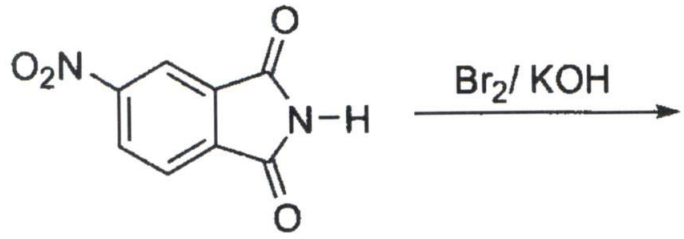
d) Write the structures of the following product(s) **A** and **B** with mechanism: **(10)**



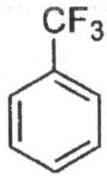
e) Complete the following reaction with its complete mechanism: **(10)**

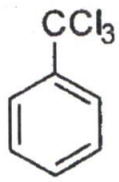


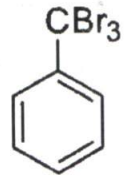
2. a) Give the structure of the major product formed from the following reaction with a mechanism. Assume that standard aqueous workup conditions are used for product isolation. **(20)**

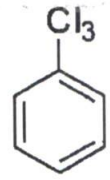


b) Arrange the following in decreasing order of reactivity towards S_EAr: **(15)**

(i) 

(ii) 

(iii) 

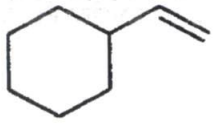
(iv) 

c) The correct major product for the pericyclic reactions with mechanism: **(15)**

(i) 

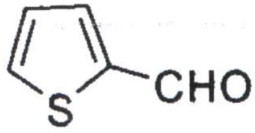
n-Bu_3SnH
AIBN
Benzene,

AIBN = Azobisisobutyronitrile

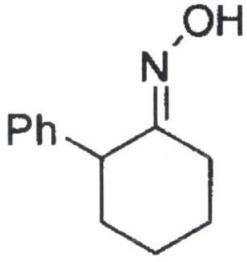
(ii) 

(i) SeO_2
t-BuOOH
(ii) PCC

3. a) Complete the following reactions and give the mechanism: **(20)**

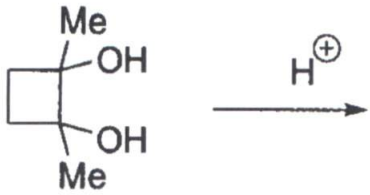
(i) 

$BrCH_2COOEt$
1. Zn
2. H_3O^+

(ii) 

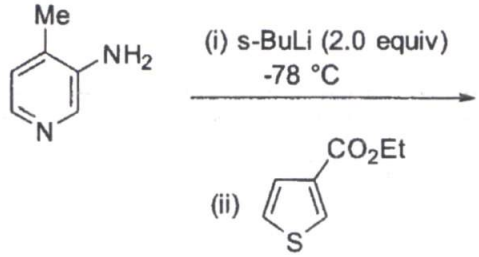
$H^{\oplus}$

b) Write the product formed and write the name of reaction intermediate generated *in situ* in the reaction mixture. **(15)**

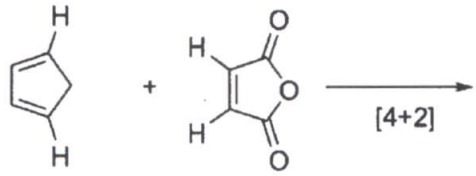


c) Write the products in the following reactions and provided their respective mechanism(s): **(15)**

(i)

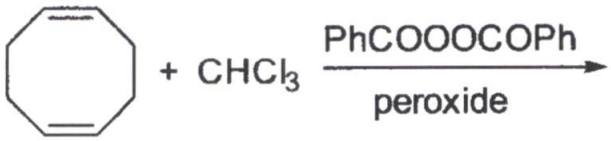


(ii)

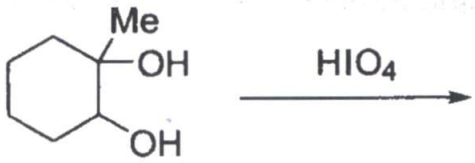


4. a) Give the structure of the major product (s) formed in the following reactions: **(20)**

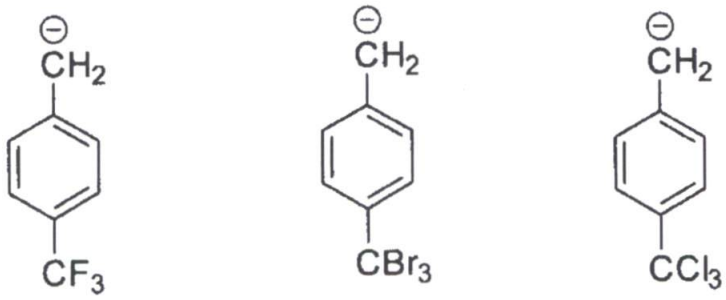
(i)



(ii)

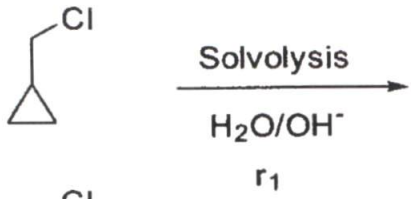


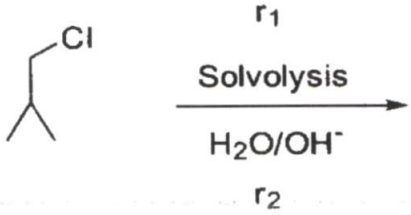
b) Arrange the following in decreasing order of their stability with the explanation. **(15)**



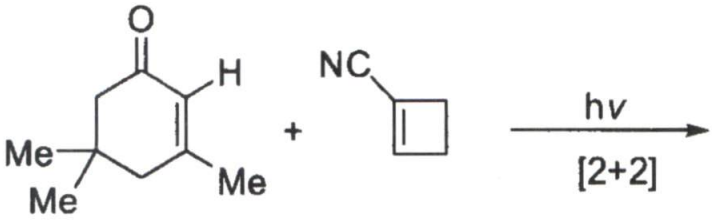
(I) (II) (III)

c) Explain the order of rate for the given solvalysis reaction with suitable explanations: **(15)**

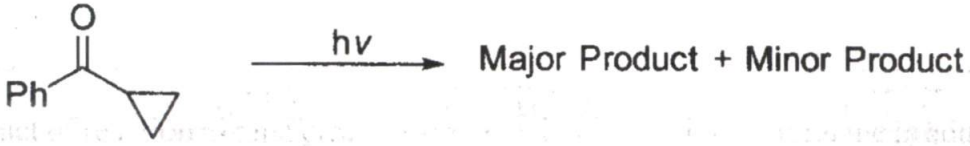
(i) 

(ii) 

SECTION - B

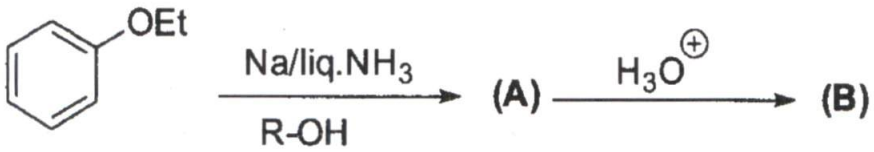
5. a) 

on: **(10)**

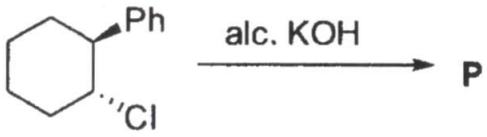
b) 

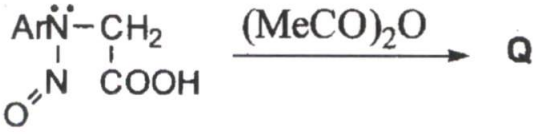
(10)

c) What are A and B in the following reaciton sequence and give the mechanism for the **(10)**

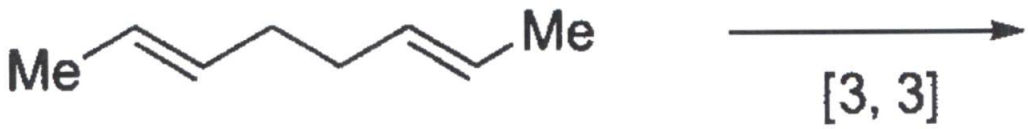


d) ıe formation of **P** and **Q**. **(10)**

(i) 

(ii) 

e) Write the structure of the product formed with mechanism. **(10)**



6. a) Assign structure to the compound with the molecular formula $C_9H_{10}O_2$, on the basis of following spectral data:

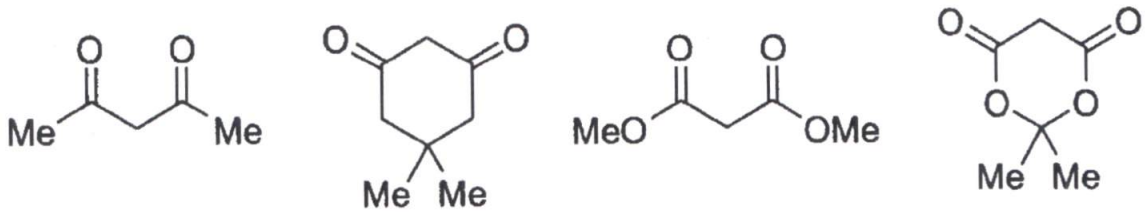
i) UV (EtOH): λ_{max} 268 nm, 264 nm, 257 nm, 243 nm

ii) IR: 1745 cm^{-1}, 1225 cm^{-1}, 749cm^{-1}, 697cm^{-1}

iii) ^1H NMR: δ 7.1-7.3 (m, 5H), 5.0 (s, 2H), 1.96 (s, 3H)

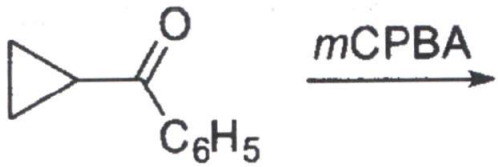
iv) Mass: m/e ions: 105, 108, 91, 43. **(20)**

b) Explain the following compounds with their decreasing order of acidity with explanations: **(15)**



I II III IV

c) Give the structure of the product formed in the following reaction. **(15)**



7. a) Describe the characteristic infrared absorption frequencies that would distinguish between the following pair of compounds. **(20)**

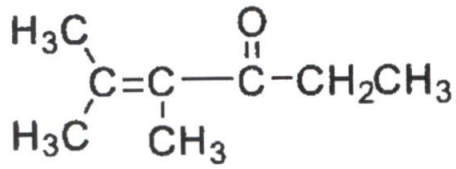
(i) $CH_3(CH_2)_3-\overset{O}{\overset{\|}{C}}-H$ and $CH_3(CH_2)_2-\overset{O}{\overset{\|}{C}}-CH_3$

(ii) $CH_3(CH_2)_5-C\equiv C-H$ and $CH_3(CH_2)_6-C\equiv N$

b) Calculate the intensity ratio of M and M+1 signal for the mass spectrum of Naphthalene molecule. **(15)**

c) Predict the UV maximum for each of the following substances: **(15)**

(i) $H_2C{=}CH{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}CH_3$

(ii) 

8. a) Draw structures, level equivalent protons and indicate the number of signals in each of the following:

i) Mesitylene

ii) *p*-ethylbenzene

iii) Isopropylbenzene **(20)**

b) Discuss and identify the two levels of protein structure (secondary and tertiary). Explain how the structure of a protein structure of a protein affects its properties and how denaturation changes the structure. **(15)**

c) Suggest an explanation for the observed order of SN^1 reactivity of the following compounds: **(15)**

I

II

III

Total No. of Printed Pages-8]

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CC(M)

CIVIL ENGINEERING

(OPTIONAL)

PAPER - II

[17]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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ii) Your answer should be precise and coherent.

iii) For any typographical error, please read it as it appears in the question paper.

iv) Diagrams/Figures, may be drawn wherever required in the space provided.

v) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

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vii) No blank page be left in between answer to various questions.

SECTION - A

1. a) What is meant by seasoning timber? Why is it necessary for timber to be seasoned? Briefly describe some of the methods commonly used to season timber artificially. **(10)**

   b) Three formations, each 25m thick, lie over one another. If a constant-velocity vertical flow field is set up across the set of formations with hydraulic head **h** = 120m at the top and h =100m at the bottom. The hydraulic conductivity of the top formation is 0.0001 m/s, the middle formation 0.0005 m/s, and at the bottom formation 0.0010 m/s. Calculate the hydraulic head **h** at the two internal boundaries. **(10)**

   c) A driver travelling at 70kmph on an urban road approaches a queue of vehicles during red interval at the controlled intersection. The driver suddenly observes a person stepping from a parked car and approaching towards the path of the driver, separated by a distance of 90m. The section of the roadway has an upgrade of 3% and the coefficient of friction between tyres and the pavement is 0.47. Assuming 80% brake efficiency, ascertain whether the driver can safely stop her/his vehicle if reaction time of the driver is 2.5s. **(10)**

   d) What is shotcrete? Give a few examples where shotcrete is used in the construction process. **(10)**

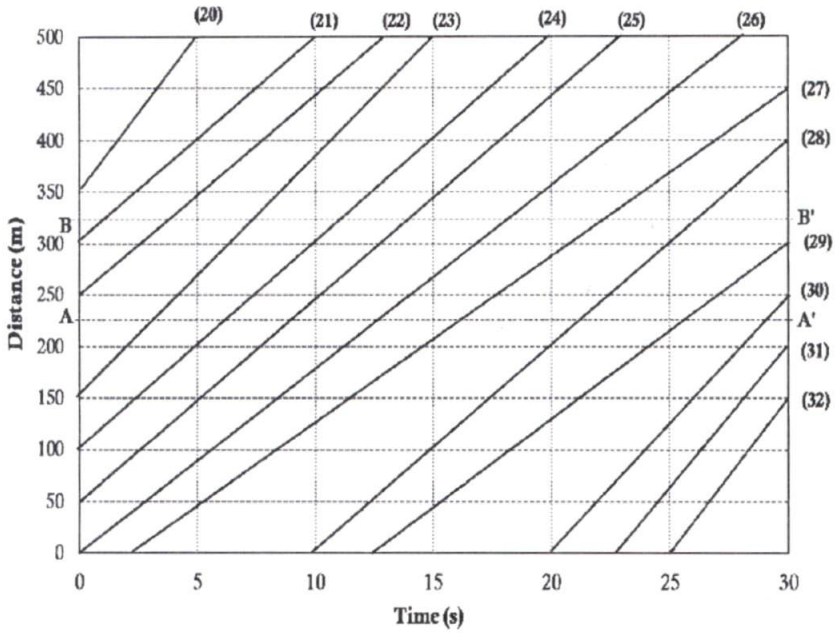
   e) What do you understand by hysteresis in rating curve? Explain with the help of a diagram. **(10)**

2. a) The following observations were taken with a 4 m staff. Find the missing values (X) in a levelling page. Show the calculations and apply the necessary checks. **(20)**

Points	BS (m)	IS (m)	FS (m)	Rise (m)	Fall (m)	RL (m)	Remark
1	3.250					249.260	BM
2	1.755		X		0.750	X	CP
3		1.950			0.195	X	
4	X		1.920			X	CP
5		2.340		1.500		X	
6		X		1.000		X	
7	1.850		2.185			X	CP
8		1.575				X	
9		X				X	
10	X		1.895	1.650		X	CP
11			1.350	0.750		X	

b) As part of a water quality project, aeration devices need to be installed in a river at location(s) where the DO falls below 2 mg/l. The ultimate BOD of the river water just below the only sewage outfall is known to be 40 mg/L and the saturation-dissolved oxygen (DO) is 10 mg/L. The deoxygenation rate coefficient is 0.3/d (k_d) and the self-purification constant (S) is 3. The river is flowing at a speed of 50 km/day. Are aerators needed for this river? If so, at what distance from the outfall will they have to be placed? State clearly any assumptions you may use in your calculations. **(15)**

c) The figure presents the trajectory of vehicles within a time-space domain and the numbers within brackets represent unique identification of each vehicle. **(15)**



i) An observer recorded the times at which the front end of the vehicles passed sections A-A' and B-B' and the data were noted as shown in the table below. Based on the information provided in both the table and time-space plot, determine the space mean speed (in km/h) of the vehicles travelling within the section A-A' and B-B'.

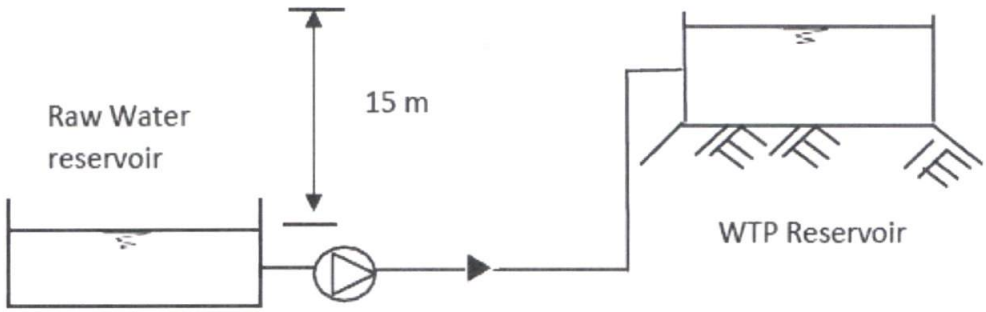
Vehicle id	Time of passing A-A' (s)	Time of passing B-B' (s)
23	3.2	9.7
24	6.1	13.6
25	9.0	16.5
26	12.8	21.0
27	16.2	25.3
28	21.1	28.8

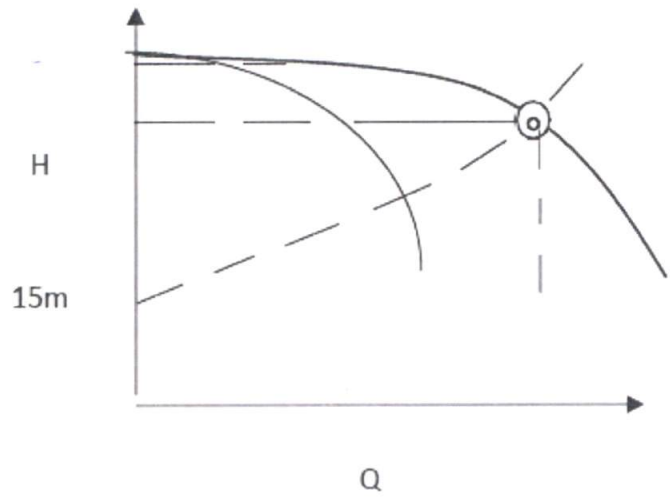
ii) Determine traffic flow (in vehicles per hour), density (vehicles per km) and space mean speed (km/h) within the entire time-space domain as shown in the two-dimensional plot of vehicles.

3. a) The figure below shows a schematic of a rising main that delivers water from a raw water reservoir to another reservoir located at a water treatment plant (WTP) through a 3 km long ductile iron (DI) pipeline having 300 mm diameter. The value of Hazen-William's friction factor for the DI pipe is 120 (C_H=120). Minor losses in the pipeline shall be 10% of the frictional loss in the pipeline. The existing inventory of centrifugal pumps have the following characteristics.

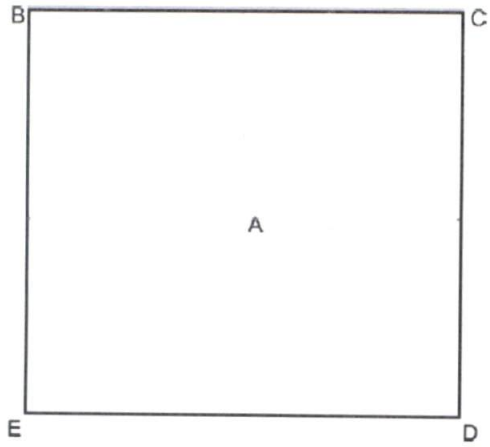
Find out the maximum flow rate of water that can be pumped to the WTP reservoir with two pumps running in parallel. **(20)**

Flow Rate (m^3/d)	0	980	1460	1960	2450	2940	3420	3900
Head (m)	26.3	25.8	25	24.1	23.2	21.4	18.9	15.8





b) Five rain gauge stations A, B, C, D and E are located in a square shaped hypothetical basin whose each side is 51.75 km, as shown below. Station A is at the center of the basin. Compute the Thiessen weights for the stations and mean areal rainfall over the basin by using Thiessen polygon method if the rainfall at stations A, B, C, D and E are 100 cm, 95 cm, 105cm, 114cm and 86cm, respectively. **(15)**



c) Calculate the super-elevation, maximum permissible speed and transition length for a 3° curve on a high-speed BG section with a maximum sanction speed of 120 kmph. Assume the equilibrium speed to be 75 kmph and the booked speed of the goods train to be 50 kmph. **(15)**

4. a) The water content of solids slurry (sludge from wastewater treatment) was 98% by weight. Initially the solids contained 72% organic matter of specific gravity 1.1 and 28% mineral matters of specific gravity 2.6. The sludge was then digested when 70% of the initial volatile solids were destroyed and then the water content was reduced to 90% by weight. What is the percentage reduction in the volume of slurry at the end? **(20)**

b) Determine the minimum cost and optimum duration for the network of the project. The data of each activity is given in the following Table. Indirect cost may be taken as Rs 2500/- per week. **(15)**

Activity	Normal		Crash	
	Time (weeks)	Cost (Rs)	Time (weeks)	Cost (Rs)
1-2	3	5000	2	5500
2-4	14	10000	11	13000
2-3	7	6000	4	9000
3-4	9	11000	6	18000
4-5	4	9000	3	12000

c) A 6-hour storm with constant rainfall occurred over an agricultural catchment of 2.4 km^2 area and the total rainfall observed was 8 cm. Infiltration curve for the event showed the initial infiltration rate of 1 cm/hr. Reducing linearly, infiltration rate attained a constant value of 0.2 cm/hr after 5 hours of rainfall and for the remaining duration of rainfall. A pan installed in the catchment indicated a fall of 0.5 cm in the water level (after allowing for rainfall) for that day. Other losses were negligible. Determine volume of runoff from the catchment. If required, assume a pan coefficient of 0.7 and crop coefficient of 1.15. **(15)**

SECTION - B

5. a) A 0.3 m well fully penetrates a confined aquifer 30 m deep. After a long period of pumping at a rate of 1500m^3/day, the drawdowns in the wells at 20 and 45 m from the pumping well are found to be 2.2 and 1.8 m, respectively. Determine the transmissivity of the aquifer. What is the drawdown in the pumped well? **(10)**

b) Define the terms: **(10)**

i) Line of collimation

ii) Parallax of a point

iii) Phreatic line

iv) Self cleansing velocity of sewer line

v) Ruling gradient

c) Differentiate between **(10)**

i) GWT and piezometric surface

ii) BOD and COD

iii) Overtaking sight distance and inter mediate sight distance

iv) Potential Evaporation and Actual ET

v) Expressway and Highway.

d) State and explain four important durability tests performed on building stones. **(10)**

e) Derive the expression for self-cleansing velocity of sewers. Mention clearly (with a well-labelled diagram) the forces acting on the sediment and the provide details of the notations used in the derivation. **(10)**

6. a) An impervious floor of a weir on permeable soil is 16 m long and has sheet piles at both the ends. The upstream pile is 4 m deep and the downstream pile is 5 m deep. The weir creates a net head of 2.5 m. Neglecting the thickness of the weir floor, calculate the uplift pressures at the junction of the inner faces of the pile with the weir floor, by using Khosla's theory. (Required curves are provided) **(20)**

b) Draw a neat sketch of the following road sign, highlighting the background colour of all the signs **(15)**

i) RESTRICTION ENDS

ii) LEFT REVERSE BEND and

iii) NO STOPPING & NO STANDING

iv) BRIDGE

v) PARKING LOT

c) Water at a rate of 0.005 m^3/day per m^2 of horizontal area, is pumped from a 1000 m wide unconfined aquifer lying between two parallel canals. It is underlain by a horizontal impervious stratum. The depth of water above the impervious stratum on the left and right canals are 12 m 8 m respectively. Assuming a permeability of 10 m/day with vertical boundaries, determine **(15)**

i) Equation of water table taking left canal as origin

ii) Compute the discharges per meter length from both the canals. If there is no pumping, what would be the seepage from left canal to right canal

7. a) An approach to a signalized intersection has an effective green of 25s and a saturation flow rate of 1300veh/h. The length of the cycle is 50s. At the beginning of the effective red, vehicles arrive at 80% of the saturation flow for 10s, following which the vehicle arrivals are observed at half of the saturation flow for 10s and then arrivals stop for 5s. Then the arrivals are observed at 55% of the saturation flow for the remaining of the cycle. After the end of the first cycle, vehicles begin to arrive at 60% of the saturation flow. Plot a graph showing the cumulative arrivals and cumulative departures against time for the two cycles of the intersection approach. Determine the total vehicle delay for both the cycles and the maximum queue lengths observed in each cycle.**(20)**

b) For the data given in the following table, perform resource levelling within the minimum project duration for the smallest number of workers, if activities can not be split. **(15)**

Activities	Duration (days)	No. of workers
1-2	8	4
1-3	7	8
1-5	10	6
2-3	5	6
2-4	8	9
3-4	4	5
4-5	5	8

c) At 20°C, DO tests were carried out on a wastewater sample, where DO measurements at the beginning of the tests show values of 8.2 mg/l. Subsequently, DO values of 5.6mg/l and 2.7 mg/l were noted after 8 days and 100 days respectively. Calculate the following: **(15)**

i) What is the ultimate BOD of this sample?

ii) What is the value of k, the reaction rate constant (calculate for both base e and base 10)?

iii) What is the 5-day DO reading for this sample?

iv) What is the BOD_5 value at 27°C? Based on this answer and your answer from part c, comment on the role of temperature in the BOD exertion process.

8. a) Explain the fineness modulus of aggregates? What is the significance of fineness modulus in the concrete mix? Write precisely the important steps associated with the concrete design mix procedure. **(20)**

b) Define the ϕ index.

A storm with a 15.0 cm precipitation and time distribution given below produced a direct runoff 8.7 cm. Estimate the ϕ index of the storm ? **(15)**

Time from start (hr)	1	2	3	4	5	6	7	8
Rainfall in each hour (in cm)	0.6	1.35	2.25	3.45	2.7	2.4	1.5	0.75

c) A Tacheometer was used for a traverse MNOP and the readings are given below. Compute the bearing and distance of line MP if the levelling staff was held vertical at all points. Take standard values of tacheometric constants. **(15)**

Line	Bearing	Vertical angle	Staff readings (m)		
			Top hair	Middle hair	Bottom hair
MN	00°00'	+ 05° 11'	0.900	1.872	2.844
NO	289° 54'	+ 02° 30'	0.939	1.677	2.415
OP	201° 12'	– 02° 43'	0.891	1.949	3.007

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Roll No. _____

CC(M)

COMMERCE AND ACCOUNTANCY

(OPTIONAL)

PAPER - II

[19]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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PART - A

1. Write short notes on the following: (5×10=50)

   a) Strategies for overcoming resistance to change. (10)

   b) Techniques of organizational development. (10)

   c) Equity theory of motivation and job satisfaction. (10)

   d) Occupational stressors. (10)

   e) Problems with unstructured interviews in employee selection. (10)

2. a) What is the role of Leadership Continuum in Organization Performance? (20)

   b) What is the importance of Group Cohesiveness in Coordination? (15)

   c) Describe the strategies to resolve interpersonal conflicts in an organization. (15)

3. a) What do you mean by horizontal organization? What is the role of autonomous teams in such type of structure? (20)

   b) What are the most common problems that organizations experience in getting started on a succession planning and management programme? (15)

   c) Explain three ego states under the transactional analysis. (15)

4. a) Explain how individual differences affect job satisfaction. How does pluralist perspective of power describe an organisation. (20)

   b) Distinguish between transactional leadership and transformational leadership. Which of two is more appropriate in Indian conditions at present? (15)

   c) What is source of Power? Discuss the phenomenon of powerplay in modern organisations. (15)

PART - B

Write Short Notes on following.

5. a) 360-degree appraisal system. (10)

   b) Big Five Personality Traits. (10)

   c) Hawthorne effect and human relations at workplace. (10)

   d) Pygmalion effect and employee performance. (10)

   e) Difference between organizational efficiency and effectiveness. (10)

6. a) Discuss the current industrial relations position in India highlighting the IR policies of the Government of India. **(20)**

b) What is Industrial Discipline? What are the possible causes of Industrial Indiscipline? Critically Examine. **(15)**

c) Functions of trade unions have changed is the era of globalization. Comment. **(15)**

7. a) "Human resource practices are culture bound". Discuss how different HRM techniques are adopted in different cultural milieus. **(20)**

b) State and Explain the concept of HRD Matrix. **(15)**

c) What do you understand by Manpower Planning? Discuss the various forms of manpower planning. **(15)**

8. a) Constitution and law provide for participation of workers in Management, but its implementation is far from satisfactory. Discuss measures required for its effective implementation. **(20)**

b) What do you mean by negotiators dilemma? Describe the conditions for the success of collective bargaining. **(15)**

c) "In the highest form of discipline, all are self - regulated and all are free." Discuss this statement and enumerate the measures that are necessary for the maintenances of discipline in an industrial organisation. **(15)**

Total No. of Printed Pages-3]

Roll No. _____

CC(M)

ECONOMICS

(OPTIONAL)

PAPER - II

[21]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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SECTION - A

Answer the following questions in about **150 words each.** **(5×10=50)**

1. a) What was the pattern of national income and per capita income during the first four decades of India since Independence? **(10)**

   b) Briefly discuss the impact of Green Revolution on agricultural productivity in India. **(10)**

   c) Write short note on "Gadgil formula" on allocation of central assistance for the states in India. **(10)**

   d) Do you agree that the role of Finance Commission is fulfilled in India? Justify. **(10)**

   e) Critically evaluate that India's post liberalisation economic growth is driven by the services sector. **(10)**

2. a) Industrial and agricultural developments are the two sides of the same coin. What policy prescriptions would you advocate in the context of the Indian economy? **(20)**

   b) Provide details of policy support and concessions provided to the Small Scale Industries in India. **(15)**

   c) It is not the population but the poverty and unemployment are the two most chronic problems of the Indian economy. What policy measures would you suggest to solve these problems. **(15)**

3. a) Has New Economic Policy promoted jobless growth in India? Comment with evidence. **(20)**

   b) India adopted outward orientation in its external sector policy during the post reform period in the aftermath of the economic crisis of 1991. Explain how this was reflected in the new EXIM policy. **(15)**

   c) What are the major challenges faced by the Indian Agricultural Sector during the post reform period? How Contract Farming is found to be useful in addressing many such challenges. **(15)**

4. a) How Public Distribution System (PDS) is used as a policy to control food prices and poverty elimination? **(20)**

   b) The 73rd and 74th Constitutional Amendments have remained as unfinished agenda. What are the ways in which it disrupts the achievement of economic democracy. **(15)**

   c) How the role of RBI got transformed as regards conduct of monetary policy and banking sector regulator under the new regime in the post reform period. **(15)**

SECTION - B

5. Answer the following questions in about **150 words each:**

a) Briefly discuss about the impact of economic reforms introduced in India since early 1990s on the public spending on rural infrastructure and agriculture. **(10)**

b) What was the rationale for promoting FDI in the Indian Industrial sector during the post reform period? **(10)**

c) Examine the success of RBI's monetary policy in fulfilling the twin objectives of inflation control and growth promotion. **(10)**

d) Is it true that capital formation in the Indian agriculture is shrinking? State why and how? **(10)**

e) What do you mean by partial and full convertibility of Exchange Rate? **(10)**

6. a) Write short notes on Federalism and Fiscal Consolidation of India. **(20)**

b) Discuss the dominating role of the public sector in the industrialisation process under the Central Planning Regime followed in India during the pre-reform period.**(15)**

c) Examine the rationale behind the recent withdrawal of a considerable amount of currency from circulation in India. What do you think has been it's impact? **(15)**

7. a) What major reforms have been initiated in the **Exchange Rate Management** in India during the post - reform period, particularly moving from an administrative regime to flexible exchange rate regime? **(20)**

b) Discuss how agricultural subsidy policy in India was affected due to WTO regulations. **(15)**

c) What are the issues with Govt. Of India's poverty reduction programmes? Do you think that universal basic income is a better alternative. Justify you answer. **(15)**

8. a) Critically examine the effect of MGNREGA on rural development in India and give your recommendations to make it more effective. **(20)**

b) What is the present outlook for the Indian economy's Industrial performance. What are the positive factors, risks and challenges. **(15)**

c) Write short notes on TRIPS and New EXIM Policy. **(15)**

Total No. of Printed Pages-8]

Roll No. _____

CC(M)
ELECTRICAL ENGINEERING
(OPTIONAL)
PAPER - II
[23]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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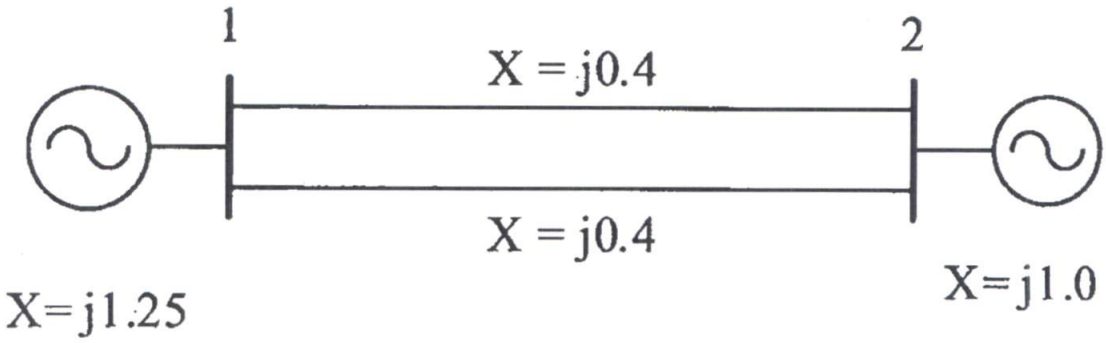
SECTION - A

1. a) The unit step response of a unity feedback system is given as $c(t) = 1 + e^{-4t} - 2e^{-2t}$. Determine the static position error constant K_p and static velocity error constant K_v. **(10)**

b) For a power system network, the single-line diagram is shown in the figure. All reactance values indicated are in pu on a common base value. Compute Y_{bus} matrix. If the voltages at bus 1 and 2 are $1.1\angle 15^0$ pu and $1.0\angle 0^o$ pu, respectively, find the current injected at bus 1 and 2. **(10)**



c) A programmable delay subroutine is given below: **(10)**

```
DELAY:   LHLD   BITTIME
BACK:    MOV    A, H
         ORA    L
         RZ
         DCX    H
         JMP    BACK
```

Find the decimal number to be passed on to produce a delay of 10 msec and the maximum delay this subroutine produces. The CLK OUT of the processor is 4 MHz

d) The secondary of a 200 A/ 1 A, 50 Hz, bar primary current transformer draws a current of 1 A when the secondary burden is 1 Ω. The magnetic core requires 100 Ampere turns for magnetization. Find the (i) percentage ratio error, (ii) the approximate value of phase angle between primary and secondary currents, and (iii) the core flux in the CT. **(10)**

e) A signal in the range 300 Hz to 3300 Hz is sampled at 8000 samples/sec. Each sample is converted to a pulse-code modulation (PCM) format by quantizing to eight levels, and thereafter binary PCM waveforms are used for transmission. Assume that a filter with a roll-off factor of 1 is used at the detector. **(10)**

i) Determine the bit rate.

ii) Determine the minimum bandwidth required for detection of PCM waveforms.

2. a) A three-phase, 50 Hz, 100 km long, single-circuit transmission line is operated at 110 kV. With negligible resistance of the line, the inductance and capacitance of the line is 0.25 H per phase and 1.6 μF per phase, respectively. Using nominal $-\pi$ model, calculate the unity power factor load (in MVA) at rated voltage to be connected at receiving end of the line for which the voltage magnitude at receiving end will be same as that at the sending end. **(20)**

b) Consider a delta modulator (DM) designed to operate at 4 times the Nyquist rate for a signal with a 4 kHz bandwidth. The difference (step size) between the two levels of the quantizer used in the DM is 400 mV. Assume that the quantization error is uniformly distributed, and the average power of the quantization error is uniformly distributed over a frequency range $-f_s$ to f_s where f_s represents the sampling frequency.**(15)**

i) Determine the maximum amplitude of a 1 kHz sinusoid input for which the DM system does not show slope overload distortion.

ii) Assuming that the bandwidth of the low pass filter used in the receiver is 4 kHz, determine the post-filtered output signal-to-quantization ratio in dB if there is no slope overload distortion.

c) Two ammeters A and B give full-scale deflection with 90 mA and 150 mA respectively and their resistances are 1 Ω and 1.25 Ω, respectively. Range extension to 15 A is achieved by connecting shunts for both the ammeters. These ammeters along with shunts are connected in parallel to a circuit in which a current of 10 A is flowing. Determine the readings of both ammeters. **(15)**

[Turn Over

3. a) The open loop transfer function of unity feedback system is $G(s) = \dfrac{Ks^2}{(s^2+1)(s+1)}$.

Draw the root locus of the system. Determine all features of the root locus that apply to this particular system. **(20)**

b) It is required to provide time-current grading for the system shown in figure. Two IDMT over current relays are placed at locations *'a'* and *'b'* with settings the following table. **(15)**

Relay point	CT Ratio	Fault Current	Current Setting
a	200/5	5000A	125%
b	200/5	4000A	100%

The relay at *'b'* has time-multiplier of 0.1. The time grading margin between the relays is 0.5 sec for discrimination. Assume the relay to have 2.2 sec IDMT characteristics given in following table linearly varying between two consecutive points. Determine the operating times of relays at locations 'a' and *'b'*.

PSM	2	3	5	7	10	13	16	20
Time (Sec)	10	7.0	4.5	3.5	3.0	2.8	2.5	2.2

c) Write minimum sequence of instructions to implement the following: **(15)**

i) Enable RST 6.5 interrupt without changing the state of the other interrupts and serial data.

ii) Write a subroutine ALHL that arithmetically shifts the contents of (H, L) register pair left by one bit. Assume that the data is available in (H,L) register pair.

Before Shift

H7	H6	H5	H4	H3	H2	H1	H0	L7	L6	L5	L4	L3	L2	L1	L0

After Shift

H7	H5	H4	H3	H2	H1	H0	L7	L6	L5	L4	L3	L2	L1	L0	0

4. a) Consider a first-order linear predictor in a differential pulse code modulator (DPCM) defined by **(20)**

$$\hat{x}[n] = wx[n-1]$$

Where $x[n]$ is a stationary random sequence with zero mean and variance $\sigma_x^{\ 2}$, and w is the coefficient of first-order predictor filter. Assume that $R_x[k]$ represents the auto-correlation of $x[n]$. The variance of prediction error is defined as

$\sigma_d^2 = E\{(x[n] - \hat{x}[n])^2\}$

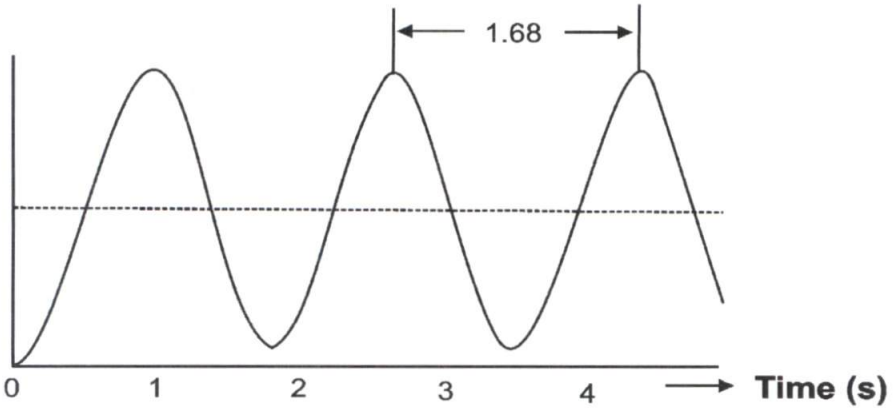
where E{.} denotes the expectation operator.

i) Determine the optimal value of w in terms of σ_d^2 and $R_x[1]$ which minimizes σ_d^2.

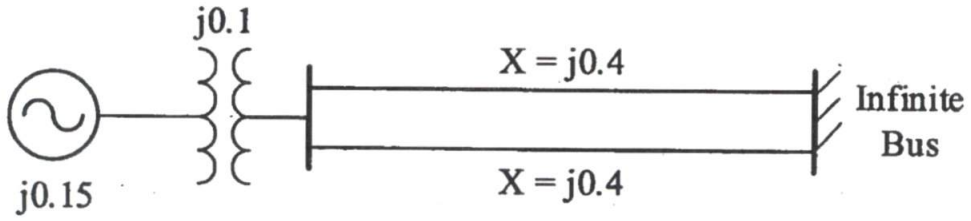
ii) Calculate the minimum value of σ_x^2 in terms of σ_x^2 and $R_x[1]$.

iii) Determine the optimal prediction gain in terms of σ_x^2 and $R_x[1]$.

b) Unit step response of a feedback system with $G(s)H(S) = \dfrac{K}{(s+2)(s+4)(s+a)}$ is shown in figure. Determine the values of K and a. **(15)**



c) A synchronous generator is connected to an infinite-bus through transformer and transmission line as shown in the single-line diagram below. All reactance values indicated are in pu on a common base value. The generator is supplying 0.8 pu real power and the voltages at the generator terminal and infinite-bus are 1.0 pu. Determine the power angle equation for the system as a function of rotor angle of the generator with respect to infinite-bus. **(15)**



[Turn Over

SECTION - B

5. a) The state space representation of a system is given by the following equations. **(10)**

$$\dot{x} = \begin{bmatrix} -1 & 0 \\ 0 & 2 \end{bmatrix} x + \begin{bmatrix} 1 \\ 1 \end{bmatrix} u \quad y = [0\ 1] x$$

If the initial values of the state variables are zero, obtain the output y solving the state equations.

b) The operating costs of two generating units are given as: **(10)**

$$C_1(P_1) = 0.05P_1^2 + 20P_1 + 100 \text{ Rs.per hour}$$

$$C_2(P_2) = 0.075P_2^2 + 18P_2 + 90 \text{ Rs.per hour}$$

Where, P_1 and P_2 are power (in MW) generated by the unit 1 and 2, respectively. The limits on output power from the generating units are as follows:

$$50\text{MW} \le P_1 \le 200\text{MW}$$

$$50\text{MW} \le P_2 \le 200\text{MW}$$

Assuming that both the units are operated and the transmission losses are ignored, find

i) economic dispatch of the two units to meet a load demand of 180 MW

ii) savings obtained by loading the units optimally, if the load of 180 MW is equally shared by both the units.

c) A Three-phase, 30 MVA, 66/33 kV, delta-star, transformer is protected by percentage differential relays. If the CTs located on delta and star side are 300/5 and 1200/5, respectively, calculate the relay current at full load. **(10)**

d) A resistor, inductor and capacitor have the following ratings: **(10)**

Resistance R = 1.2 kΩ with an error of $\pm 20\%$,

Inductance L = 160 μH with an error of $\pm 12\%$, and

Capacitance C = 160 pF with an error of $\pm 8\%$

Determine:

(i) The resonant frequency considering that those three elements are error free and connected in parallel

(ii) The limiting error in the calculation of resonant frequency in both percent and in Hz when those elements are connected in parallel.

(iii) The relative error in the calculation of resonant frequency in percent and in Hz when those three elements are having positive errors (+20%, +12%, and +8% respectively) and connected in series.

e) Consider a (6, 3) linear block code for which the generator matrix is defined as **(10)**

$$G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 1 \end{bmatrix}$$

i) Determine if the aforementioned code is a Hamming code.

ii) Determine the minimum distance of the aforementioned code.

iii) How many errors can the aforementioned code detect?

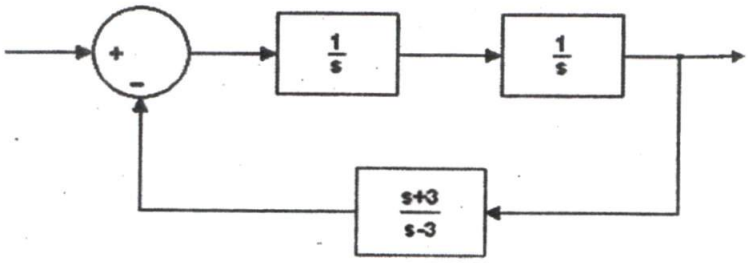
iv) How many errors can the aforementioned code correct?

6. a) 11 kV, 10 MVA star-connected alternator has its neutral grounded through the resistance of 12Ω. The protective relay is set to operate when out of balance current exceeds 20% of the full load current. **(20)**

i) How much percentage of the winding remains unprotected against earth fault?

ii) What is the minimum value of earthing resistance required to protect 85% of the winding against earth fault?

b) Apply Nyquist Stability criterion to determine the closed loop stability of system shown in figure. Also comment about the open loop stability of the system. **(15)**



c) Binary data is transmitted at a rate of 10^6 bits/sec over a channel using coherent binary phase shift keying (BPSK) signalling scheme. Assume that the one-sided power spectral density of noise at the receiver input is 10^{-10} watt/Hz. Determine the minimum average carrier power, in terms of inverse complementary error function, required at the receiver input to maintain a probability of error $P_e \leq 10^{-4}$. **(15)**

7. a) An 11 kV, 20 MVA synchronous generator has positive, negative and zero sequence reactances of 12%, 12% and 8%, respectively. The neutral of generator is grounded through a reactance of 4%. All reactance values are based on generator rating. A solid single line to ground fault occurs at phase *a* of the generator terminals. Determine the current in all phases (in A) and voltage between the lines (in kV). The generator was unloaded before occurrence of the fault. **(20)**

b) An 8085A microprocessor based system has the following chips. The relevant control pins, other than address and data lines, of each chip are also indicated: **(15)**

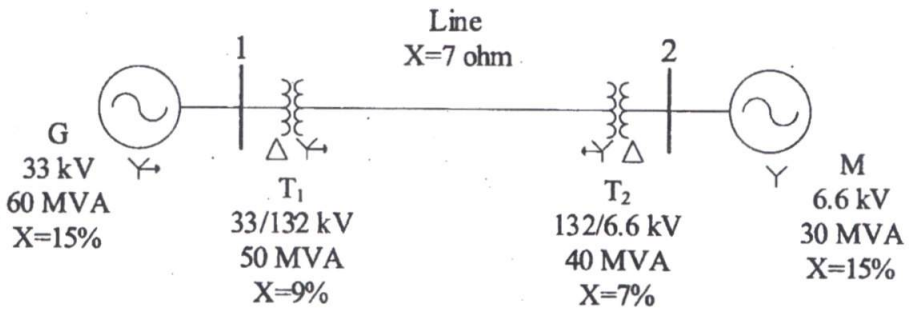
[Turn Over

RAM 6264(8k × 8):	$\overline{OE}$,	$\overline{WE}$,	$\overline{CE}$	–	2 chips
EPROM 2764(8k×8):	$\overline{OE}$,	$\overline{CE}$		–	1 chip
Intel 8255A(PPI):	$\overline{RD}$,	$\overline{WR}$,	$\overline{CE}$, RESET	–	1 chip

Develop the system bus of the system including Power-ON RESET circuit using 74LS373 latch. The peripheral chip is interfaced as memory mapped I/O. Draw the neat connection diagram for interfacing these chips to the system bus. Use 74LS138 for decoding. Give the addresses of all memory chips and the ports of 8255A.

c) The temperature-resistance relationship of a thermistor is given by $R_T = aR_0 e^{\frac{b}{T}}$. The thermistor has a resistance of 4 kΩ at ice-point and 800 Ω at 77°C. If the temperature varies from 25°C to 100°C, what would be the range of resistance to be measured? **(15)**

8. a) For a power system network, the single-line diagram is shown in the figure. The pu reactance values indicated for different equipment are on their ratings. Compute the pu reactance for all equipment on a common base value of 100 MVA, 132 kV at the line side. **(20)**



b) An analog voltage signal whose highest signal frequency of 2 kHz is to be digitally coded with a resolution of 0.01% with a voltage range of 0-10 V. In this process, a sample and hold circuit acts as a low-pass filter. Determine: **(15)**

(i) The minimum number of bits in the digital code,
(ii) Analog value of LSB,
(iii) Quantization interval,
(iv) Practical value of minimum sampling rate, cut-off frequency of sample and hold circuit,
(v) Dynamic range of converter in dB,
(vi) Number of decision intervals.

c) The open loop transfer function of a unity feedback system is $G(s) = \frac{e^{-0.1s}}{s}$. Find the gain margin of the system. **(15)**

Total No. of Printed Pages-4] Roll No. _____

CC(M)

GEOGRAPHY

(OPTIONAL)

PAPER - II

(27)

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are eight questions divided in two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No. 1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page be left in between answer to various questions.*

SECTION - A

1. a) On the outline map of India provided to you, mark the location of all the following. Write in your QCA Booklet the significance of these locations whether physical/ commercial/economic/ecological/environmental/cultural in not more than 30 words **(10×2=20)**

   i) Dharmashala

   ii) Pinjore

   iii) Nohkalikai falls

   iv) Kuldiha wildlife sanctuary

   v) Nalanda

   vi) Sivasagar

   vii) Gangasagar

   viii) Kottayam

   ix) Madurai

   x) Pallitana

   b) What is jet stream theory and how does it impact Indian Monsoon. **(10)**

   c) When India has well planned local governance then what are the challenges and opportunities in localizing SDGs. **(10)**

   d) Do you think India needs smaller states and evaluate its implications and consequences. **(10)**

2. a) Large tribal population has moved out from traditional habitat. Critically examine the statement in the light of Tribal Plans and Sub-Plans in India. **(20)**

   b) Critically evaluate the Jammu and Kashmir eco tourism policy. Has the policy been able to achieve its objectives? **(15)**

   c) Evaluate the pillars of Jammu and Kashmir State Action Plan for Climate Change. **(15)**

3. a) Critically evaluate whether population explosion is a threat to food security in India. **(20)**

   b) Evaluate the risk in agriculture and related farmers unrest in India and bring out the possible solutions to meet the challenges. **(15)**

   c) How far Panchyati Raj Institutions have helped in decentralized planning and development in Jammu and Kashmir. What are the latest developments in this field. **(15)**

4. a) Whether environmental or economic issues are becoming major cause of uninhabited villages in India. Explain with suitable examples. **(20)**

b) Evaluate in brief the New Foreign Trade Policy of India and highlight important expectations in import and export sector. **(15)**

c) Explain the different phases of planning under FYPs. How far they have been able to eradicate regional imbalance in India **(15)**

SECTION B

Answer the following question in 150 words **(5×10=50)**

5. a) Briefly touch the major friction points of Indo-China border dispute. **(10)**

b) Evaluate the conceptual understanding of western disturbances and highlight its significance and its impact in Indian sub-continent. **(10)**

c) Is India facing depletion of ground water? Explain its regional challenges and management strategies. **(10)**

d) Briefly explain how land use change can help in economic growth of India. **(10)**

e) What are the environmental concerns of interlinking rivers in India? **(10)**

6. a) Population planning in India has been more about 'Planning the population' and not 'plan for the population'. Critically discuss this statement. **(20)**

b) Explain the concept of dry farming and its relevance in augmenting food supply in India **(15)**

c) What is SEZ and what are its advantages and challenges in Indian perspective. **(15)**

7. a) Highlight the role of Public Sector Undertakings in India and their contribution in upliftment of society in general and through CSR in particular **(20)**

b) There is steady rise of MNCs in India after liberalization. Analyse their effect in transformation of India. **(15)**

c) What is food security. How central and state initiatives are solving the issues and challenges of food Security in India **(15)**

8. a) Evaluate geopolitical scenario in South Asia and explain India's approach to meet the existing challenges in the region **(20)**

b) Evaluate the impact of climate change on livelihood and migration and its associated problems in India **(15)**

c) What are different stages of multi-level planning in India. Explain how panchayat level planning is becoming important in decentralization of SDGs **(15)**

Total No. of Printed Pages-3]

Roll No. _____

CC(M)

GEOLOGY

(OPTIONAL)

PAPER - II

[29]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are eight questions divided in two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No.1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

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vi) *No blank page be left in between answer to various questions.*

SECTION - A

1. **Answer the following in about 150 words each.** **(5×10=50)**

   a) Describe pleochrosim and birefringence in crystals. **(10)**

   b) Differentiate between porphyritic and poikilitic textures. **(10)**

   c) Describe Pauling's rule for crystal structure of ionic compounds. **(10)**

   d) Describe process of fractional crystallisation in magmatic rocks. **(10)**

   e) Explain significance of Herringbone cross-stratification in finding depositional environment. **(10)**

2. a) What are neosilicates? Discuss and describe the crystal structure of Olivine. **(20)**

   b) Describe stereographic projection used for the representation of crystal symmetry. **(15)**

   c) What is optical indicatrix? Explain its utility in mineralogical study. **(15)**

3. a) Derive and describe the Gibbs phase rule for metamorphic rocks. How many phases are present on a univariant line in a metamorphic rock represented by a three component chemical system and how does this number changes for a divariant field? **(20)**

   b) Describe the process of magma differentiation. **(15)**

   c) Explain the petrogenetic process of island arc magma. **(15)**

4. a) Describe major Proterozoic sedimentary basins of India and discuss the sedimentation history of Vindhyan basin. **(20)**

   b) Describe sedimentary structures which are useful in deducing the paleocurrent direction. **(15)**

   c) Describe the Dunham's classification scheme of carbonate rocks. **(15)**

SECTION - B

5. a) Describe Room and Pillar method of coal mining. **(10)**

   b) Distinguish between reserve and resources of economic deposits. **(10)**

   c) Give a brief description of metallogenic epochs. **(10)**

   d) Describe Goldschmidt's classification of elements with examples. **(10)**

   e) Discuss natural hazards associated with volcanic activity. **(10)**

6. a) Describe ore forming process in relation to pegmatites. What types of ores are associated with pegmatites? **(20)**

   b) Describe the distribution of gold deposits in India. **(15)**

   c) Describe basic elements of National Mineral Policy 2021. **(15)**

7. a) What do you understand by the coefficient of aqueous mobility? Describe various steps in geochemical exploration. **(20)**

   b) Discuss use of resistivity survey in groundwater exploration. **(15)**

   c) Write a note on geological guides for mineral prospecting. Explain the principle behind magnetic prospecting. **(15)**

8. a) What is Environment Impact Assessment (EIA)? Describe the stages of EIA. **(20)**

   b) What do you understand by the term seismic hazard? Describe India seismic hazard map. **(15)**

   c) What do you mean by Large Ion Lithophile Elements (LILE) and High Field Strength Elements (HFSE)? Explain with examples. **(15)**

Roll No._____ Total No. of Printed Pages-6

CC(M)

KASHMIRI

PAPER - II

[30]

Time Allowed - 3 Hours *Maximum Marks - 250*

(Answer Must be written in kashmiri)

جواب دِنہٕ برو ٔ نہہ پُر وسوالن متعلق خاص ہدایات۔

۱۔ یتھ پرچس منز چھِ اُٹھ سوال یم دوٚن حصن (سیکشنن) پیٹھ مشتمل چھِ۔

۲۔ توہہِ چھِ کل پانژن سوالن ہندی جواب دِنی۔

۳۔ سوال نمبر 1 (اکھ) تہٕ سوال نمبر 5 (پانژُک) جواب دِیُن چُھ لازمی۔

۴۔ دویو سیکشنو منز چُھ باقی ترٛ بن سوالن ہُند جواب دِیُن۔ مگر پرٛ تھ سیکشن کہٕ سوالو منز چُھ کم کھوتہٕ کم اکہِ سوالُک جواب دِیُن ضروری۔ پرٛ تھ سوالس تہٕ سوالُکس حصس برونہہ کنہِ چھِ (Marks) درج کرنہٕ آہمتی۔

۵۔ سوالن ہُند جواب دِنہٕ باپتھ چُھ الفاظن ہُند تعداد مقرر کرنہٕ آمُت۔ اَچ پابندی کرنی چھےٚ لازمی۔

۶۔ سوالن ہندِ بن جوابن یِیہِ ترتیب وار اہمیت دِنہٕ۔

۷۔ اگر کُنہِ سوالُک یا تمکہِ کُنہِ حصُک لکھنہٕ آمُت جواب تُہی مُجرا چھونہٕ یرٛ ھان تھاوُن، تتھ گرٛ ھ کراس دِیُن۔ نتہٕ یِیہِ سُہ جواب تصور کرنہٕ، یُد وَے سُہ جواب اڈلیو کُے تہٕ آسہِ۔

۸۔ کانہہ صفحہ یا صفحک کانہہ حصہ اگر خالی روزِ، تتھ گرٛ ھ کراس دِیُن۔

(ب) ''سو کتہِ چھےٚ یٚتہِ۔ تسے وونی ترےٚ ربتھ گژھن وأرِ وِس منز'' ملہِ قأدرن وونُس فخرِ سان۔ زن تہٕ تمٔ فتح أس زیٚنٛ ہژ۔ ''نہٕ سہ میأنٛ دِرے چھےٚ! ہری کرشنس آیہِ نہٕ پژھے۔ تأجیٚ ہباچھ۔'' ژےٚ چھےٚ ناخبر؟ ملہِ قأدرن وونُس شکایت کرنہٕ کس اندازس منز۔ وِدسٕ ہےٚ خبر چھِ۔ خدا صأب تھأوِنس اوٚ رجان۔ سوے یٚنہِ وول نیرنس تام مصرسٕ نشی بہتھ أس۔ پرُن لبکھن نبا چھُنہِ روومُت۔ یا گوژھ وُچھن کُس طریقہٕ تہٕ تمیز دیٚتُن مصرس۔ ہری کرشنس گیہِ پانس پیٹھ ندامت۔ تمٔ وونس اِدسہ تہٕ مہے نےٚ خبرِ ے۔ گرس منز تُج نہٕ یہِ کتھ تہٕ کأنسہِ۔ گوڈنبتھ نہٕ مہے پانس موکجارتہِ۔'' (10)

(ج) ''یٚمہِ وندِ پیوٚ وشین بے وایہِ۔ خلقو ترأوِ ترےٚ ترےٚ شین۔ شین ترأونس منز اوس سہ طاق۔ سہ پلز یوو پربتھ کأنسہِ تہٕ چھیکرس ہأوِ تمٔس تہٕ وندن دند۔ یٚیلہِ سہ سونتہٕ کالہِ کامبن کوچن، دجن ڈورہن آوکوٚر، تمٔس أس ببسأکھی اگادِ گأمژ۔ سہ اوس نہٕ اکھ قدم تہٕ امہِ ورأے کٔڈتھ ہبکان۔ أچھ آسس وارے اوٚرِ ژا مژ۔ گوڈٕ أسی تمٔس سأری چایہِ ہن، بتہٕ ہن اوٚرِ نان۔ مگر وونی اوس سہ ٹھُک ٹھُک کران پانے چایہِ موقعہ وأتھ پیوان۔ سہ اوس لگ بھگ وونی مُشتھے گومُت۔ یا ممکن چھُ پانس ہوُے ما آسہِ ہبکھ وونی باسان۔ یا گامُک یوٚ ہے اکھ بیاکھ کُل کوٚٹ ہیوٚ۔'' (10)

(د) ''دلہِ وأتھ باسیو پوشہِ کُجہِ نوٚوُے عالم۔ تمہِ ترو وو پھر بکھ ہیوٚ۔ سأری ہے ژھنی تو بلاے گوڈٕ چھنہِ مسلمانے کُنہِ بوٚد۔ ژوپأری چھِ پٚنٛی بٹہِ بأے۔ دودِ وول تہٕ بٹے، کاندُ رتہِ بٹے۔ یٚیہِ موکلأوِ بگوانن تس ہأنزنہِ نش۔ یہ أس پوشہِ کُجہِ بیاکھ فراغت۔ سو ''ہأنزنی'' یعنی پٚنٛی زِٹھ نوش یا دپینہٕ ستی کھرُس ترِہش۔ کتھِ کتھِ پیٹھ أس رانٹسہِ ہندی پأٹھی اگادِ گژھان۔ محلس منز زانہِ ہے نہٕ تس ناو کانہہ مگر تمہِ کٔڈ أڈ أڈ۔ اِد بگوان تہٕ چُھس وُچھتھے پوٚ کُمت۔ نتہِ کیاہ۔ گاشہِ تہٕ صأبہِ چھِ أکر ہے ماجہِ ہندی گبر۔ وُچھتو صأبہِ کیاہ چھُ یٚیتہِ یہاتہِ کران۔ تہٕ تس چھِ تتہِ بتہِ کامنٛی۔ أمی ہے ہأنزنہِ ہندِ شکس لدطالع کنٛ۔ تمہِ اوس فأصلہِ کوٚرمُت زِ سوترِ نہٕ رہتہِ کالہِ تہٕ کُشیرِ واپس۔'' (10)

(ہ) ژنہِ ژوٗر! تمواوسُس حأران گژھتھ وۆنمُت ۔اَ ہنوٗ اِدکیاہ۔توہہِ چھُو نابوزمُت زِیٖلہِ ہہہ جنگلہِ منز نیرِتھ کُنہِ گامس منز چھُ اژان، گریسی چھِ شورتُلان ۔ژنہِ ژوٗ رہو۔ژنہِ ژورہو۔مأریوٗنو۔ژنہِ ژوٗر ناو بوٗزِتھ چھِ ہہس ترا ژان۔تُمس چھےٚ تھرِتھرِ اژان ۔سُہ چھُ دستہِ چھکان تہِ ژلان ۔یہ چھےٚ گریستہن ہنٛز زبردست چال آسان۔اگرتم کربکہِ دِن ۔ہہہ ہا چھُ ہہہ ۔ژوٗرِ روٗزی توو۔تیٖلہِ گژھ ہہس پنتہن زورن ہُند احساس تہِ ہہہ نہناوِ سأرِی ہے گامس ۔سُہ اوس تمن ونان۔ توہہِ تہِ چھُو ژنہِ ژوٗر گوٗمُت ۔توہہِ چھُو نہِ پننہِ طاقتُک احساس۔اگرتوہہِ منز احساس پأدِ سپدِ تیٖلہِ ژارِو نہِ سُلطان زانہہ تہِ لبکہِ۔یہن روپیَن پیٹھ کڈِ نہِ تُہند خوٗن ۔زچہِ تہِ ہا کہِ میٚچہِ پیٹھ ہیٚیہِ وِنہِ توہہِ سُہ مُلی۔ **(10)**

6. یمن سوالن ہُند جواب لیکھو۔ **(50)**

(الف) 'ژس' افسانکین فکری تہِ فنی پہلوون ہیٚیوسام۔ (۲۰۰ الفاظن منز) **(20)**

(ب) 'کوکر جنگ' افسانک تنقیدی جأیزکرِو پیش۔ (۲۰۰ الفاظن منز) **(20)**

(ج) ''حالس چھُ روتُل'' افسانک مرکزی خیال لیکھو۔ (۱۰۰ الفاظن منز) **(10)**

7. یمن سوالن ہُند لیکھو جواب۔ **(50)**

(الف) 'مرُن۔۔۔اوان الیچُن' ناولک مرکزی خیال۔ (۲۰۰ الفاظن منز) **(20)**

(ب) ''پأتھر چھُ جأری'' اوٗک انگی ناٹکس منز کمن چیزن پیٹھ چھُ طنز؟ (۲۰۰ الفاظن منز) **(20)**

(ج) ''راز ایڈیپس'' ڈرامہٕک مرکزی خیال۔ **(10)**

8. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) لکہ پأ تھر تہٕ امکی قسم۔ (۲۰۰ الفاظن منز) (20)

(ب) لُکہٕ ادب تہٕ امکی قسم۔ (۲۰۰ الفاظن منز) (20)

(ج) ا ذ ک انگی ناٹک ''مزارِ شعرا'' ہٕک مرکزی خیال۔ (۱۰۰ الفاظن منز) (10)

Total No. of Printed Pages-4] Roll No. _____

CC(M)
MEDICAL SCIENCE
(OPTIONAL)
PAPER - II
[41]

Time Allotted - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are eight questions divided in Two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No.1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a question/part is indicated against it. Answer must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

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SECTION - A

1. a) Discuss the causes, evaluation, and treatment of jaundice in a five-day-old male child. **(5+5+10)**

   b) Discuss the clinical features, evaluation complications and treatment of tetralogy of Fallot. **(5+5+5+5)**

   c) Discuss the assessment and management of severe dehydration in a 3-year-old child with acute diarrhoea. **(5+5)**

2. a) Write short notes on: **(4×5)**

   i) e FAST in Trauma

   ii) Complication of massive blood transfusion

   iii) Tuberculoma

   iv) Systemic Inflammatory Response Syndrome

   b) Write short notes on: - **(4×5)**

   i) Criteria of a good screening program

   ii) National digital health mission

   iii) Challenges of managing non-communicable diseases in primary health care settings in India

   iv) Misclassification bias in epidemiological studies

   c) Write briefly about the 'National strategic plan for tuberculosis elimination 2017-2025' **(10)**

3. a) Discuss the management of a 2-year old child, who presents with a diagnosis of atopic dermatitis under the following headings. **(10+5+5)**

   i) Counselling to parents

   ii) Agents to be used topically

   iii) Agents to be used systemically

   b) Describe the epidemiology, pathogenesis, clinical manifestations and treatment of acute rheumatic fever. **(5+5+5+5)**

   c) Discuss epilepsy under following heads: **(3+4+3)**

   i) Etiologies

   ii) Diagnosis

   iii) Antiepileptic drugs

4. a) Write short note on: **(4×5)**

i) Typhoid vaccine

ii) Mobile medical units in India under National Health Mission

iii) Psychosis

iv) Depot medroxy progesterone acetate

b) Define acute pancreatitis? Describe cause, pathogenesis, types and complication of acute pancreatitis. **(5+5+10)**

c) Discuss in brief: **(5+5)**

i) Management of alcohol dependence syndrome

ii) National Mental Health programme of India

SECTION - B

5. a) A 22 year old male presented with pain in right iliac fossa since 5 days associated with fever and vomiting. On examination, 5x3 cm tender lump palpable in right iliac fossa and total leukocyte count was 15350/mm3. **(3+6+3+3)**

i) What are the differential diagnosis?

ii) Write diagnostic approach for appendicular mass.

iii) Write Alvarado Score and its significance.

iv) Write management of an appendicular mass.

b) A 22-year-old primigravida at 37 weeks period of gestation presented with headache and pedal edema. On examination PR 100/min, BP-160/110mm Hg and urine albumin 3+. What is the diagnosis and enumerate classification of this disorder in pregnancy? How would you manage this case? What can be the maternal and neonatal complication? **(5+10+5)**

c) Describe the clinical features, diagnostic approach and treatment of tubercular meningitis. **(5+5+5)**

6. a) Define severe acute malnutrition (SAM). Discuss the management of SAM with complications. **(30)**

b) Describe briefly the functions of the Health and Wellness Centres (HWC) launched by the Govt of India . What are the expanded range of services to be provided by HWC. **(10+10)**

[Turn Over

7. a) A 30 years old female presented with lump in the abdomen extending from left hypochondrium to umblicus. **(3+3+4)**

   i) What are the differential diagnosis?

   ii) Define hypersplenism.

   iii) Discuss post-splenectomy complication.

   b) Discuss FIGO classification of fibroid uterus? How do you manage a case of a nulligravida female presenting with heavy menstrual bleeding and abdominal lump of 18 weeks size? **(5+15)**

   c) Write short notes on the following: **(4×5)**

   i) Post exposure prophylaxis of rabies

   ii) Dengue shock syndrome

   iii) Electric Burns

   iv) Management of Lupus nephritis

8. a) Discuss the following in a patient with vitiligo: **(4×5)**

   i) Complications

   ii) Light-based therapies

   iii) Topical therapies

   iv) Systemic therapies

   b) Describe in brief: **(10+10)**

   i) Medical management of PPH

   ii) Parenteral iron therapy in anemia with pregnancy

   c) Define "Hodgkin's lymphoma"? Describe briefly about WHO classification of Hodgkin's lymphoma. **(5+5)**

Total No. of Printed Pages-4]

Roll No. _____

CC(M)

LAW

(OPTIONAL)

PAPER - II

[33]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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SECTION - A

Write short notes on the following in around **150 words.** **(5×10=50)**

1. a) *actus non facit reum, nisi mens sit rea* **(10)**

   b) Principle of Joint Liability under Indian Penal Code, 1860 (IPC). **(10)**

   c) What is Defamation? Discuss in detail the circumstances in which one may not be liable for defamation under the law of torts. **(10)**

   d) *Ignorantia juris neminem excusat* **(10)**

   e) Distinction between section 299 and section 300 IPC. **(10)**

2. a) What are main grounds for conviction in the *State of Maharashtra v. Mayer Hans George* (AIR 1965 SC 722) and acquittal in the *Nathulal vs. State of Madhya Pradesh* (AIR 1966 SC 43), when in both cases the accused was charged for violating statutory provisions? In one case accused was charged for contravening the provisions of the Foreign Exchange Regulation Act 1948 and in the other the Essential Commodities Act, 1955? Do you approve of the court decision in these cases? Discuss. **(20)**

   b) Plea Bargaining as incorporated in India is different from Plea Bargaining in many other parts of the world including United States of America. Discuss in detail the salient features of the Plea Bargaining, how Indian model is different from others and explain the reason why Plea Bargaining is not successful in most places in India. **(15)**

   c) What do you mean by vicarious liability? How far state is vicariously liable for wrongful acts committed by its officials? **(15)**

3. a) Explain, citing decided cases, the principle of right to private defence as incorporated in Indian Penal Code, 1860 and what are the limitations to the exercise of right to private defence of body and property. **(20)**

   b) What do you mean by the proposition 'rarest of the rare cases' in relation to imposition of death penalty? **(15)**

   c) Elucidate the progress made towards abolition of death penalty and limiting the factors that should be decisive in favour of imposition of death penalty citing decided cases. **(15)**

4. a) What changes has been brought in Rape Laws in India in last two decades? Elaborate citing decided cases. **(20)**

b) Critically examine and evaluate the findings of the Supreme Court in *State of Punjab vs. Gurmit Singh (AIR 1996 SC 1393)* and state the significance of the judgement in trial of cases of sexual assault. **(15)**

c) Discuss the Law relating to setting aside of an arbitral award as contained in the Arbitration and Conciliation Act, 1996. **(15)**

SECTION - B

5. Write short notes the following in not more than **150 words each.** **(5×10=50)**

a) Define free consent. What are the factors vitiating free consent of parties to an agreement under the Indian Contract Act, 1872? **(10)**

b) 'Public Authority' under Right to Information Act, 2005. **(10)**

c) What are the major legal provisions on noise pollution in India? Critically examine the view of the Apex Court on this issue. **(10)**

d) What do you mean by trial by media? Whether administration of justice is really affected by trials by media? Comment. **(10)**

e) Public Interest Litigation. **(10)**

6. a) What is dishonour of Cheque? What are the situations when a cheque is considered as dishonoured under the Negotiable Instruments Act, 1881 and what is the punishment for dishonour of cheque? **(20)**

b) The rule of law requires that wrong should not remain unredressed. Accordingly, different forms of remedies are prescribed by law of torts. Explain different forms of remedies available citing decided cases. **(15)**

c) Elucidate 'Act of God' by referring to different cases decided by courts in India and abroad. **(15)**

7. a) What are the significant changes in law brought for protection of consumer rights in India? **(20)**

b) What are the different forms of alternative dispute resolution mechanisms available in India? Explain each of them. **(15)**

c) What do you mean by Partnership? Discuss in detail the law on formation and dissolution of partnership in India. **(15)**

8. a) Violence against women in cyber space is a matter of concern. Assume You have been appointed as expert by the Government of India to highlight about the adequacy/inadequacy of existing legislation namely Information Technology Act, 2000. Suggest the government what measures need to be under taken including legal reform to combat violence against women in cyber space. **(20)**

b) Define quasi-contracts and discuss in detail different kinds of quasi-contracts under the Indian Contract Act, 1872 with suitable examples. **(15)**

c) Write a detailed note on intellectual property rights and economic development. **(15)**

Total No. of Printed Pages-4]

Roll No. _____

CC(M)
MATHEMATICS
(OPTIONAL)
PAPER - II
[37]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

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SECTION - A

1. a) Show that the set Q^+ of all positive rational numbers is an abelian group under the binary operation * defined by $a * b = \frac{ab}{3}$, where ab is the ordinary multiplication of two positive rational numbers a and b. **(10)**

b) Test for convergence the series $2x + \frac{3x^2}{8} + \frac{4x^3}{27} + ... + \frac{(n+1)x^n}{n^3} + ...$ **(10)**

c) Show that the function $f(z) = e^{-z^{-4}}, z \neq 0$ and $f(0) = 0$ is not analytic at Z=0 although the Cauchy - Riemann equations are satisfied at that point. **(10)**

d) Test for convergence of the series $1 + \frac{2}{5}x + \frac{6}{9}x^2 + \frac{14}{17}x^3 + \frac{30}{33}x^4 + ...$ **(10)**

e) Form a partial differential equation by eliminating arbitrary functions f and g from $z = f(x^2 - y) + g(x^2 + y)$ **(10)**

2. a) Let G be a finite abelian group and n a positive integer relatively prime to 0(G). Prove that every $g \in G$ can be written as $g = x^n$ for some $x \in G$. **(20)**

b) Verify Cauchy's theorem for the function 5 sin 2z if C is the square with vertices at $1 \pm i, -1 \pm i$ **(15)**

c) Examine for term by term integration the series the sum of whose first n terms is $n^2 x(1-x)^n (0 \leq x \leq 1)$. **(15)**

3. a) Show that $\frac{1}{2}x^2 < x - \log(1+x) < \frac{1}{2}\frac{x^2}{(1+x)}, if -1 < x < 0$ **(20)**

b) If U is an ideal of R, then prove that $[R:U] = \{x \in R : rx \in U \text{ for every } r \in R\}$ is an ideal of R and that it contains U. **(15)**

c) Examine the nature of the function $f(z) = \frac{x^2 y^5 (x+iy)}{x^4 + y^{10}}, z \neq 0, f(0) = 0$ in a region including the origin. **(15)**

4. a) Solve the following system. **(20)**

$$10x + 2y + z = 9$$
$$2x + 20y - 2z = -44$$
$$-2x + 3y + 10z = 22$$

by using Guass - Seidel method.

b) Evaluate $\int_{-\pi}^{2\pi} \frac{a\cos\theta}{a+\cos\theta} d\theta, a > 1$ by putting $e^{i\theta} = z$ and using the theory of residues. **(15)**

c) Show that $A = \{xf(x) + 2g(x) : f(x), g(x) \in Z[x]\}$ is not a principal ideal of Z [x] and so Z [x] is not a P.I.D. **(15)**

SECTION - B

5. a) Using simplex algorithm solve the following L.P. problem. **(10)**

$$Minimum\ Z = 4x_1 + 8x_2 + 3x_3$$
$$Subject\ to \quad x_1 + x_2 \geq 2$$
$$2x_1 + x_3 \geq 5$$
$$x_1, x_2, x_3 \geq 0$$

b) Solve by the method of separation of variables.

$\frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial t}$, If $u(x,o) = x^2(25 - x^2)$ **(10)**

c) For the differential equation

$\frac{dy}{dx} = -xy^2$ Find by Runge - Kutta Method of fourth order y(0.6), given that y=1.7231 at x=0.4. Take h=0.2. **(10)**

d) Find the root of log x=cosx, by Newton Raphson method upto five decimal places. **(10)**

e) Show that $\frac{x^2}{a^2}\tan^2 t + \frac{y^2}{b^2}\cot^2 t = 1$ is a possible boundary of a liquid motion. Also find the normal velocity. **(10)**

6. a) Show that 'θ' (Which occurs in the Lagrange's mean value theorem) approaches the limit $\frac{1}{2}$ as 'h' approaches zero. Provided that $f''(a)$ is not zero. It is assumed that $f''(x)$ is continuous. **(20)**

b) Apply Lagrange's Formula to find f (5) given that f (1)=2, f(2)=4, f(3)=8, f(4)=16, f(7)=128 and explain why the result differs from 2^5. **(15)**

c) A toy company manufactures two types of doll. a basic version-doll A and a deluxe version - doll B Each doll of type B takes twice as long to produce as one of type A, and the company would have time to make a maximum 2,000 per day if it produces only basic version. The supply of plastic is sufficient to produce 1,500 dolls per day (both A and B combined). The deluxe version requires a fancy dress of which there are only 600 per day available. If the company makes profit of Rs. 3.00 and Rs. 5.00 per doll respectively, on doll A and B; how many of each should be produced per day in order to maximize profit? **(15)**

7. a) Three forces P, Q, R acting on a particle are in equilibrium and the angle between P and Q is double of the angle between P and R. Show that. **(20)**

$$P = \frac{Q^2 - R^2}{Q}$$

b) A point moves in a straight line so that its distance from a fixed point in that line is the square root of the quadratic function of the time, prove that its acceleration varies inversely as the cube of the distance from the fixed point. **(15)**

c) Prove by contour integration

$$\int_0^\infty \frac{\log(1+x^2)}{1+x^2}\, dx = \pi \log 2$$ **(15)**

8. a) Find the complete integral of **(20)**

$$Z^2 = pqxy$$

b) A uniform rod OA, of length 2a, free to turn about its end O, revolves with uniform angular velocity ω about the vertical OZ through O, and is inclined at a constant angle α to OZ, show that the value of α is either zero or $\cos^{-1}(3g / 4aw^2)$ **(15)**

c) Given that $\frac{dy}{dx} = \log_e(x+y)$, with the initial condition that y=1 when x=0, find y for x=0.2 and x=0.5, by using Euler's modified method. **(15)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)

PHYSICS

(OPTIONAL)

PAPER - II

(45)

Time Allowed - Three Hours | *Maximum Marks-250*

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SECTION - A

1. a) What is wave-particle duality? Explain the de-Broglie wave length. **(10)**

   b) Zeeman effect can be observed in a spectral line of 500 nm, wavelength, when spectrometer resolution is 0.01 nm. Find out minimum magnetic field required for Zeeman effect. **(10)**

   c) What is uncertainty principle. Explain its consequences. **(10)**

   d) Define rotational and vibrational spectra. Explain its origin in diatomic molecules. **(10)**

   e) According to Debye's model of solids, the expression for specific heat is given as

$$C_v = \frac{9N_0 k_B}{x^3}\int_0^x \frac{\zeta^4 e^{\zeta}}{[e^{\zeta}-1]^2} d\zeta,$$

   where $\zeta = (h\nu / k_B T), x = (h\nu_m / k_B T)$ and $(\theta_D = h\nu_m / k_B)$ is the Debye's characteristic temperature. Show that

   i) At high temperatures Debye's model gives Dulong Petit's law and

   ii) At low temperatures it gives $C_v \alpha T^3$ in agreement with the experiment. **(10)**

2. a) What is density of states? Explain density of states for a particle in 3-D, 2-D, 1-D potential box and zero dimensional solid with diagrams. **(20)**

   b) If a particle is tunnelling through a potential barrier of height V_0. The kinetic energy of particle is $E<V_0$. Derive an expression for transmission probability of a particle. **(15)**

   c) What is the relation between kinetic energy and wavelength of particle. Calculate the kinetic energy of an electron having wavelength 1 nm. **(15)**

3. a) What is spin-quantization? Discuss Stern-Gerlach experiment with its working principle, diagram and experimental consequences. **(20)**

   b) Explain spin-orbit coupling and discuss the splitting of spectral lines of H-atom due to spin-orbit coupling. **(15)**

   c) Derive an expression for the Lande g-factor. **(15)**

4. a) What is Raman Effect? What is Stokes and anti-Stokes shift. Explain working principle of Raman spectrometer and its applications. **(20)**

   b) What is Lamb Shift? Explain its significance. **(15)**

   c) Discuss Franck-Condon principle and its applications. **(15)**

SECTION - B

5. a) What is nuclear binding energy. Find out binding energy per nucleon for $^{238}U_{92}$. **(10)**

b) Describe α – decay for an unstable nucleus. **(10)**

c) What is superconductivity? Explain type-1 and type-2 superconductors. **(10)**

d) How many types of quarks exist? Explain the basic properties of each quark. **(10)**

e) The differential gain of an op amp is 100. In the measurement of common mode gain experiment when 1.0V is applied common to both the inputs, the output voltage measured is 0.01V. Calculate the common-mode rejection ration (CMMRR). **(10)**

6. a) What is Mossbauer effect? Explain the working principle of Mossbauer spectroscopy with possible use. **(20)**

b) What is nuclear fission and fusion? Explain the working principle of Pressurized Water Reactor (PWR) for power generation. **(15)**

c) What is semi-empirical mass formula. Discuss its applications. **(15)**

7. a) Explain construction and working principle of Transmission Electron Microscope (TEM). How is TEM useful in material characterization? **(20)**

b) What is Bragg's law? Give a detailed derivation of Bragg's law. **(15)**

c) What is Josephson effect? Explain Josephson junction with applications. **(15)**

8. a) Explain with diagrams forward and reverse biasing of a p-n junction. What is meant by avalanche breakdown? **(20)**

b) What is n-p-n transistor? Draw a circuit diagram of n-p-n transistor and discuss active and saturated regions. **(15)**

c) What is MOSFET? Discuss its application. **(15)**

Total No. of Printed Pages-3]

Roll No. _____

CC(M)

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

(OPTIONAL)

PAPER - II

[47]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper

i) *There are eight questions divided in two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No.1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

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SECTION - A

1. Answer the following questions in about **150 words** each:- **(5×10=50)**

   (a) Write three major differences about the changing nature of the state in advanced industrial and developing societies. **(10)**

   (b) 'Although interest groups and pressure groups are very similar in nature, yet they are different in their working. Comment. **(10)**

   (c) Do you agree that in international politics, states have neither permanent enemies nor friends, but only permanent interests. **(10)**

   (d) Discuss 'Buck Passing' as a strategy in power balancing. **(10)**

   (e) 'AUKUS is good for containing China's belligerence in the Indo-Pacific'. Elucidate. **(10)**

2. (a) Critically examine the utility of political economy approach to the study of comparative politics. **(20)**

   (b) Do you think that 'failed states' are a cause for concern for international peace and security? **(15)**

   (c) Discuss the role of transnational actors in the globalisation of the economy. **(15)**

3. (a) 'The United States has been fading as a global power'. Comment. **(20)**

   (b) Some of the ideas raised in the demand for New International Economic Order are still relevant and useful. Elucidate. **(15)**

   (c) Write a short note on the New START Treaty between the USA and Russia. **(15)**

4. (a) Given the current turmoil in Afghanistan, do you think that there is a need to rethink promotion of democracy as a global strategy? **(20)**

   (b) Differentiate between classical realism and neorealism. **(15)**

   (c) How is the World Health Organisation (WHO) responding to Covid-19? **(15)**

SECTION - B

5. Answer the following questions in about **150 words** each. **(5×10=50)**

(a) Highlight the key characteristics of India's diplomacy in recent times. **(10)**

(b) Distinguish between India's Non-Alignment 1.0 and Non-Alignment 2.0. **(10)**

(c) How India's Look East Policy is different from its Act East Policy? **(10)**

(d) What are the major challenges for India's membership in the Nuclear Supplier Group allign? **(10)**

(e) Discuss the main features of 'New Delhi Consensus' **(10)**

6. (a) 'There is more continuity than change in India's foreign policy'. Elucidate. **(20)**

(b) Do you agree that the failure of SAARC to further regional cooperation in South Asia has pushed India to search for alternative regional institutions? **(15)**

(c) 'The border dispute has now turned into a permanent political irritant between India and Nepal'. Discuss. **(15)**

7. (a) 'The 21st century is going to be the Indian century'. Analyse. **(20)**

(b) Assess the progress made by the India-Africa Forum Summit. **(15)**

(c) 'Given their geopolitical tensions, India and China are going to be in a perpectual state of confrontation. Discuss. **(15)**

8. a) Critically examine India's vision for a New World Order. **(20)**

(b) Analyse India's call for reforms in UN Peace-Keeping operations. **(15)**

(c) Discuss India's views on the Treaty on Prohibition of Nuclear Weapons, 2021. **(15)**

Total No. of Printed Pages-3]

Roll No. _____

CC(M)

PSYCHOLOGY

(OPTIONAL)

PAPER - II

[49]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

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vi) No blank page be left in between answer to various questions.

SECTION - A

1. Answer the following questions in about **150** words each. **(5×10=50)**

   a) With the help of hypothetical examples, explain the difference between 'Delusional Disorder' and 'Shared Psychotic Disorder'. **(10)**

   b) Discuss the significance of genograms in the study of communities. **(10)**

   c) Examine the efficacy of self-help groups for mobilizing social change. **(10)**

   d) Discuss the factors that influence entrepreneurial potential and entrepreneurship in women. **(10)**

   e) What is the role of resilience and optimism in promoting the performance and well-being of military personnel? **(10)**

2. a) Describe the clinical picture of schizophrenia with a focus on positive, negative and disorganized symptoms. **(20)**

   b) Using the ecological framework of Community Psychology, discuss the problem of poverty in India. **(15)**

   c) Examine how career counselling can be useful for school students. **(15)**

3. a) *Humans are said to be social animals.* Elucidate the impact of the pandemic-related lockdowns on the mental health of people. **(20)**

   b) Does exposure to noise have an impact on individuals? Discuss using suitable research evidence. **(15)**

   c) What are the sources of power in an organization? How does workplace politics influence the efficiency of employees in the organization. **(15)**

4. a) The perceptions of 'fairness' and 'organization justice' are key determinants of employee motivation and satisfaction. Discuss this statement in light of the appropriate theory of work motivation. **(20)**

   b) India's elderly population is projected to touch 194 million in 2031. Discuss the role of psychologists in building a better psycho-social milieu for older adults. **(15)**

   c) Discuss the impact of rapid technological growth on the environment **(15)**

SECTION - B

Answer the following questions in about **150 words** each: **(5×10=50)**

5. a) Elucidate the role of 'projective identification' in psychoanalytically driven psychotherapy. **(10)**

b) Discuss the role of 'participatory action research' in community psychology. **(10)**

c) Critically examine the relationship between happiness and economic growth. **(10)**

d) Elaborate on approaches for the reduction of stigma stemming from mental illness. **(10)**

e) Propose a plan using psychological principles to conserve water in India. **(10)**

6. a) With the help of 'Full Range of Leadership Model', Discuss the key characteristics of 'transactional' and 'transformational' leaders. **(20)**

b) Researches suggest that increased screen time can have detrimental effects on the mental health of children. Elaborate on the strategies that can reduce this behaviour of children. **(15)**

c) Describe and critically assess any three off-the-job training techniques that may be useful even in the context of remote work during the pandemic. **(15)**

7. a) Examine the idea of rehabilitation of juvenile delinquents from a psychological and policy perspective. **(20)**

b) Discuss, with empirical evidence, the processes and pitfalls of decision making in groups. **(15)**

c) How does an effective recruitment strategy help improve overall quality of a selection process. **(15)**

8. a) Briefly describe Rosenthal and Jacobson's famous study on "self-fulfilling prophecy" done in 1968. **(20)**

b) What are common psychological techniques used to improve an athlete's performance. Write about the skills needed for psychologist for maximum efficiency. **(15)**

c) What is the difference between explicit and implicit prejudice? Critically discuss the persistence of caste prejudice in Indian Society. **(15)**

Total No. of Printed Pages-4] Roll No. _____

CC(M)

PUBLIC ADMINISTRATION

(OPTIONAL)

PAPER - II

[51]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. Answer the following questions in about 150 words each. (5×10=50)

   a) In Contemporary times, Kautilya's Arthashastra is relevant more in the field of International relations than in economic affairs. Analyse the Statement. (10)

   b) Indian Bureancracy is no more a steel frame. Discuss. (10)

   c) Analyse the salient features of the Indian Constitution with reference to its continuity with the past. (10)

   d) Critically examine the asymmetrical features of the Indian Federal System in the context of a centralised federation. (10)

   e) Indian constitution is more of a political document than a social-economic one. Do you agree? Give reasons. (10)

2. a) India opted for a mixed economy after Independence. Critically examine the compulsions before the developmental planners for adopting the middle path. (20)

   b) Critically assess the challenges faced by the public sector undertakings in the context of rapid globalisation. Give suggestions for improving the efficacy of PSUs. (15)

   c) Parlimentary committees carry the load of the Legislature. Elucidate. (15)

3. a) The role of Prime Minister in 'Strategic Decision Making' has redefined the office of the Prime Minister. Evaluate. (20)

   b) Will the formation of NITI Aayog enable to realise the goals of Cooperative-federalism in a more democratic way? Give reasons for your answer. (15)

   c) The Generalist vs. specialist controversy has hindered the efficiency of Bureancracy. Do you agree? Give reasons. (15)

4. a) The main problem of Centre-State relations in India is bottlenecks in Fiscal Federalism. Comment. (20)

   b) The performance of the district administration needs to be evaluated in proportion to the work assigned to them. Discuss. (15)

   c) Evaluate the various efforts made to Indianise the public services. According to you, which aspect of public services in India still has a major imprint of Britrish Raj. (15)

SECTION - B

Answer the following questions in about **150 words** each: **(5×10=50)**

5. a) The weakest aspect of Indian administration is the grievance redressal machinery. Discuss. **(10)**

   b) Budget is an indicator of financial health of a polity which is reflected in the statement of income and expenditure. Discuss. **(10)**

   c) Excellent ideas but poor implementation have characterised the administrative reforms in India since Independence. Critically examine the statement giving examples from the Union and State Governments. **(10)**

   d) 73rd and 74th Constitutional Amendments have provided structural framework to PRI's resulting into a silent revolution. Comment. **(10)**

   e) How does New Localism impact Centre-State- Local relations in the era of LPG? **(10)**

6. a) Critically examine the concept of community policing as a tool for improving public-police relations, with suitable examples from J & K. **(20)**

   b) There is a constant and continuous collision between bureaucratic values and democratic values which adversely affects development. Do you agree? Elaborate. **(15)**

   c) Assess the contribution of State agencies and Paramilitary forces in the maintenance of law and order and countering insurgency and terrorism in J & K. **(15)**

7. a) The Right to Information (RTI) has started its journey but it is far from its destination. Comment. **(20)**

   b) 'SMART' administration still has a long way to go. critically examine the statement. **(15)**

   c) Critically discuss the purpose of formation of National Investigation Agency (NIA) and also discuss its efficacy. **(15)**

8. a) Identify the response of disaster management in combating the challenges of both natural and man-made in India. **(20)**

b) Do you agree with the view that citizens charters in India have succeeded in their objective of making the administrative system citizen-centric? Analyse and give your suggestions in this regard. **(15)**

c) 'Audit is the Watchdog of the nation against executive extravagance and inefficiency' in the light of this statement assess the contribution of the CAG in shaping transparency in the public account. **(15)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)

SOCIOLOGY

(OPTIONAL)

PAPER - II

(53)

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. **Answer the following questions in about 150 words each.** **(5×10=50)**

   a) Discuss the pluralistic approach of G.S. Ghurye for studying Indian Society. **(10)**

   b) Examine the major Sociological contributions of M.N. Srinivas. **(10)**

   c) Elucidate AR Desai's account of the social background of Indian Nationalism. **(10)**

   d) Describe Louis Dumont's approach to the study of caste. **(10)**

   e) Discuss and analyze the peasant uprisings in Telangana & Andhra Pradesh. **(10)**

2. a) Tribes have been often labelled as 'Anti-development'. Comment in the context of the unrest in Central India. **(20)**

   b) Explain the intersections of caste with class and other factors as elucidated by Beteille. **(15)**

   c) Critically analyze land reforms in the Indian Agrarian Sector. **(15)**

3. a) Describe the industrial class structure in India. **(20)**

   b) Critically examine A.M. Shah's view on the family structure in India. **(15)**

   c) What are the problems faced by the religious minorities in India? **(15)**

4. a) What are the barriers to women's participation in the Labour Market. **(20)**

   b) Examine the role of vote banks in Indian Politics. **(15)**

   c) Discuss the significance of the Shah Bano and other similar cases in the context of the Uniform Civil Code. **(15)**

SECTION - B

5. **Answer the following questions in about 150 words each.** **(5×10=50)**

   a) Justify the view that modernization in deeply rooted in tradition and the social structure in India. **(10)**

   b) Analyze the reasons for the lower enrollment and employment rates of the scheduled caste, scheduled tribes and minorities in various sectors in India. **(10)**

   c) Critically analyze the Green Revolution and its impact on health in India. **(10)**

   d) Explain the problems of migrant workers in India in the context of the Covid 19 Pandemic. **(10)**

   e) Critically analyze the National Population Policy 2020. **(10)**

6. a) Slums are an integral part of Indian Cities. Comment. **(20)**

b) What are the various factors that hinder women's employment and development in India. **(15)**

c) How does the Indian approach to secularism differ from the Western approach to secularism? **(15)**

7. a) What are the various ways in which ethnicity becomes a source of conflict? **(20)**

b) Describe the multidimensionality of poverty in India. **(15)**

c) The two-child policy has adversely affected sex ratio in India. Comment. **(15)**

8. a) Critically evaluate the role of the state in promoting education of the girl child in India. **(20)**

b) Comment on the fifth schedule and the sixth schedule of the Constitution of India. **(15)**

c) Evaluate the bottom-up approach in the context of development initiatives in India. **(15)**

Total No. of Printed Pages-3]

Roll No. _____

CC(M)

ZOOLOGY

(OPTIONAL)

PAPER - II

[57]

Time Allowed - Three Hours

Maximum Marks-250

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SECTION - A

1. Write answer in about 150 words for each of the following :

   a) What is translation? Explain the process in a prokaryote. **(10)**

   b) Differentiate between molecular taxonomy and classical taxonomy. **(10)**

   c) Describe Hardy-Weinberg law and mention its underlying assumptions. **(10)**

   d) Describe the mechanism of sex determination in man. **(10)**

   e) Define lampbrush and polytene chromosomes and comment on their occurrence. **(10)**

2. a) Using diagrams where necessary, describe the strcuture of rods and cones and compare their physiological properties. **(20)**

   b) Define paleontology. Discuss the chronological order of horse evolution. **(15)**

   c) Describe genetic and induced teratogenesis giving suitable examples. Also enumerate its medical implications. **(15)**

3. a) What is fluid mosaic model? Discuss the role of lipids in maintaining the fluidity of plasma membrane. **(20)**

   b) Write the application of RFLP in DNA fingerprinting and explain the use of VNTRs in paternity tests. **(15)**

   c) Explain the 'Michaelis-Menten equation' and write its significance in enzyme kinetics. **(15)**

4. a) Explain embryonic stem cells. With the help of a flow chart, explain the process of developing transgenic mice using these embryonic stem cells. Differentiate transgenic vs knock-out mice. **(20)**

   b) Differentiate between genomics and proteomics. Comment upon Human genome project. **(15)**

   c) What is DNA cloning? Write down the applications of plasmids, cosmids and artificial chromosomes in recombinant DNA technology. **(15)**

SECTION - B

5. a) Describe the role of acetylcholine at neuromuscular junction. **(10)**

   b) Describe the continental drift. Current distribution of animals is a result of continental drift. Explain? **(10)**

   c) Write a note on cardiac pacemakers. **(10)**

   d) Write a note on "ontogeny recapitulates phylogeny". **(10)**

   e) Comment on structure of proteins. **(10)**

6. a) Give the structure of ATP, AMP and cyclic AMP. Describe their role in Krebs cycle and oxidative phosphorylation. **(20)**

   b) Describe the origin of lysosomes and state the role of its different enzymes. **(15)**

   c) Define the role of hormones in male and female gametogenesis. **(15)**

7. a) Describe the mechanism of oxygen and carbon dioxide transport in blood. **(20)**

   b) Explain the process of oogenesis. Discuss the importance of meiotic arrest during oogenesis. **(15)**

   c) Give an account of structure and function of nephron and explain the regulatory mechanism by the Renin-Angiotensin-Aldosterone systems. **(15)**

8. a) Mention the sources, types and uses of stem cells in human welfare. **(20)**

   b) Write down the name of different kind of immunoglobulins and their functions. Explain Rh incompatibility in human beings and mention which immunoglobulin is involved in it and why? **(15)**

   c) Describe how polarity is established during embryonic development and comment on its significance with reference to the gradient theory. **(15)**

Roll No._____ Total No. of Printed Pages-6

CC(M)

KASHMIRI

PAPER - II

[30]

Time Allowed - 3 Hours | *Maximum Marks - 250*

(Answer Must be written in kashmiri)

جواب دِنہٕ برو نہہ پُرٕ وسوالن متعلق خاص ہدایات۔

۱۔ یتھ پرچس منز چھِ اُٹھ سوال یم دون حصن (سیکشنن) پیٹھ مشتمل چھِ۔

۲۔ توہہِ چھِ کل پانژن سوالن ہندی جواب دِنی۔

۳۔ سوال نمبر 1 (اکھ) تہٕ سوال نمبر 5 (پانژُک) جواب دِیُن چُھ لازمی۔

۴۔ دویو سیکشنو منز چُھ باقی ترٕ ہن سوالن ہُند جواب دِیُن۔ مگر پرٕ بتھ سیکشن کیو سوالو منز چُھ کم کھوتہٕ کم اکہِ سوالُک جواب دِیُن ضروری۔ پرٕتھ سوالس تہٕ سوالُکس حصس برونہہ کنہِ چھِ (Marks) درج کرنہٕ آمتی۔

۵۔ سوالن ہُند جواب دِنہٕ باپتھ چُھ الفاظن ہُند تعداد مقرر کرنہٕ آمُت۔ اَچ پابندی کرِنی چھےٚ لازمی۔

۶۔ سوالن ہندہٕ جوابن یِیہِ ترتیب وار اہمیت دِنہٕ۔

۷۔ اگر کُنہِ سوالُک یا تمکہِ کُنہِ حصُک لکھنہٕ آمُت جواب تُہی مُجرا چھونہٕ یژھان تھاوُن، تتھ گژھ کراس دِیُن۔ نتہٕ یِیہِ سُہ جواب تصور کرنہٕ، یُد وَے سُہ جواب اڈلیو کے تہٕ آسہِ۔

۸۔ کانہہ صفحہ یا صفحک کانہہ حصہ اگر خالی روزِ، تتھ گژھ کراس دِیُن۔

SECTION - A

1. بونہٕ کنہِ دِنہِ آمتین شعرن کُرِ وتشریح تہٕ شاعرِ سُند حوالہٕ دِتھ ہیو شعری اُسلوبس سام۔ (5×10=50)

(الف) آمہِ پننہٕ سوٗ درس ناوِ چھس لمان — کتہِ بوزِ دَے میون میٚنتہِ دیہِ تار
آمین ٹاکین پونی زن شمان — زوٗ چُھم بزِ بمان گھرِ گژھ ہا

(ب) یتھ واوِ ہالے ژونگ کُس زالے — تِلہٕ کنہِ زالے علم تہٕ دیہن
پزکتھ تزأوتھ سوکتھ پالے — سورُے علم چُھ الف لام میم

(ج) شزاونُن شین زن بو گلان آلیس — باغس پھوٗجس بو ہی
چونُے باغ تَے ژے وولو چھاوان — ژے کہو زِگیی میأنی دِے

(د) سوچھِ کرال کران تس مرحبا — یُس گوٗو زینے دیوانَے
مُرتھ ہُران تس مرتبہ — ہبا یہ چُھی گمانَے

(ہ) دچھہِ رأنٹھ گھژ ہلہِ ہلہِ — تتھ ما ور زانہہ دراو
کأرِ گر کوتاہ دلہِ — کہو کلہِ کر ٹھہرا و

2. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) للہٕ واکھن ہنزِ فنی خوبیہِ۔(۲۰۰ الفاظن منز) (20)

(ب) للہٕ واکھ تہٕ شیخہٕ شرکین منز ہشر تہٕ ہبن۔ (۲۰۰ الفاظن منز) (20)

(ج) حبہِ خاتونہِ ہندِس کلامس منز نسوأنی اظہار۔(۱۰۰ الفاظن منز) (10)

3. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) محمود گامی سند ہن وژنن ہنز خوبیہ۔ (۲۰۰ الفاظن منز) (20)

(ب) 'گلریز' مثنوی منز منظر نگاری تہٕ جذبات نگاری۔ (۲۰۰ الفاظن منز) (20)

(ج) کاشر صوفی شاعری پیٹھ فکری اثرات۔ (۱۰۰ الفاظن منز) (10)

4. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) رسول میر نی سراپا نگاری۔ (۲۰۰ الفاظن منز) (20)

(ب) نظم ''گریسی کوٗر'' چھےٚ روایتی شاعری نشہِ انحراف۔ (۲۰۰ الفاظن منز) (20)

(ج) آزاد نی ''شکویہِ کشمیر'' نظمہِ ہُند تنقیدی جائیز۔ (۱۰۰ الفاظن منز) (10)

SECTION - B

5. بونہٕ کنہِ دِنہٕ آمتین نثری اقتباسن ہنز کرِ وتشریح تہٕ فنی پہلوٗن ہیٚو جائیز۔ (5×10=50)

(الف) ''یہ چھنہٕ ووٚنی کانسہِ تہٕ خبر سُہ کوٚت گیاو۔ تو پتہٕ تیوٚت بکارتہِ کُس چھُ تس متعلق بیٚہیہِ دریافت کرنہِ۔ بڈٕ کچُل، اسمانٛی ملاٗ یکن ژوٗرِ اوسُے ہُر یمانہٕ وانسا ہتھ پھیران۔ پیٹھہٕ کتھہٕ کتالی۔ ووٚنی گو ومیانہٕ شرٕ ہن چھُ کُنہِ دوہ یاد پیوان۔ شُرٕ ہن کیاہ؟ تمن اوسُے تمی سنزن کتھہٕ بکواسس مزہ میٹھان۔۔۔ یٚمہِ دوہ سُہ سون یہِ ہے، سُہ دوٚہی دوہ اوس پنڈی نیران۔ کانسہِ یارس دوستس اوسامےٚ بنان یُن۔ تمس وُچھتھ اوس پرٕ ہتھ اکھا پوٚت کھوری واپس ژلان۔ تمی کُس اکھا اوس کن کھینہٕ رؤس ترووُمت۔ کتھِ پیٹھ اوسُے ونان ''بوز تاریخ ونے۔'' (10)

(ب) ''سو کتہِ چھےٚ بیٚتہِ۔ تسے وونی ترنے ربتھ گژھن وأری وِس منز'' ملہِ قأدرن وونُس فخرِ سان۔ زن تہٕ تمی فتح أس زٕنی ہژ۔ ''نہٕ سہ میأنی دِرے چھےٚ! ہری کرشنس آیہِ نہٕ پژھے۔ تأجیُے ہباچھ۔'' ژنے چھے ناخبر؟ ملہِ قأدرن وونُس شکایت کرنہٕ کس اندازس منز۔ وِدس ہےٚ خبر چھِ۔ خدا صأب تھأوی نس اوٚ رجان۔ سوے بیٚنہِ وول نیرنس تام مصرس نشی بہتھ أس۔ پرُن لکھن نبا چھُنہِ روومُت۔ یا گوژھ وُچھن کُس طریقہٕ تہٕ تمیز دیتُن مصرس۔ ہری کرشنس گیہِ پانس پیٹھ ندامت۔ تمی وونس اِدسہ تہٕ مبے نے خبرے۔ گرس منز تُج نہٕ یہِ کتھ تہٕ کأنسہِ۔ گوڈنتھ نہٕ مبے پانس موکجارتہِ۔'' **(10)**

(ج) ''یمہِ وندِ پیوٚ وشین بے وایہِ۔ خلقو ترأوی ترنے ترنے شین۔ شین ترأونس منز اوس سہ طاق۔ سہ پلز یوو پر بتھ کأنسہِ تہٕ چھیکرس ہأوی تمس تہٕ وندن دند۔ بیلہِ سہ سونتہٕ کالہِ کامبن کوچن، دجن ڈورِ بن آو کوٚر، تمس أس ببسأ کھی اگادِ گأمژ۔ سہ اوس نہٕ اکھ قدم تہٕ امہِ ورأے کڈتھ ہبکان۔ أچھ آسس وارے اوٚری ژا مژ۔ گوڈ أسی تمس سأری چایہِ ہن، بتہٕ ہن اوٚری نان۔ مگر وونی اوس سہ ٹھک ٹھک کران پانے چایہِ موقعہ وأتھ پیوان۔ سہ اوس لگ بھگ وونی مُشتھے گومُت۔ یا ممکن چھُ پانس ہوُے ما آسہِ ہبکھ وونی باسان۔ یا گامُک یوٚ ہے اکھ بیاکھ کُل کوٚٹ ہیوٚ۔'' **(10)**

(د) ''دلہِ وأتھ باسیو پوشہِ کُجہِ نوٚوُے عالم۔ تمہِ ترو وو پھر بکھ ہیوٚ۔ سأری ہے ژھنی تو بلاے گوڈ چھنہِ مسلمانے کُنہِ بوٚد۔ ژوپأری چھِ پٹنی بٹہٕ بأے۔ دودِ وول تہٕ بٹے، کانڈ رتہٕ بٹے۔ بیٚیہِ موکلأوی بگوانن تس ہأنزنہٕ نش۔ یہ أس پوشہِ کُجہِ بیاکھ فراغت۔ سو ''ہانزنی'' یعنی پٹنی زِٹھ نوش یا دیپنہٕ ستی کھرُس ترہش۔ کتھِ کتھِ پیٹھ أس رانٹسہِ ہندی پأٹھی اگادِ گژھان۔ محلس منز زانہِ ہے نہٕ تس ناو کانہہ مگر تمہِ کڈ أڈی أڈی۔ اِد بگوان تہٕ چُھس وُچھتھے پوٚ کمُت۔ نتہٕ کیاہ۔ گاشہِ تہٕ صأبہِ چھِ أکی ہے ماجہِ ہندی گبر۔ وُچھتو صأبہِ کیاہ چھُ بیٚتہِ یہاتہٕ کران۔ تہٕ تس چھِ تتہٕ بتہٕ کامنی۔ أمی ہے ہانزنہِ ہندِ شکس لدطالع کنی۔ تمہِ اوس فأصلہٕ کوٚ رمُت زِ سوترنہٕ رہتہٕ کالہِ تہٕ کشیرِ واپس۔'' **(10)**

(ہ) ژنہِ ژوٗر! تمواوسُس حأران گژھتھ وۆنمُت ۔اَ ہنوٗ اِدکیاہ۔توہہِ چھُو نابوزمُت زِیٚیلہِ ہہہ جنگلہِ منز نیرتھ کُنہِ گامس منز چھُ اژان، گریسی چھِ شورتُلان ۔ژنہِ ژوٗ رہو۔ژنہِ ژورہو۔مأریوٗنو۔ژنہِ ژوٗر ناو بوٗزِتھ چھِ ہہس ترا ژان۔تُمس چھےٚ تھرِ تھرِ اژان ۔سُہ چھُ دستہِ چھکان تہِ ژلان ۔یہ چھےٚ گریستہن ہنٛز زبردست چال آسان ۔اگرتم کربکہِ دِن ۔ہہہ ہا چھُ ہہہ ۔ژوٗرِ روٗزی توو۔تیلہِ گژھ ہہس پننہن زورن ہُند احساس تہِ ہہہ نہناوِ سأری ہے گامس ۔سُہ اوس تمن ونان ۔ توہہِ تہِ چھُو ژنہِ ژوٗر گوٗمُت ۔توہہِ چھُونہِ پننہِ طاقتک احساس ۔اگرتوہہِ منز احساس پأدِ سپدِ تیلہِ ژارِو نہِ سُلطان زانہہ تہِ لبکہِ ۔یہن روپیَن پیٹھ کدٕ نہِ تُہند خوٗن ۔زچہِ تہِ ہاکہِ میٚچہِ پیٹھ ہیٚیہِ وِنہِ توہہِ سُہ مُلی۔ (10)

6. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) 'ژس' افسانکین فکری تہِ فنی پہلوون ہیٚوسام۔ (۲۰۰ الفاظن منز) (20)

(ب) 'کوکر جنگ' افسانک تنقیدی جأیزٕ کرِو پیش۔ (۲۰۰ الفاظن منز) (20)

(ج) ''حالس چھُ روتُل'' افسانک مرکزی خیال لیکھو۔ (۱۰۰ الفاظن منز) (10)

7. یمن سوالن ہُند لیکھو جواب۔ (50)

(الف) 'مُرن۔۔۔اوان الچُن' ناولک مرکزی خیال۔ (۲۰۰ الفاظن منز) (20)

(ب) ''پأتھر چھُ جأری'' اوٗک انگی ناٹکس منز کمن چیزن پیٹھ چھُ طنز؟ (۲۰۰ الفاظن منز) (20)

(ج) ''رازِ ایڈیپس'' ڈرامٹک مرکزی خیال۔ (10)

8. یمن سوالن ہُند جواب لیکھو۔ (50)

(الف) لکھ پأ تھر تہٕ امکی قسم۔ (۲۰۰ الفاظن منز) (20)

(ب) لُکھ ادب تہٕ امکی قسم۔ (۲۰۰ الفاظن منز) (20)

(ج) ا ذک انگی ناٹک ''مزارِ شعرا'' ہُک مرکزی خیال۔ (۱۰۰ الفاظن منز) (10)

Roll No._____ Total No. of Printed Pages-3

CC(M)
URDU
(OPTIONAL)
(LITERATURE)
PAPER - I

[55]

[Maximum Marks - 250] *[Time Allowed - 3 Houres]*

سوالات سے متعلق خاص ہدایات

(سوالوں کے جواب تحریر کرنے سے پہلے درج ذیل ہدایات کو غور سے پڑھئے)

۱۔ اس پرچے میں آٹھ سوالات ہیں جو دو حصوں (سیکشن) پر مشتمل ہیں۔

۲۔ امیدوار کو کل پانچ سوالوں کے جواب دینے ہیں۔

۳۔ صرف پانچ سوالوں کے جواب لکھئے۔ سوال نمبر 1 اور 5 کے جواب لازمی ہیں۔ دونوں سیکشن کے باقی سوالات میں سے صرف تین سوالوں کے جواب دینے ہیں لیکن ہر سیکشن کے سوالات میں سے کم از کم ایک سوال کا انتخاب ضروری ہے۔

۴۔ ہر سوال یا سوال کے حصے کے نمبر اس کے سامنے درج کر دیئے گئے ہیں۔

۵۔ جوابات اُردو میں ہی مطلوب ہیں۔

۶۔ سوالات کے جوابات کے لئے الفاظ کی جو تعداد مقرر کی گئی ہے اس کی پابندی لازمی ہے۔

۷۔ سوالات کے جوابات کو ترتیب وار اہمیت دی جائے گی۔ جب تک کوئی جواب یا اس کا حصہ کاٹ کر مسترد نہ کر دیا گیا ہو سوال کا جواب تصور کیا جائے گا گرچہ جواب جزوی طور پر ہی حل کرنے کی کوشش کی گئی ہو۔ کوئی صفحہ یا صفحے کا کوئی حصہ اگر چھوڑا جائے تو اس کو کاٹنا ضروری ہے۔

SECTION - A

1. درج ذیل پر تنقیدی نوٹ (100 الفاظ میں) لکھئے۔ (5×10=50)

(الف) وسطی ہند آریائی دور (10)

(ب) اُردو اور کھڑی بولی کا رشتہ (10)

(ج) اُردو کے آغاز کے بارے میں محمود شیرانی کا نظریہ (10)

(د) اُردو کی تہذیبی و ثقافتی بنیادیں (10)

(ہ) اُردو رسم الخط کی خصوصیات (10)

2. درجِ ذیل پر تنقیدی نوٹ لکھئے۔ (50)

(الف) جدید ہند آریائی زبانوں کی گروہ بندی (200 الفاظ میں) (20)

(ب) دکنی اُردو کی لسانی خصوصیات (150 الفاظ میں) (15)

(ج) قلی قطب شاہ کی شاعری (150 الفاظ میں) (15)

3. درج ذیل پر تنقیدی مضمون لکھئے۔

(الف) دکن میں اُردو مرثیہ نگاری (200 الفاظ میں) (20)

(ب) وجہی کی کتاب ''سب رس'' کی زبان (150 الفاظ میں) (15)

(ج) ولی دکنی کی غزل گوئی (150 الفاظ میں) (15)

4. درج ذیل پر تنقیدی مضمون لکھئے۔ (50)

(الف) مثنوی کدم راؤ پدم راؤ (200 الفاظ میں) (20)

(ب) دکن میں اُردو غزل کا ارتقاء (150 الفاظ میں) (15)

(ج) دکنی اُردو پر علاقائی اثرات (150 الفاظ میں) (15)

SECTION - B

5. درج ذیل پر تنقیدی نوٹ (100 الفاظ میں) لکھئے۔ (5×10=50)

(الف) اُردو میں داستان نگاری کی روایت (10)

(ب) دبستان دہلی کی شاعری کی بنیادی خصوصیات (10)

(ج) میر تقی میر کی شاعری (10)

(د) شبلی کی سوانح نگاری (10)

(ہ) اُردو میں ڈرامہ کا آغاز (10)

6. درج ذیل پر تنقیدی مضمون لکھئے۔ (50)

(الف) اُردو میں انشائیہ نگاری (200 الفاظ میں) (20)

(ب) قصیدے کا فن اور اس کے اجزائے ترکیبی (150 الفاظ میں) (15)

(ج) اُردو میں ترقی پسند تحریک (150 الفاظ میں) (15)

7. درج ذیل پر تنقیدی مضمون لکھئے۔ (50)

(الف) پریم چند کی ناول نگاری (200 الفاظ میں) (20)

(ب) اقبال کی نظم نگاری (150 الفاظ میں) (15)

(ج) عصمت چغتائی کی افسانہ نگاری (150 الفاظ میں) (15)

8. درج ذیل پر تنقیدی مضمون لکھئے۔ (50)

(الف) اُردو میں تنقید نگاری کا آغاز وارتقاء (200 الفاظ میں) (20)

(ب) اُردو زبان وادب اور مشترکہ تہذیب (150 الفاظ میں) (15)

(ج) غالب کی مکتوب نگاری (150 الفاظ میں) (15)

Total No. of Printed Pages-4]

Roll No. _____

CC(M)
MANAGEMENT
(OPTIONAL)
PAPER - II
[35]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are eight questions divided in two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No.1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English, in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page be left in between answer to various questions.*

SECTION A

1. **Describe the following in about 150 words each** **(5×10=50)**

a) Examine the change in structure of India's foreign trade post 1991. **(10)**

b) Discuss the effect of RTA's on Indian Economy. **(10)**

c) A recent trend among MNCs is to replace expatriates in foreign subsidiaries with local managers. Discuss the implementation of this policy from the standpoint of

i. Formulation of global strategies.

ii. The control of foreign subsidiaries. **(5+5=10)**

d) Explain various stages of System Development Life Cycle (SDLC). **(10)**

e) In the following table are recorded data showing the test scores made by salesmen on an intelligence test and their weekly sales: **(10)**

Salesmen	1	2	3	4	5	6	7	8	9	10
Test Scores	40	70	50	60	80	50	90	40	60	60
Sales (000)	2.5	6.0	4.5	5.0	4.5	2.0	5.5	3.0	4.5	3.0

Calculate the regression line of sales on test scores and estimate the most probable weekly sales volume if a salesmen makes a score of 70.

2. a) Use simplex method to maximize $z=3x_1+2x_2+5x_3$ subject to the constraints:

$$x_1+2x_2+x_3 \le 430, 3x_1+2x_3 \le 460, x_1+4x_2 \le 420; and\ x_1, x_2, x_3 \ge 0.$$ **(20)**

b) 'Linear program is useful technique of management with some limitations' Comment on the statement with suitable examples. **(15)**

c) What is the difference, if any, between quality assurance and quality control as they are generally understood as same? **(15)**

3. a) What are the different types of production systems? Where would each one of them be applicable? Give practical examples. **(20)**

b) How are organizational resources linked to the competitive advantages and corporate performance of an organization.? **(15)**

c) What is BCG Matrix? How does it help analyze business portfolio of the firm? Illustrate BCG Matrix with an industry wise categorization. **(15)**

4. a) What are the government policies concerning the development of backward areas in India. Explain various principles of corporate governance. **(20)**

b) What is the relevance of 'objectives' in project management? Where is the effect of this consideration felt during the project management process? Give examples and explain. **(15)**

c) How do the three elements of globalization, innovation, and sustainability impact your understanding of strategy? **(15)**

SECTION - B

5. **Describe the following in about 150 words each** **(5×10=50)**

a) Free market economics stimulate greater economic growth, where as state-directed economies stifle growth. Discuss. **(10)**

b) How are organizational resources linked to the competitive advantages and corporate performance of an organization? **(10)**

c) The mean produce of wheat of a sample of 100 fields is 200 lbs. per acre with a standard deviation of 10 lbs. Another sample of 150 fields gives the mean of 220 lbs. With a standard deviation of 12 lbs. Can the two samples be considered to have been taken from the same population whose standard deviation is 11 lbs? Use 5 percent level of significance (z=1.96). **(10)**

d) Describe the concept of sensitivity analysis. **(10)**

e) Discuss Porter's five forces model. How will you apply this model in industry? **(10)**

6. a) Information requirements vary at different levels of management in the company. Discuss various types of information systems that might be useful to managers depending on their roles and responsibilities with suitable examples. **(20)**

b) What are the different types of strategies available for a company to go abroad for business expansion? **(15)**

c) Discuss the role of Research and Development (R&D) in production management for promising economies like India. **(15)**

7. a) Is downsizing a good strategy for revamping an organization's competitiveness when it is facing major competitive threats in the markets? **(20)**

b) How would you perceive the role of the Quality Control manager in an organization? In a manufacturing organization should the quality control function be separate from the line function of manufacturing? If yes, why? If no, why not? (Give an example as to where it need not be separate). **(15)**

c) Differentiate between Enterprise Information System and e-Commerce. Discuss a few applications of Enterprise Information systems. **(15)**

8. a) What are the factors that require attention in 'country risk analysis'? Explain. **(20)**

b) Discuss government policies relating to 100% export oriented units. Explain various sources of funding available in international business. **(15)**

c) Why is Foreign Direct Investment (FDI) preferred over Foreign Portfolio Investment (FPI)? Explain. **(15)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)

ANTHROPOLOGY

(OPTIONAL)

PAPER - II

[11]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

i) *There are eight questions divided in Two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No. 1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a question/ Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page be left in between answer to various questions.*

SECTION - A

1. **Write notes on the following in about 150 words each.** **(5×10=50)**

   a) Purushartha **(10)**

   b) Impact of Christianity on Indian Society **(10)**

   c) Dominant Caste **(10)**

   d) Burzahom **(10)**

   e) Westernization **(10)**

2. a) Critically examine the status of religious minorities in India and effectiveness of the Government policies and programmes for their welfare. **(20)**

   b) What is Nature-Man-Spirit Complex? How it is related to environmental conservation? Explain. **(15)**

   c) Discuss media and social change in Indian context with special reference to digital media. **(15)**

3. a) Critically examine Surajit Sinha and F.G. Bailey's contribution in development of the concept of Tribe-Caste Continuum. **(20)**

   b) Discuss the salient characteristics and phylogenic status of Narmada Man. **(15)**

   c) Critically examine B.S. Guha's classification of Indian Population **(15)**

4. a) Examine how protohistoric findings from India have contributed to the understanding of Indus Valley Civilization. **(20)**

   b) Discuss the contribution of D.N. Majumdar in understanding of Indian castes and tribes. **(15)**

   c) Describe Ethnoarchaeological findings from India with special reference to traditional technologies and organization of craft production. **(15)**

SECTION - B

5. **Write notes on the following in about 150 words each.** **(5×10=50)**

a) Xaxa Committee **(10)**

b) The Sentinelese **(10)**

c) Negrito Problem **(10)**

d) Denotified, Nomadic and Semi-Nomadic Tribes **(10)**

e) PESA **(10)**

6. a) Discuss how Forest-Tribe relations have transformed after independence. What policies and programmes of Government of India are responsible for this transformation? **(20)**

b) Critically examine N.K. Bose's idea of Hindu Method of Tribal Absorption with suitable examples. **(15)**

c) Critically discuss effectiveness of Constitutional safeguards for the protection and welfare of the Scheduled Castes. **(15)**

7. a) What are the basic features of the Draft National Tribal Policy prepared by the MOTA? Offer a well-informed critique of this policy. **(20)**

b) What are the causes of social unrest among the Central Indian Tribal Communities? How anthropological knowledge can be useful in addressing these problems. **(15)**

c) Discuss situation of Particularly Vulnerable Tribal Groups in India and examine impact of special programmes for their welfare. **(15)**

8. a) What are the specific health problems of Indian Scheduled tribes? Discuss Special efforts made by the Government to address these problems. **(20)**

b) Compare and contrast administrative approach in dealing with tribal/indigenous communities in India and Canada. **(15)**

c) Examine impact of development programmes and welfare measures on scheduled Tribes of Jammu and Kashmir. **(15)**

Total No. of Printed Pages-4] Roll No. _____

CC(M)
ENGLISH
LITERATURE
(OPTIONAL)
PAPER - II
[25]

Time Allowed - Three Hours ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are eight questions divided in two Sections and printed in English. Candidate has to attempt **Five** questions in All. Questions **No.1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least One question from each Section. The number of marks carried by a question/part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

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vi) No blank page be left in between answer to various questions.

[Turn Over

SECTION - A

1. Critically comment on the following passages in about 150 words each. (5×10=50)

I. I write it out in a verse____ **(10)**

MacDonagh and MacBride
And Connolly and Pearse
Now and in time to be,
Wherever green in worn,
Are changed, changed utterly:
A terrible beauty is born.

(W.B. Yeats)

II. Time and the bell have buried the day, **(10)**

The black cloud carries the sun away.
Will the sunflower turn to us, will the clematis
Stray down, bend to us; tendril and spray
Clutch and cling?

(T.S.Eliot)

III. Column by column in a cloud of dust **(10)**

They marched away enduring a belief
Whose logic brought them, somewhere else, to grief.

(W.H. Auden)

IV. We think each one will heave to and unload **(10)**

All good into our lives, all we are owed
For waiting so devoutly and so long.
But we are wrong:

(Philip Larkin)

V. My cold parchment tongue licks bark **(10)**

In the mouth when I see her four
Still sensible fingers slowly flex (A.K. Ramanujan)
To pick a grain of rice from the kitchen floor.

2. a) "Ramanujan's poetry deals with recollected memories and intense reflections". Discuss this statement with examples from his poems. **(20)**

b) How is the theme of class consciousness and hostility dealt with in John Osborne's *Look back in Anger?* **(15)**

c) Discuss W.B. Yeats's symbolism in 'The Tower' and 'Byzantium'. **(15)**

3. a) 'Yeats invents new myths or tries old ones in changed contexts'. Discuss this statement with reference to at least two of his poems. **(20)**

b) Critically examine T.S. Eliot's *The Love Song of J. Alfred Prufrock* as the monologue of a neurotic mind. **(15)**

c) Discus Samuel Beckett's *Waiting for Godot* as a modernist play. **(15)**

4. a) 'W.H. Auden's poetry deals with the suffering and dehumanization built into the modern life.' Discuss this statement with reference to at least two of his poems. **(20)**

b) Discuss how John Osborne's *Look Back in Anger* highlights the alienation of the youth in Post-war Britain. **(15)**

c) Examine how Philip Larkin's poetry represents an opposition to modernism. **(15)**

SECTION - B

Write a brief note on the following in about 150 words each. (5×10=50)

5. a) Elements of Modernism in Joseph Conrad's *Lord Jim.* **(10)**

b) Stream of Consciousness technique in Virginia Woolf's *Mrs. Dalloway.* **(10)**

c) Theme of Industrialism in D.H. Lawrence's *Sons and Lovers.* **(10)**

d) 'Orientalism' in E.M. Forster's *A Passage to India.* **(10)**

e) Theme of alienation in V.S. Naipaul's *A House for Mr. Biswas.* **(10)**

6. a) Discuss the significance of the *Harikatha* technique in weaving the old and the new, and the religious and the political in Raja Rao's *Kanthapura.* **(20)**

b) Discuss Jim as a tragic hero in Joseph Conrad's *Lord Jim.* **(15)**

c) Discuss D.H. Lawrence's Sons and Lovers as a novel with psychoanalytical elements. **(15)**

7. a) Discuss James Joyce's *A Portrait of the Artist as a Young Man*. as post colonial novel. **(20)**

b) Critically comment on the significance of the Marabar Caves in E.M. Forster's *A Passage to India*. **(15)**

c) "Virginia Woolf's Mrs. Dalloway offers a critique of the superficiality of the social conventions in Post-war British Society". Discuss. **(15)**

8. a) How effective is the portrayal of spirit and rhythms of life in an Indian village in Raja Rao's *Kanthapura*? Is the writer successful in doing so? Give a reasoned answer. **(20)**

b) Critically comment on the theme of rootlessness and exile in V.S.Naipaul's A *House for Mr. Biswas.* **(15)**

c) Discuss the portrayal of the woman characters in E.M. Forster's *A Passage to India.* **(15)**

Total No. of Printed Pages-4] Roll No. _____

CC(M)
MANAGEMENT
(OPTIONAL)
PAPER - II
[35]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

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SECTION A

1. **Describe the following in about 150 words each** **(5×10=50)**

a) Examine the change in structure of India's foreign trade post 1991. **(10)**

b) Discuss the effect of RTA's on Indian Economy. **(10)**

c) A recent trend among MNCs is to replace expatriates in foreign subsidiaries with local managers. Discuss the implementation of this policy from the standpoint of

i. Formulation of global strategies.

ii. The control of foreign subsidiaries. **(5+5=10)**

d) Explain various stages of System Development Life Cycle (SDLC). **(10)**

e) In the following table are recorded data showing the test scores made by salesmen on an intelligence test and their weekly sales: **(10)**

Salesmen	1	2	3	4	5	6	7	8	9	10
Test Scores	40	70	50	60	80	50	90	40	60	60
Sales (000)	2.5	6.0	4.5	5.0	4.5	2.0	5.5	3.0	4.5	3.0

Calculate the regression line of sales on test scores and estimate the most probable weekly sales volume if a salesmen makes a score of 70.

2. a) Use simplex method to maximize $z=3x_1+2x_2+5x_3$ subject to the constraints:

$$x_1+2x_2+x_3 \le 430, 3x_1+2x_3 \le 460, x_1+4x_2 \le 420; and\ x_1, x_2, x_3 \ge 0.$$ **(20)**

b) 'Linear program is useful technique of management with some limitations' Comment on the statement with suitable examples. **(15)**

c) What is the difference, if any, between quality assurance and quality control as they are generally understood as same? **(15)**

3. a) What are the different types of production systems? Where would each one of them be applicable? Give practical examples. **(20)**

b) How are organizational resources linked to the competitive advantages and corporate performance of an organization.? **(15)**

c) What is BCG Matrix? How does it help analyze business portfolio of the firm? Illustrate BCG Matrix with an industry wise categorization. **(15)**

4. a) What are the government policies concerning the development of backward areas in India. Explain various principles of corporate governance. **(20)**

b) What is the relevance of 'objectives' in project management? Where is the effect of this consideration felt during the project management process? Give examples and explain. **(15)**

c) How do the three elements of globalization, innovation, and sustainability impact your understanding of strategy? **(15)**

SECTION - B

5. **Describe the following in about 150 words each** **(5×10=50)**

a) Free market economics stimulate greater economic growth, where as state-directed economies stifle growth. Discuss. **(10)**

b) How are organizational resources linked to the competitive advantages and corporate performance of an organization? **(10)**

c) The mean produce of wheat of a sample of 100 fields is 200 lbs. per acre with a standard deviation of 10 lbs. Another sample of 150 fields gives the mean of 220 lbs. With a standard deviation of 12 lbs. Can the two samples be considered to have been taken from the same population whose standard deviation is 11 lbs? Use 5 percent level of significance (z=1.96). **(10)**

d) Describe the concept of sensitivity analysis. **(10)**

e) Discuss Porter's five forces model. How will you apply this model in industry? **(10)**

6. a) Information requirements vary at different levels of management in the company. Discuss various types of information systems that might be useful to managers depending on their roles and responsibilities with suitable examples. **(20)**

b) What are the different types of strategies available for a company to go abroad for business expansion? **(15)**

c) Discuss the role of Research and Development (R&D) in production management for promising economies like India. **(15)**

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b) How would you perceive the role of the Quality Control manager in an organization? In a manufacturing organization should the quality control function be separate from the line function of manufacturing? If yes, why? If no, why not? (Give an example as to where it need not be separate). **(15)**

c) Differentiate between Enterprise Information System and e-Commerce. Discuss a few applications of Enterprise Information systems. **(15)**

8. a) What are the factors that require attention in 'country risk analysis'? Explain. **(20)**

b) Discuss government policies relating to 100% export oriented units. Explain various sources of funding available in international business. **(15)**

c) Why is Foreign Direct Investment (FDI) preferred over Foreign Portfolio Investment (FPI)? Explain. **(15)**

Total No. of Printed Pages-4] Roll No. _____

CC(M)
MEDICAL SCIENCE
(OPTIONAL)
PAPER - II
[41]

Time Allotted - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

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SECTION - A

1. a) Discuss the causes, evaluation, and treatment of jaundice in a five-day-old male child. **(5+5+10)**

   b) Discuss the clinical features, evaluation complications and treatment of tetralogy of Fallot. **(5+5+5+5)**

   c) Discuss the assessment and management of severe dehydration in a 3-year-old child with acute diarrhoea. **(5+5)**

2. a) Write short notes on: **(4×5)**

   i) e FAST in Trauma

   ii) Complication of massive blood transfusion

   iii) Tuberculoma

   iv) Systemic Inflammatory Response Syndrome

   b) Write short notes on: - **(4×5)**

   i) Criteria of a good screening program

   ii) National digital health mission

   iii) Challenges of managing non-communicable diseases in primary health care settings in India

   iv) Misclassification bias in epidemiological studies

   c) Write briefly about the 'National strategic plan for tuberculosis elimination 2017-2025' **(10)**

3. a) Discuss the management of a 2-year old child, who presents with a diagnosis of atopic dermatitis under the following headings. **(10+5+5)**

   i) Counselling to parents

   ii) Agents to be used topically

   iii) Agents to be used systemically

   b) Describe the epidemiology, pathogenesis, clinical manifestations and treatment of acute rheumatic fever. **(5+5+5+5)**

   c) Discuss epilepsy under following heads: **(3+4+3)**

   i) Etiologies

   ii) Diagnosis

   iii) Antiepileptic drugs

4. a) Write short note on: **(4×5)**

i) Typhoid vaccine

ii) Mobile medical units in India under National Health Mission

iii) Psychosis

iv) Depot medroxy progesterone acetate

b) Define acute pancreatitis? Describe cause, pathogenesis, types and complication of acute pancreatitis. **(5+5+10)**

c) Discuss in brief: **(5+5)**

i) Management of alcohol dependence syndrome

ii) National Mental Health programme of India

SECTION - B

5. a) A 22 year old male presented with pain in right iliac fossa since 5 days associated with fever and vomiting. On examination, 5x3 cm tender lump palpable in right iliac fossa and total leukocyte count was 15350/mm3. **(3+6+3+3)**

i) What are the differential diagnosis?

ii) Write diagnostic approach for appendicular mass.

iii) Write Alvarado Score and its significance.

iv) Write management of an appendicular mass.

b) A 22-year-old primigravida at 37 weeks period of gestation presented with headache and pedal edema. On examination PR 100/min, BP-160/110mm Hg and urine albumin 3+. What is the diagnosis and enumerate classification of this disorder in pregnancy? How would you manage this case? What can be the maternal and neonatal complication? **(5+10+5)**

c) Describe the clinical features, diagnostic approach and treatment of tubercular meningitis. **(5+5+5)**

6. a) Define severe acute malnutrition (SAM). Discuss the management of SAM with complications. **(30)**

b) Describe briefly the functions of the Health and Wellness Centres (HWC) launched by the Govt of India . What are the expanded range of services to be provided by HWC. **(10+10)**

[Turn Over

7. a) A 30 years old female presented with lump in the abdomen extending from left hypochondrium to umblicus. **(3+3+4)**

   i) What are the differential diagnosis?

   ii) Define hypersplenism.

   iii) Discuss post-splenectomy complication.

   b) Discuss FIGO classification of fibroid uterus? How do you manage a case of a nulligravida female presenting with heavy menstrual bleeding and abdominal lump of 18 weeks size? **(5+15)**

   c) Write short notes on the following: **(4×5)**

   i) Post exposure prophylaxis of rabies

   ii) Dengue shock syndrome

   iii) Electric Burns

   iv) Management of Lupus nephritis

8. a) Discuss the following in a patient with vitiligo: **(4×5)**

   i) Complications

   ii) Light-based therapies

   iii) Topical therapies

   iv) Systemic therapies

   b) Describe in brief: **(10+10)**

   i) Medical management of PPH

   ii) Parenteral iron therapy in anemia with pregnancy

   c) Define "Hodgkin's lymphoma"? Describe briefly about WHO classification of Hodgkin's lymphoma. **(5+5)**

Total No. of Printed Pages-3] Roll No. _____

CC(M)

DOGRI

PAPER - II

[26]

Time Allowed - Three Hours ***Maximum Marks-250***

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting questions.

*i) There are **EIGHT** questions divided in two Sections and printed in **Dogri**.*

*ii) Candidate has to attempt **SIX** questions in all.*

iii) Follow the instructions for answering the questions. Given at the begining of each section.

iv) The number of marks carried by a question/part is indicated against it.

v) Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

vi) Word limit in questions, wherever specified, should be adhered to.

vii) Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

SECTION - A

हिदायत – सुआल नं. 1 जरूरी ऐ । बाकी त्र'ऊं सुआलें (2, 3 ते 4) चा कोई दो सुआल करो।

1. अ) अज़ादी बाद दी डोगरी कविता च उपलब्ध प्रवृत्तियें बारै अपना मत विस्तार च प्रस्तुत करो। (30)

ब) अज़ादी पैह्ले दी डोगरी कविता च लाला रामधन ते पंडत हरदत्त शास्त्री हुंदे योगदान दी चर्चा करो। (25)

जां (OR)

अ) किशन स्मैलपुरी ते जितेंद्र उधमपुरी हुंदी कविता दियें विशेशताएं बारै सरोखड़ जानकारी देओ । (30)

ब) सिद्ध करो जे अज़ादी पैह्ले दी डोगरी कविता च समाज–सुधार ते देशभगती दा सुर प्रमुख लभदा ऐ ।(25)

2. रामायण महाकाव्य चा अयोध्या कांड दी कथावस्तु बारै आलोचनात्मक जायज़ा प्रसत्तु करो । (35)

3. डोगरी गज़ल दी विकास यात्रा च शिवराम दीप जां अश्विनी मगोत्रा हुंदी शायरी बारै अपने विचार प्रकट करो ।(35)

4. खंड काव्य दे नियमें दे अधार उप्पर 'वीर गुलाब' खंडकाव्य दी आलोचना करो । (35)

SECTION - B

हिदायत – सुआल नं. 5 जरूरी ऐ । बाकी त्र'ऊं सुआलें (6, 7 ते 8) चा कोई दो सुआल करो।

5. अज्जै दी डोगरी क्हानी च ''मील पत्थर'' क्हानी–संग्रैह् दियें क्हानियें दा थाह्र निश्चत करो । (55)

जां (OR)

हेठ दित्ती दियें पुस्तकें चा कु'नें पं'जें दे बारे च 40-40 शब्दें च उं'दी साहित्यक म्हत्ता बारै अपने विचार लिखो । (5×11=55)

क) बर्लिन दी दिवार

ख) हैलो माया

ग) धुखदे गोह्टे

घ) नैंह् ते पोटे

ङ) टापू दा आदमी

च) काले हत्थ

छ) तारकालें ते भ्यागा दे बश्कार

ज) खीरला माह्नू

झ) साक सुन्ना प्रीत पित्तल

ञ) जंगल हस्सेआ ऐ

6. कैद्दी उपन्यास दे पात्र–चित्रण बारै अपना आलोचनात्मक नज़रिया प्रस्तुत करो । (35)

7. नाट्यकला दी द्रिश्टी कन्नै न्यांऽ नाटक दा विश्लेशन करो । (35)

8. डोगरी गद्य दे विकास च शिवनाथ जां विश्वनाथ खजूरिया दे योगदान बारै चर्चा करो । (35)

Total No. of Printed Pages-4] Roll No. _____

CC(M)

SANSKRIT

(LITERATURE)

PAPER - II

Time Allowed - Three Hours [32] *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instruction carefully before attempting questions.

*i) There are **EIGHT** questions divided in two Sections and printed in **SANSKRIT.***

*ii) Candidate has to attempt **FIVE** questions in all.*

*iii) Questions No. 1 and 5 are compulsory and out of the remaining, **THREE** are to be attempted choosing at least **ONE** question from each Section.*

iv) The number of marks carried by a question/part is indicated against it.

v) Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

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खण्ड – A / SECTION - A

1. अधोनिर्दिष्टानां विषयाणां पर्यालोचनं सोदाहरणं प्रत्येकं सार्धशतेन (150) शब्दैः विधीयताम्। (5×10=50)

   a) 'उपमा कालिदासस्य' इति वचसः आशयो विव्रियताम्। (10)

   b) 'प्रतिभा भारवेर्येन सच्छायेनाधिकीकृता' इत्युक्तिः समीक्ष्यताम्। (10)

   c) 'नवसर्गगते माघे नवशब्दो न विद्यते' इति मतं परीक्ष्यताम्। (10)

   d) 'नैषधं विद्वदौषधम्' – इत्येषा सूक्तिः सयुक्तिकंप्रसाध्यताम्। (10)

   e) 'दण्डीत्युपस्थिते सद्यः कवीनां कम्पतां मनः' इत्युक्तिः विविच्यताम्। (10)

2. अधोलिखितानां विषयाणां सारगर्भितं समीक्षणं क्रियताम् – (15+15+20=50)

   a) ईशावास्योपनिषदुक्तः कर्मयोगो निरूप्यताम्। (15)

   b) 'सुन्दरे किं न सुन्दरम्' – सूक्तिमिमामाश्रित्य वाल्मीकेः कवित्वं वर्ण्यताम्। (15)

   c) कौटिलीयार्थशास्त्रोक्तं राज्यस्वरूपं समासेन निर्दिश्यताम्। (20)

3. अधःप्रदत्तानां विषयाणां समीक्षा विधीयताम् – (15+15+20=50)

   a) उत्तररामचरितस्य कथानकवैशिष्ट्यं निरूप्यताम्। (15)

   b) रत्नावलीनाटिकायां चित्रणनैपुण्यं प्रसाध्यताम्। (15)

   c) मुद्राराक्षसस्य राजनीतिदृशा महत्त्वं प्रतिपाद्यताम्। (20)

4. अधस्तनानां विवेचनं संस्कृतभाषया देवनागरीलिप्यॉ संक्षेपेण समुपस्थाप्यताम् – (15+15+20=50)

   a) भर्तृहरिदृशा विद्यायाःविज्ञानां च महत्त्वमुपपाद्यताम्। (15)

   b) कालिदासोक्तो मेघगमनमार्गः वर्ण्यताम्। (15)

   c) 'हर्षचरितं बाणभट्टस्याद्यं प्रणयनम्' इति वचः परिक्ष्यताम्। (20)

खण्ड – B / SECTION - B

5. नागराक्षरैः संस्कृतभाषायां प्रत्येकं सार्धशतेन (150) शब्दैः व्याख्यायताम्। (5×10=50)

a) क्व सूर्यप्रभवो वंशः क्व चाल्पविषया मतिः।
तितीर्षुर्दुस्तरं मोहादुडुपेनास्मि सागरम्।। (10)

b) रघूणामन्वयं वक्ष्ये तनुवाग्विभवोऽपि सन्।
तद्गुणैः कर्णमागत्य चापलाय प्रचोदितः।। (10)

c) यं सर्वशैलाः परिकल्प्य वत्सं मेरौ स्थिते दोग्धरि दोहदक्षे।
भास्वन्ति रत्नानि महौषधीश्च पृथूपदिष्टां दुदुहुर्धरित्रीम्।। (10)

d) आमेखलं सञ्चरतां घनानां छायामधःसानुगतां निषेव्य।
उद्वेजिता वृष्टिभिराश्रयन्ते शृङ्गाणि यस्यातपवन्ति सिद्धाः।। (10)

e) श्रियः कुरूणामधिपस्य पालनीं प्रजासु वृत्तिं यमयुङ्क्त वेदितुम्।
सवर्णिलिङ्गी विदितः समाययौ युधिष्ठिरं द्वैतवने वनेचरः।। (10)

6. अधोनिर्दिष्टानां संस्कृतभाषायां नागराक्षरैः व्याख्या क्रियताम् – (15+15+20=50)

a) ईशावास्यमिदं सर्वं यत्किञ्च जगत्यां जगत्।
तेन त्यक्तेन भुञ्जीथा मा गृधः कस्य स्विद्धनम्।। (15)

b) उपवासकृशां दीनां निश्श्वसन्तीं पुनः पुनः।
ददर्श शुक्लपक्षादौ चन्द्ररेखामिवामलाम्।। (15)

c) नासतो विद्यते भावो नाभावो विद्यते सतः।
उभयोरिप दृष्टोऽन्तस्त्वनयोस्तत्त्वदर्शिभिः।। (20)

7. अधोलिखितानामाशयः ससन्दर्भं प्रकाश्यताम् – (15+15+20=50)

a) तस्मिन्नद्रौ कतिचिदबलाविप्रयुक्तः स कामी
नीत्वा मासान् कनकवलयभ्रंशरिक्तप्रकोष्ठः।
आषाढस्य प्रथमदिवसे मेघमाश्लिष्ट सानुं
वप्रक्रीडापरिणतगजप्रेक्षणीयं ददर्श।। (15)

b) अज्ञः सुखमाराध्यः सुखतरमाराध्यते विशेषज्ञः।

ज्ञानलवदुर्विदग्धं ब्रह्मापि तं नरं न रञ्जयति।। (15)

c) अपरिणामोपशमो दारूणो लक्ष्मीमदः। कष्टमनञ्जनवर्ति

साध्यमपरम् ऐश्वर्यतिमिरान्धत्वम्। अशिशिरोपचारहार्यः

अतितीव्रः दर्पदाहज्वरोष्मा। सततममूलमन्त्रशम्यः विषमो विषयविषास्वादमोहः। (20)

8. अधोलिखितपद्यानि प्रसङ्गनिर्देशपूर्वकं व्याख्यायन्ताम् – (15+15+20=50)

a) चिरप्रसुप्तः कामो में वीणया प्रतिबोधितः।

तां तु देवीं न पश्यामि यस्या धोषवती प्रिया।। (15)

b) सतां केनापि कार्येण लोकस्याराधनं व्रतम्।

तत्पूरितं हि तातेन मां च प्राणांश्च मुञ्चता।। (15)

c) भूत्वा चिराय चतुरन्तमहीसपत्नी

दौष्यन्तिमप्रतिरथं तनयं निवेश्य।

भर्त्रा तदर्पितकुटुम्बभरेण सार्धं

शान्ते करिष्यसि पदं पुनराश्रमेऽस्मिन्।। (20)

Total No. of Printed Pages-4]

Roll No. _____

CC(M)

PUNJABI

PAPER - II

[34]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper

i) *There are eight questions divided in Two Sections and printed in English. Candidate has to attempt* ***Five*** *questions in all. Questions* ***No.1*** *and* ***5*** *are compulsory and out of the remaining, any* ***Three*** *are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer(QCA) Booklet in the space provided.*

ii) *Your answer should be precise and coherent.*

iii) *If you encounter any typographical error, please read it as it appears in the text book.*

iv) *Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.*

v) *No continuation sheets shall be provided to any candidate under any circumstances.*

vi) *No blank page be left in between answer to various questions.*

SECTION - A

1. ਪ੍ਰਸ਼ਨ (5×10=50)

(ੳ) ਬਾਬਾ ਫ਼ਰੀਦ ਦੀ ਬਾਣੀ ਵਿਚੋਂ ਪ੍ਰਾਪਤ ਉਨਾਂ ਦੀ ਵਿਚਾਰਧਾਰਾ ਬਾਰੇ ਉਦਾਹਰਨਾਂ ਸਤਿਹ ਚਰਚਾ ਕਰੋ । (10)

(ਅ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ ਦੀ ਬਾਣੀ 'ਜਪੁਜੀ ਸਾਹਿਬ' ਦੇ ਮੂਲ ਮੰਤਰ ਦੀ ਵਿਆਖਿਆ ਕਰੋ । (10)

(ੲ) 'ਆਸਾ ਦੀ ਵਾਰ' ਬਾਣੀ ਵਿਚ ਪਉੜੀਆਂ ਦੇ ਨਾਲ ਸਲੋਕ ਕਿਉਂ ਦਿੱਤੇ ਗਏ ਹਨ ? ਚਰਚਾ ਕਰੋ । (10)

(ਸ) ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਦੇ ਜੀਵਨ 'ਤੇ ਚਾਨਣਾ ਪਾਉਂਦੇ ਹੋਏ ਦੱਸੋ ਕਿ ਉਸ ਦੇ ਜੀਵਨ ਵਿਚ ਮੁਰਸ਼ਦ ਸ਼ਾਹ ਇਨਾਇਤ ਦੀ ਕੀ ਭੂਮਿਕਾ ਸੀ ? (10)

(ਹ) ਹੀਰ ਵਾਰਿਸ ਨੂੰ ਸੁਆਦਲਾ ਅਤੇ ਲੋਕਪ੍ਰਿਯ ਕਰਨ ਵਿਚ ਬੋਲੀ ਦੀ ਕੀ ਭੂਮਿਕਾ ਹੈ ? (10)

2. ਪ੍ਰਸ਼ਨ

(ੳ) ਬਾਬਾ ਫ਼ਰੀਦ ਦੀ ਕਾਵਿ ਭਾਸ਼ਾ ਅਤੇ ਸ਼ੈਲੀ ਨੂੰ ਆਪਣੇ ਅਧਿਐਨ ਦਾ ਵਿਸ਼ਾ ਬਣਾਉ । (20)

(ਅ) 'ਜਪੁਜੀ ਸਾਹਿਬ' ਬਾਣੀ ਵਿਚ ਆਏ ਪੰਜ ਖੰਡਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ । (15)

(ੲ) ਹੀਰ ਵਾਰਿਸ ਵਿਚ ਹੀਰ ਦਾ ਕਿੱਸਾ ਰਚਨ ਦਾ ਕੀ ਕਾਰਣ ਦੱਸਿਆ ਹੈ ? (15)

3. ਪ੍ਰਸ਼ਨ

(ੳ) ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਦੀ ਕਵਿਤਾ ਵਿਚਲੀ ਵਿਦਰੋਹੀ ਸੁਰ ਦੀ ਵਿਸਤ੍ਰਿਤ ਵਿਆਖਿਆ ਪੇਸ਼ ਕਰੋ । (20)

(ਅ) 'ਬਾਰਹਮਾਹ ਤੁਖਾਰੀ' ਬਾਣੀ ਵਿਚ ਪ੍ਰਕਿਰਤੀ ਚਿਤਰਨ ਸੰਬੰਧੀ ਚਰਚਾ ਕਰੋ । (15)

(ੲ) ਵਾਰਿਸ ਸ਼ਾਹ ਦੀ ਹੀਰ ਨੂੰ ਪੰਜਾਬੀ ਦੇ ਹੀਰ ਸਾਹਿਤ ਵਿਚੋਂ ਉੱਤਮ ਕਿਉਂ ਮੰਨਿਆ ਜਾਂਦਾ ਹੈ ? ਵਿਚਾਰ ਕਰੋ । (15)

4 ਪ੍ਰਸ਼ਨ

(ੳ) ਵਾਰਿਸ ਦੀ ਹੀਰ ਵਿਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੀ ਕਿਹੋ ਜਿਹੀ ਤਸਵੀਰ ਉਭਰਦੀ ਹੈ । ਚਾਨਣਾ ਪਾਉ । (20)

(ਅ) 'ਬੁੱਲ੍ਹੇ ਸ਼ਾਹ ਦੀਆਂ ਕਾਫੀਆਂ ਉਸ ਦੀ ਕਾਵਿ ਕੁਸ਼ਲਤਾ ਦਾ ਨਮੂਨਾ ਹਨ' । ਕਿਵੇਂ ? ਰੋਸ਼ਨੀ ਪਾਉ । (15)

(ੲ) ਫ਼ਰੀਦ ਬਾਣੀ ਵਿਚ ਪੇਸ਼ 'ਮੌਤ' ਦੇ ਸੰਕਲਪ ਤੇ ਉਦਾਹਰਨਾਂ ਸਹਿਤ ਚਰਚਾ ਕਰੋ । (15)

SECTION - B

5. ਪ੍ਰਸ਼ਨ (5×10=50)

(ੳ) 'ਚੰਦਨਵਾੜੀ' ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਦੇ ਆਧਾਰ ਤੇ ਧਨੀ ਰਾਮ ਚਾਤ੍ਰਿਕ ਦੀ ਕਵਿਤਾ ਵਿਚ ਮਿਲਦੇ ਪੰਜਾਬ ਪਿਆਰ ਸੰਬੰਧੀ ਆਪਣੇ ਵਿਚਾਰ ਪ੍ਰਗਟ ਕਰੋ । (10)

(ਅ) ਨਾਨਕ ਸਿੰਘ ਦੇ ਨਾਵਲ 'ਚਿੱਟਾ ਲਹੂ' ਨਾਵਲ ਵਿਚ ਪਾਖੰਡੀ ਅਤੇ ਧਾਰਮਿਕ ਲੋਕਾਂ ਦੇ ਕਾਰਨਾਮਿਆਂ ਨੂੰ ਵੀ ਨੰਗਿਆਂ ਕੀਤਾ ਗਿਆ ਹੈ । ਕਿਵੇਂ ? (10)

(ੲ) ਗੁਰਬਖਸ਼ ਸਿੰਘ ਦੀ 'ਜ਼ਿੰਦਗੀ ਦੀ ਰਾਸ' ਪੁਸਤਕ ਵਿਚ ਸ਼ਾਮਿਲ ਨਿਬੰਧ 'ਗਿਆਨ ਹੀ ਪਰਮ ਆਨੰਦ ਹੈ' ਦਾ ਸਾਰ ਲਿਖੋ । (10)

(ਸ) ਬਲਵੰਤ ਗਾਰਗੀ ਦੇ 'ਲੋਹਾ ਕੁੱਟ' ਨਾਟਕ ਨੂੰ ਰੰਗਮੰਚ ਦੀ ਦ੍ਰਿਸ਼ਟੀ ਤੋਂ ਵਾਚੋ । (10)

(ਹ) ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਪੁਸਤਕ 'ਸਹਿਤਿਆਰਥ' ਵਿਚਲੇ ਲੇਖ 'ਕਵਿਤਾ ਤੇ ਅਨੁਭਵ' ਤੇ ਸੰਖੇਪ ਨੋਟ ਲਿਖੋ । (10)

6. ਪ੍ਰਸ਼ਨ

(ੳ) ਸ਼ਾਹ ਮੁਹੰਮਦ ਦੀ ਰਚਾਨ 'ਜੰਗ ਹਿੰਦ ਪੰਜਾਬ' ਦੀ ਇਤਿਹਾਸਕਤਾ 'ਤੇ ਉਦਾਹਰਨਾਂ ਸਾਹਿਤ ਵਿਸਥਾਰ ਨੋਟ ਲਿਖੋ । (20)

(ਅ) ਬਲਰਾਜ ਸਾਹਨੀ ਰਚਿਤ 'ਮੇਰਾ ਪਾਕਿਸਤਾਨੀ ਸਫ਼ਰਨਾਮਾ' ਨਾਲ ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ ਕਰਾਉ । (15)

(ੲ) ਗੁਰਬਖਸ਼ ਸਿੰਘ ਦੀ 'ਮੇਰੀਆਂ ਅਭੁੱਲ ਯਾਦਾਂ' ਪੁਸਤਕ ਵਿਚ ਕਿੰਨੇ ਲੇਖ ਦਰਜ ਹਨ । ਇਸ ਵਿਚਲੇ ਲੇਖ 'ਮੇਰੇ ਦਾਦੀ ਜੀ' ਸੰਬੰਧੀ ਚਰਚਾ ਕਰੋ । (15)

7. ਪ੍ਰਸ਼ਨ

(ੳ) ਨਾਨਕ ਸਿੰਘ ਦੇ ਲਿਖੇ 'ਇਕ ਮਿਆਨ ਦੋ ਤਲਵਾਰਾਂ' ਨਾਵਲ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਂਦੇ ਹੋਏ ਇਸ ਨੂੰ ਇਤਿਹਾਸਕ ਨਾਵਲ ਦੇ ਤੌਰ ਤੇ ਪਰਖੋ । (20)

(ਅ) 'ਨਵਾਂ ਜਹਾਨ' ਪੁਸਤਕ ਵਿਚ ਧਨੀ ਰਾਮ ਚਾਤ੍ਰਿਕ ਨੇ ਕਿਸ ਕਿਸਮ ਦੇ ਨਵੇਂ ਜਹਾਨ ਦੀ ਕਲਪਨਾ ਕੀਤੀ ਹੈ ? (15)

(ੲ) ਬਲਰਾਜ ਸਾਹਨੀ ਰਚਿਤ 'ਮੇਰਾ ਰੂਸੀ ਸਫ਼ਰਨਾਮਾ' ਦੀ ਵਾਰਤਕ ਸ਼ੈਲੀ ਤੇ ਨੋਟ ਲਿਖੋ । (15)

8. ਪ੍ਰਸ਼ਨ

(ੳ) ਬਲਵੰਤ ਗਾਰਗੀ ਦੇ 'ਸੁਲਤਾਨ ਰਜ਼ੀਆ' ਨਾਟਕ ਦੇ ਵਿਸ਼ੇ ਵਸਤੂ ਤੇ ਵਿਸਥਾਰ ਨੋਟ ਲਿਖੋ ।(20)

(ਅ) ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ ਦੀ ਪੁਸਤਰ 'ਪੰਜਾਬੀ ਕਾਵਿ ਸ਼ਿਰੋਮਣੀ' ਵਿਚ ਪੇਸ਼ ਗੁਰਬਾਣੀ ਸਾਹਿਤ ਬਾਰੇ । ਸੇਖੋਂ ਦੀ ਆਲੋਚਨਾ ਦ੍ਰਿਸ਼ਟੀ 'ਤੇ ਚਾਨਣਾ ਪਾਉ (20)

(ੲ) ਨਾਨਕ ਸਿੰਘ ਦੇ 'ਪਵਿੱਤਰ ਪਾਪੀ' ਨਾਵਲ ਦੇ ਸਿਰਲੇਖ ਸੰਬੰਧੀ ਚਰਚਾ ਕਰੋ । (10)

Total No. of Printed Pages-8]

Roll No. _____

CC(M)
MECHANICAL ENGINEERING
(OPTIONAL)
PAPER - II
[39]

Time Allowed - Three Hours

Maximum Marks-250

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting the paper.

*i) There are eight questions divided in two Sections and printed in English. Candidate has to attempt **Five** questions in all. Questions **No. 1** and **5** are compulsory and out of the remaining, any **Three** are to be attempted choosing at least One question from each Section. The number of marks carried by a Question/Part is indicated against it. Answers must be written in English in Question-Cum-Answer (QCA) Booklet in the space provided.*

ii) Your answer should be precise and coherent.

iii) If you encounter any typographical error, please read it as it appears in the text book.

iv) Candidates are in their own interest advised to go through the general instructions on the back side of the title page of the Answer Script for strict adherence.

v) No continuation sheets shall be provided to any candidate under any circumstances.

vi) No blank page be left in between answer to various questions.

vii) Steam Table, Refrigerant tables and Psychrometric charts must be supplied to students.

SECTION - A

1. a) Let a one-dimensional velcociy field be $u = u(x,t)$, with $v = 0 = w$. The density varies as $\rho = \rho_0 (2 - \cos \omega t)$. Find an expression for $u(x,t)$ if $u(0,t) = U$. **(10)**

b) Assume the earth to behave like a black spherical body of radius 6400 km at anaverage temperature of 300 K. Determine the earth's internal heat generation rate to maintain its temperature. The only source of external radiation is the sun with a heatflux of 1350 W/m^2. Neglect the effect of earth's atmosphere. Stefan-Boltzmann constant is 5.670×10^{-8} W/m^2 -K^4. **(10)**

c) A reversible heat engine absorbs an equal amount of heat from the thermal reservoirs **A** and **B**, which are maintained at temperatures T_A and T_B, respectively. It rejects heat to the thermal reservoir **C** maintained at temperature T_C. The efficiency of the engine is α times the efficiency of the reversible engine which works between the two reservoirs **A** and **C**. Evaluate $f(\alpha)$ and $g(\alpha)$ in the following expression. **(10)**

$$\frac{T_A}{T_B} = f(\alpha) + g(\alpha)\frac{T_A}{T_C}$$

d) Considering hydrogen as an alternative fuel for internal combustion engines in automobiles, discuss the following: **(10)**

i. Compression ratio
ii. Air/fuel ratio and flammability
iii. Auto-ignition
iv. Emission
v. Thermal efficiency

e) Describe the phenomenon of supersaturation in nozzles using h-s diagram. **(10)**

2. a) For a compressible fluid, bulk modulus of elasticity (E) is defined in terms of density ρ and pressure p as $E = \rho(dp / d\rho)$ Sea water behaves as a compressible fluid with constant bulk modulus.

i. Derive expressions for the density and pressure variations with the depth, h, below the sea surface.

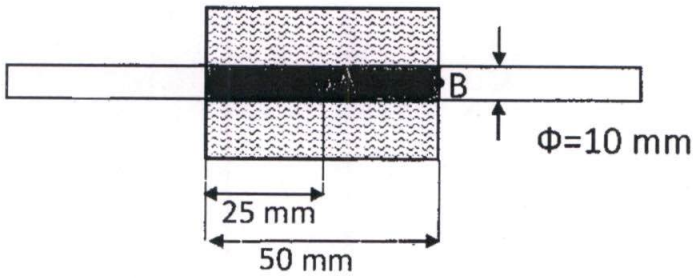
ii. Show that the density variation can be approximated as $\rho = \rho_0 + bh$, where ρ_0 is the density at the surface, and b is a constant. Evaluate the constant b, and obtain the equation for pressure variation using this approximation. **(20)**

b) The volumetric efficiency at NTP (Normal Temperature and Pressure) of a single cylinder four-stroke SI engine reduces by 10% when the engine speed is increased from 2000 to 2500 rpm. For the same change in rpm, the fuel consumption rate increases by 5%. Determine the percentage change in the air-fuel ratio of the engine. **(15)**

c) A boiler system incorporates an economizer and an air-preheater. It generates steam using fuel of calorific value 133000 kJ/kg, burnt at the rate of 500 kg/h. The feed water is heated from 20 °C (saturated liquid enthalpy = 83.86 kJ/kg) in the economizer while the flue gases coming out of boiler are cooled at the same time from 395 °C to 225 °C. The flue gases then enter the air-preheater in which the temperature of the fresh air with mass flow rate of 2.72 kg/s being fed to the boiler, is raised by 75°C. The enthalpies of the water before and after the boiler are 167 kJ/kg and 2962 kJ/kg, respectively. Neglect the heat losses. Consider specific heat Cp of air as well as for flue gases as 1.0 kJ/kg-K. The latent heat of evaporation for water at 100 °C is 2256 kJ/kg. Determine

i. The mass flow rate of flue gases (in kg/s)
ii. The temperature of flue gases (in °C) finally leaving the plant
iii. The mass flow rate of steam (in kg/s)
iv. The efficiency of the boiler
v. Equivalent evaporation of the boiler (in kg/hour) **(15)**

3. a) An infinitely long rod of diameter 10 mm is heated in oven over part of its length as shown in Figure below. The oven supplies a uniform heat flux of 1000 W/m^2. The unexposed portion of the rod is subjected to convective cooling with a heat transfer coefficient of 20 W/m^2-K. The ambient air temperature is 300 K. Calculate the temperature of the rod at points A and B. The thermal conductivity of the material of the rod is 25 W/m-K. Neglect radiation losses from the rod. **(20)**



b) A compressor compresses 6 kg/s of air from inlet conditions $T_1 = 300$ K and $p_1 = 90$ kPa to discharge conditions $T_2 = 390$ K and $p_2 = 310$ kPa. Both the inlet and discharge pipes have a radius of 0.25 m. The velocity profile in the inlet and discharge pipes is assumed uniform. Elevation changes are negligible. There is negligible heat transfer between the air in the compressor and pipes and the ambient. The air behaves as an ideal gas with Cv = 0.720 kJ/kg-K and gas constant R = 0.287 kJ/kg-K. Assuming steady flow, find the power input to the compressor. **(15)**

c) A vapor compression refrigeration system is working on reversed Carnot cycle. It operates with ideal wet compression and wet expansion from saturated vapor and saturated liquid condition, respectively. The condenser and the evaporator temperatures are 40 °C and -20 °C, respectively. On the basis of per TR (Ton of Refrigeration), determine the following parameters:

[Turn Over

i. Mass flow rate of refrigerant
ii. Compression and expansion work
iii. Condenser heat rejection, and
iv. COP of the system.

The properties for the refrigerant R-12 are given in the table below. **(15)**

Temperature °C	Pressure bar	h_f kJ/kg	h_g kJ/kg	S_f kJ/kg-K	S_g kJ/kg-K
-20	1.51	17.85	179.63	0.0732	0.7123
40	9.634	74.77	204.75	0.2725	0.6876

4. a) A Parsons turbine has blades with inlet and discharge angles as 35° and 20°, respectively. The mass flow rate of steam is 3.6 kg/s. The speed of rotation is 1500 rpm. At a particular stage, the mean blade diameter is 0.67 m and the specific volume of the steam is 1.114 m3/kg. Isentropic enthalpy drop in the stage is 10.95 kJ/kg. **(20)**

Determine the following:

i. The blade velocity (in m/s)
ii. The absolute steam velocity at the entry (in m/s)
iii. The relative steam velocity at the entry (in m/s)
iv. The power developed by the turbine stage (in kW)
v. Axial thrust on the turbine (in kN)
vi. The height of the blade (in mm)
vii. Stage efficiency

b) Consider steady state laminar flow of a viscous fluid over a vertical wall of height H in gravitational field. Based on Boussinesq approximation, the flow in the vertical boundary layer region is governed by the following equations (with x-axis along the vertical direction, and y-axis along the horizontal direction): **(15)**

Continuity: $$\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0$$

Momentum: $$\frac{\partial(uu)}{\partial x}+\frac{\partial(uv)}{\partial y}=\frac{\partial^2 u}{\partial y^2}+g\beta(T-T_\infty)$$

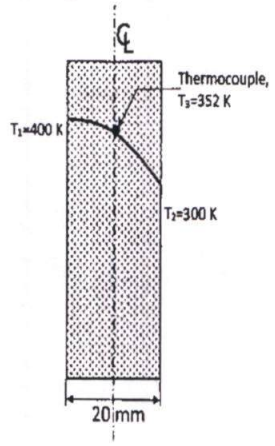
Energy: $$\frac{\partial(uT)}{\partial x}+\frac{\partial(vT)}{\partial y}=\alpha\frac{\partial^2 T}{\partial y^2}$$

Use the scale analysis in the thermal boundary layer region ($x \sim H, y \sim \delta_T$ Where heat transfer coefficient $h \sim k / \delta_T$) to show that for Pr >> $1, \delta_T \sim HRa_H^{-1/4}$ and $Nu = hH / k \sim Ra_H^{1/4}$. All symbols have their usual meaning.

c) The thermal conductivity of a material is known to vary linearly with temperature as

$$k = k_0(1 + \beta T)$$

where K_0 is a constant. During an experiment, conditions for steady one-dimensional conduction heat transfer through a plane slab were created. One of the surfaces of the slab is maintained at $T_1 = 400$ K while the other surface is maintained at $T_2 = 300$ K as shown in Figure below. A thermocouple embedded at the centre plane of the slab indicated a temperature of $T_3 = 352$ K. Determine the value of coefficient β. **(15)**



SECTION - B

5. a) An aircraft flies at the same Mach number regardless of its altitude. Compared to its speed at 12,000 m standard altitude, it flies 38 m/s faster at a low altitude of 500 m. Determine its Mach number. Assume that the standard temperature at 500 m is 11 °C and that at 12,000 m altitude is -56 °C. Take gas constant for air R = 0.287 kJ/kg-K and $\gamma = 1.4$ **(10)**

b) A steam turbine is divided into two sections, HP (high pressure) and LP (low pressure) with a reheater interposed between the two sections. The steam coming from the boiler with enthalpy 3456 kJ/kg passes through the reheater where it releases heat at constant pressure for the reheating purpose in between HP and LP sections. The steam then enters HP turbine at 3180 kJ/kg and LP turbine at 3177 kJ/kg. The steam leaves the LP turbine at 2500 kJ/kg. The saturated-liquid enthalpy of the water (supplied to the boiler) at the condenser pressure is 163 kJ/kg. Neglect the pump work. Determine the following: **(10)**

i. The enthalpy (in kJ/kg) of steam at the exit of the HP turbine,
ii. Net work done from the plant in kJ/kg,
iii. Total heat supplied (in kJ/kg) to the plant, and
iv. The thermal efficiency of the plant.

c) A centrifugal compressor has a backward-swept impeller with 19 airfoil blades. Air enters the compressor axially at a stagnation temperature of 25 °C and stagnation pressure of 1.0 bar. Air leaves the compressor at stagnation pressure of 4.5 bar. Rotational speed of the compressor is 20,000 rpm. Isentropic efficiency of the compressor is 86% and work input factor is 1.05. At the exit to the impeller, air angle is 78° and flow coefficient can be taken as 0.24. Take slip factor as 0.89. Determine the impeller diameter and specific work input. Assume $\gamma = 1.4$, and $C_p = 1.005$ kJ/kg-K. **(10)**

d) Sketch the schematic diagrams for basic vapour absorption refrigeration system and that of vapor compression refrigeration system, highlighting the area where the difference in the two systems exists. List advantages and disadvantages of the vapor absorption system. Also write the expression for COP in terms of the energy parameters mentioned in the drawn diagrams. **(10)**

e) Write a brief engineering note on Cetane number and ignition delay in diesel engines. Explain the influence of Cetane number on ignition delay. **(10)**

6. a) A summer air conditioning system with 100% outdoor air has a room sensible heat load of 400 kW and a room latent heat load of 100 kW. The required inside conditions are 24 °C and 50% RH, and the outdoor design conditions are 34 °C and 40% RH. The air is supplied to the room at a dry bulb temperature of 14 °C. The specific heat of the air-water vapor mixture is 1.0216 kJ/kg and latent heat of water is 2501 kJ/kg. Determine the following: **(20)**

i. The mass flow rate of supply air,

ii. Moisture content of supply air,

iii. Sensible and latent heat loads on the coil,

iv. The cooling capacity of the coil and coil sensible heat factor, and

v. The coil ADP if the by-pass factor of the coil is 0.2.

The barometric pressure is 1.0 atm.

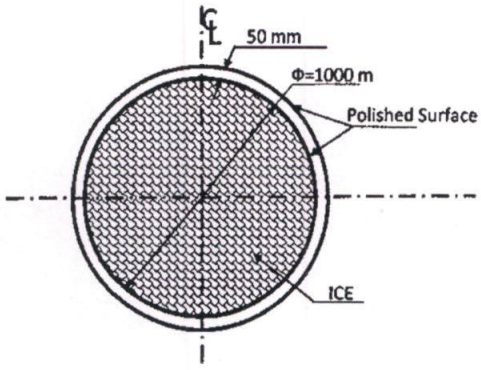
Please refer Psychrometric chart available at the end of the question paper.

b) An axial fan has a hub diameter of 0.4 m and tip diameter of 0.6 m. Air enters the fan at 30 °C and 0.1 MPa. The fan rotates at 1000 rpm. The rotor blade angle at exit is 10°. The efficiency of the fan is 74% and flow coefficient can be taken as 0.245. Compute the rotor blade angle at entry, volume flow rate, pressure rise and power required. Take R = 0.287 kJ/kg-K. **(15)**

c) A truck is running on a propane-powered engine with a lean air-fuel mixture. The chemical formula of propane is C_3H_8. The exhaust of the engine comprises of O_2, CO_2, H_2O, and N_2 only. In the exhaust, O_2 was measured to be 5% by volume. Determine the value of air-fuel ratio supplied to the engine. Assume air to be 21% O_2 and 79% N_2 by volume. Take the molecular weight of air as 29 g/mol. **(15)**

7. a) An ice-box as shown in Figure below is designed in the form of a spherical container of internal diameter 1000 mm. The ice-box contains two concentric walls of negligible thickness. There is space of 50 mm between the two concentric walls. The space between the walls is perfectly evacuated to minimize the heat transfer through convection. The surfaces surrounding the evacuated space are coated with a highly reflective paint of emissivity 0.1. The ice-box contains ice at 0°C. The outer surface temperature of the icebox is maintained at 25°C. Assume the latent heat of melting of

ice is 334 kJ/kg. Determine the amount of ice that would melt in one hour. Stefan Boltzmann constant is 5.670×10^{-8} W/m^2-K^4. **(20)**



b) A piston–cylinder device initially contains 5 Litres of air at 100 kPa and 25 °C. Air is now compressed to a final state of 600 kPa and 150 °C. The useful work input is 1.8 kJ. Assuming the surroundings at 100 kPa and 25 °C, determine

i. the exergy of the air at the initial and the final states,

ii. the minimum work that must be supplied to accomplish this compression process, and

iii. the second-law efficiency of this process. Assume air to behave as an ideal gas with constant specific heats

(Cp = 1.005 kJ/kg-K, C_v = 0.718 kJ/kg-K) and gas constant R = 0.287 kJ/kg-K. **(15)**

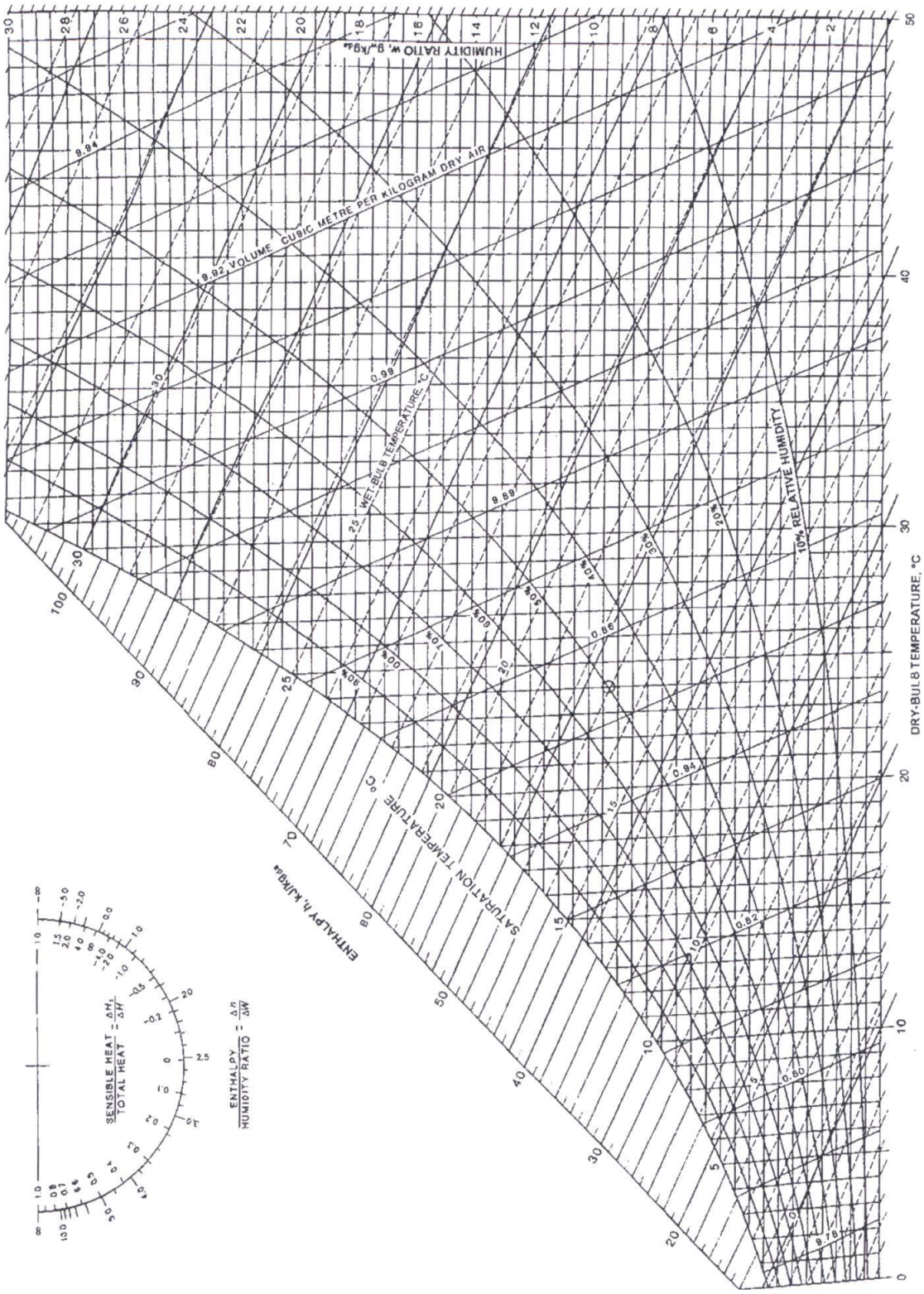
c) Air at a flow rate of 1.0 m^3/s flows through a fitting whose cross-sectional area increases gradually from 0.08 m^2 to 0.12 m^2. Determine the rise in static pressure (static regain) and total pressure loss as air flows through the fitting, if the static regain factor of the fitting is 0.8. The density of air is 1.2 kg/m^3. **(15)**

8. a) In pipe flow, some fluids behave as a non-Newtonian power-law fluid characterized by $\tau = -C(du/dr)^n$ where n = 1,3,5 ..., and C is a constant. For laminar steady state fully developed flow in a round pipe of a diameter D, show that the velocity profile is given by. $u(r) = \frac{n}{n+1}\left(\frac{\Delta p}{2LC}\right)\left[\left(\frac{D}{2}\right)^{(n+1)/n} - r^{(n+1)/n}\right]$ **(20)**

Where Δp is the pressure drop over the length L.

b) Air at 8.6 bar and 190 °C expands at the rate of 4.5 kg/s through a convergent divergent nozzle into a space at 1.03 bar. Calculate the cross-sectional areas of the throat and the exit of the nozzle. Assume the expansion to be frictionless and adiabatic, and inlet velocity is negligible. For air: C_p = 1.005 kJ/kg-K, R = 0.287 kJ/kg-K. **(15)**

c) Combustion in a diesel engine occurs at a constant pressure of 10 bar. The compression ratio of the engine is 15:1 and the temperature at the end of the compression stroke is 1000 K. If the air-fuel ratio is 21:1 and the calorific value of diesel is 44 MJ/kg, compute the volume of the gases in terms of clearance volume, V_c at the end of combustion. The specific gas constant of the combustible mixture is 0.287 kJ/kg-K, while the specific heat at constant pressure (C_p) varies with temperature as C_p =1000+0.2T J/kg-K (T is in K). **(15)**


HUMIDITY RATIO w, g_w/kg_a
VOLUME CUBIC METRE PER KILOGRAM DRY AIR
WET-BULB TEMPERATURE, °C
RELATIVE HUMIDITY
DRY-BULB TEMPERATURE, °C
SATURATION TEMPERATURE °C
ENTHALPY h, kJ/kg_a
SENSIBLE HEAT / TOTAL HEAT = ΔH_s / ΔH
ENTHALPY / HUMIDITY RATIO = Δh / Δw

Total No. of Printed Pages-4] Roll No. _____

CC(M)

HINDI

PAPER - II

[28]

Time Allowed - Three Hours | *Maximum Marks-250*

INSTRUCTIONS

Please read each of the following Instructions carefully before attempting questions.

*i) There are **EIGHT** questions divided in two Sections and printed in **HINDI.***

*ii) Candidate has to attempt **FIVE** questions in all.*

*iii) Questions No. 1 and 5 are compulsory and out of the remaining, **THREE** are to be attempted choosing at least **ONE** question from each Section.*

iv) The number of marks carried by a question/part is indicated against it.

v) Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

vi) Word limit in questions, wherever specified, should be adhered to.

vii) Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

खंड–1

1. किन्ही दो अवतरणों की सप्रसंग व्याख्या कीजिये– (2×25=50)

(क) हमरे हरि हारिल की लकरी ।

मन बच क्रम नंदनंदन सों उर यह दृढ़ करि पकरी ।।

जागत सोवत, सपने सौतुख कान्ह कान्ह जकरी ।

सुनतहि जोग लगत ऐसो अलि ! ज्यों करुई ककरी ।

सोइ व्याधि हमें ले आए देखी सुनी न करी ।

यह तौ सूर तिन्हैं से दीजें जिनके मन चकरी ।।

(ख) खेती न किसान को, भिखारी को न भीख, बलि

बनिक को बनिज, न चाकर को चाकरी ।

जीविका बिहीन लोग सीद्यमान सोच बस,

कहैं एक एकन सों कहाँ जाइ, का करी ?

वेदहूँ पुरान कही, लोकहूँ बिलोकिअत,

साँकरे सबै पै, राम ! रावरें कृपा करी ।

दारिद–दसानन दबाई दुनी, दीनबंधु !

दुरित दहन देखि तुलसी हहा करी ।।

(ग) जानकी ! हाय, उद्धार प्रिया का हो न सका ।

वह एक और मन रहा राम का जो न थका,

जो नहीं जानता दैन्य, नहीं जानता विनय,

कर गया भेद वह मायावरण प्राप्त कर जय,

बुद्धि के दुर्ग पहुँचा विद्युत गति हतचेतन,

राम में जगी स्मृति, हुए सजग पा भाव प्रमन ।

(घ) तुंग हिमालय के कंधों पर छोटी–बड़ी कई झीलें हैं;

उनके श्यामल–नील सलिल में समतल देशों से आ–आकर,

पावस की ऊमस से आकुल तिक्त – मधुर बिसतन्तु खोजते,

हंसों को तिरते देखा है, बादल को घिरते देखा है ।

2. (क) 'भक्ति– आंदोलन का जनसाधारण पर जितना व्यापक प्रभाव हुआ, उतना किसी अन्य आंदोलन का नहीं' इस कथन की सार्थकता पर विचार करते हुए कबीर की सामाजिक चेतना पर प्रकाश डालिए। (20)

(ख) 'भारत–भारती की राष्ट्रीय चेतना हिन्दू जातीयता पर अवलंबित है।' कथन का आलोचनात्मक मूल्यांकन करते हुए अपना मत सोदाहरण प्रस्तुत कीजिए। (15)

(ग) 'प्रसाद के नाटकों का शरीर जहाँ पूर्ण साहित्यिक और मनोवैज्ञानिक है, वहाँ उनका मन अनिवार्यत: ऐतिहासिक एवं उसकी आत्मा विशुद्ध सांस्कृतिक है।' इस कथन के आलोक में स्कंदगुप्त नाटक का परीक्षण कीजिए। (15)

3. (क) ''जायसी कृत 'पद्मावत' में वर्णित 'प्रेम' सौंदर्य, भाव–गाम्भीर्य और माधुर्य की त्रिवेणी से उद्भासित है।'' इस कथन के संदर्भ में जायसी की प्रेम–व्यंजना की विवेचना कीजिए। (20)

(ख) समकालीन विमर्शों के संदर्भ में 'हरिजन गाथा' कविता का मूल्यांकन कीजिये। (15)

(ग) 'भारत–दुर्दशा' के कथ्य का युगीन संदर्भों में विश्लेषण कीजिए। (15)

4. (क) 'बिहारी के दोहों में नीति, रीति, भक्ति और प्रीति का सामंजस्य मिलता है।' सोदाहरण स्पष्ट कीजिए। (20)

(ख) ''कुरुक्षेत्र'' में व्याप्त मिथक और आधुनिकता के द्वंद्व को स्पष्ट करते हुए उसकी भाषिक संरचना पर विचार कीजिए। (15)

(ग) रंगमंच की दृष्टि से ''आषाढ़ का एक दिन' की विवेचना कीजिए। (15)

खंड–2

5. किन्ही दो अवतरणों की सप्रसंग व्याख्या कीजिये– (2×25=50)

(क) हा ! भारतवर्ष को ऐसी मोहनिद्रा ने घेरा है कि अब उसके उठने की आशा नहीं। सच है, जो जान–बूझकर सोता है उसे कौन जगा सकेगा ? हा दैव! तेरे विचित्र चरित्र है, जो कल राज करता था आज जूते में टांका उधार लगवाता है। कल जो हाथी पर सवार फिरते थे, आज नँगे पाँव वन–वन की धूल उड़ाते फिरते हैं। कल जिनके घर लड़के– लड़कियों के कोलाहल से कान नहीं दिया जाता था आज उसका नाम लेवा और पानी देवा कोई नहीं बचा और जो घर कल अन्न, धन, पूत, लक्ष्मी हर तरह से भरे पूरे थे आज उन घरों में तूने दिया बोलने वाला भी नहीं छोड़ा।

(ख) मेरे जेहन में औरत वफ़ा और त्याग की मूर्ति है, जो अपनी बेजबानी से, अपनी कुर्बानी से अपने को बिल्कुल मिटाकर पति की आत्मा का एक अंश बन जाती है। देह पुरुष की रहती है पर आत्मा स्त्री की होती है। आप कहेंगे, मर्द अपने को क्यों नहीं मिटाता? औरत ही से क्यों इसकी आशा करता है ? मर्द में वह सामर्थ्य नहीं है। वह अपने को मिटाएगा तो शून्य हो जाएगा। वह किसी गोह में जा बड़ेगा और सर्वात्मा से मिल जाने का स्वप्न देखेगा। वह तेज प्रधान जीव है, और अहंकार में यह समझकर कि वह ज्ञान का पुतला है, सीधा ईश्वर में लीन होने की कल्पना किया करता है। स्त्री पृथ्वी की भाँति धैर्यवान है, शांति सम्पन्न है, सहिष्णु है। पुरुष में नारी के गुण आ जाते हैं, तो वह महात्मा बन जाता है। नारी में पुरुष के गुण आ जाते हैं, तो वह कुलटा हो जाती है। पुरुष आकर्षित होता है स्त्री की ओर, जो सर्वांश में स्त्री हो।

(ग) संसार में मनुष्य मात्र की समान वृत्ति कभी नहीं हो सकती। इस बात को भूलकर जो उपदेश दिये जाया करते हैं वे पाखंड के अंतर्गत आते हैं। वृत्तियों की भिन्नता के बीच से जो मार्ग निकल सकेगा वही लोक रक्षा का मार्ग होगा, वही धर्म का चलता हुआ मार्ग होगा। जिसमें शिष्टों के आदर, दीनों पर दया दृष्टि, दुष्टों के दमन आदि जीवन के अनेक रूपों का सौंदर्य दिखाई पड़ेगा, वही सर्वाङ्गपूर्ण लोक का मार्ग होगा। क्षात्रधर्म पालन की आवश्यकता संसार में सब दिन बनी रहेगी। कोई व्यापार युग उसे नहीं हटा सकता। किसी अनाथ अबला पर अत्याचार करने पर एक क्रूर पिशाच को हम उद्यत देख रहें हैं। समझाना – बुझाना या तो व्यर्थ है अथवा उसका समय ही नहीं है।

6. (क) 'असाध्य वीणा' कविता के आधार पर अज्ञेय के काव्य चिंतन पर विचार कीजिये। (20)

(ख) 'श्रद्धा और भक्ति' के अंतर को स्पष्ट करते हुए आचार्य रामचंद्र शुक्ल के निबंधों की विशेषता बताइए।(15)

(ग) ''भारतीय देहात के मर्म का इतना सरस और भावप्रवण प्रस्तुतिकरण हिंदी में संभवतः पहले कभी नहीं हुआ।'' इस कथन के आलोक में मैला आँचल में चित्रित ग्राम जीवन की समीक्षा कीजिए। (15)

7. (क) 'संवत्सर' निबंध में काल की प्रतीति से सम्बद्ध प्रश्नों को निजी बोध के स्तर पर उठाया गया है।' सोदाहरण समीक्षा कीजिए। (20)

(ख) 'राम की शक्तिपूजा' में कवि के आत्मसंघर्ष के विविध पक्षों का उद्घाटन कीजिए। (15)

(ग) 'गोदान प्रेमचंद की सर्वोत्तम कृति है।' आलोचनात्मक मूल्यांकन कीजिए। (15)

8. (क) 'मोहन राकेश आधुनिक हिंदी नाटक का मसीहा है'। इस कथन के आलोक में नाटककार मोहन राकेश के योगदान का मूल्यांकन कीजिए। (20)

(ख) 'परिंदे' नई कहानी की पहली कृति है।' कथन के आलोक में परिंदे कहानी का मूल्यांकन कीजिए।(15)

(ग) तुलसीदास के समन्वयवाद को सोदाहरण स्पष्ट कीजिए। (15)
