WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

ECOACOR07T-ECONOMICS (CC7)

MATHEMATICAL METHODS FOR ECONOMICS-II

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words
and adhere to the word limit as practicable.

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।
পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে
উত্তর করিবে।

All symbols are of usual significance.

1. Answer any *five* questions from the following: 2×5 = 10

   নিম্নলিখিত যে-কোনো *পাঁচটি* প্রশ্নের উত্তর দাওঃ

   (a) Give two examples of convex set in Economic analysis.

   অর্থনীতির আলোচনায় ব্যবহৃত হয় এমন দুটি Convex set-এর উদাহরণ দাও।

   (b) What do you mean by "Mixed Strategy" in game theory?

   গেম তত্ত্বে 'মিশ্র-কৌশল' বলতে কি বোঝো ?

   (c) What are the assumptions required to convert a "Leontief Static Open Model" to a 'Closed Model'?

   কি কি অনুমানের দ্বারা একটি "Leontief Static Open Model"-কে 'Closed Model'-এ পরিণত করা যায়।

   (d) Show that the following function is homothetic.

   দেখাও যে নিম্নলিখিত অপেক্ষকটি হোমোথেটিক।

   $$y = \log(x_1^2 + x_1 x_2)^2$$

   (e) Explain the concept of constant-sum-game.

   "ধ্রুবক যোগফল গেম" ধারণাটি ব্যাখ্যা করো।

   (f) Mention two main differences in between "basic feasible solution" and "feasible solution" in linear programming problem.

   "বেসিক ফিজিবল সমাধান" ও "ফিজিবল সমাধান" দ্বয়ের মধ্যে দুটি প্রধান পার্থক্য অনুধাবন করো।

   (g) Solve the equation $\frac{dy}{dt} + 2y = 6$, with initial condition $y(0) = 10$.

   প্রাথমিক শর্ত $y(0) = 10$ হলে $\frac{dy}{dt} + 2y = 6$ সমীকরণটির সমাধান করো।

(h) What kind of time path is represented by $y_t = 2\left(-\frac{y}{5}\right)^t + 9$.

নিম্নলিখিত সমীকরণটি কি ধরনের সময়পথ নির্দেশ করছে ? $y_t = 2\left(-\frac{y}{5}\right)^t + 9$ ।

2. Answer any *four* questions from the following: 5×4 = 20

নিম্নলিখিত যে-কোনো *চারটি* প্রশ্নের উত্তর দাওঃ

(a) Let the monopolist face the demand function $q = AP^{-a}$, under what condition the monopolist will decide to increase the Price (P) in order to increase revenue.

যদি একটি একচেটিয়া প্রতিযোগী $q = AP^{-a}$ চাহিদার সম্মুখীন হয়, তাহলে কোন শর্তে সেই প্রতিযোগী বিক্রয়মূল্য (revenue) বাড়ানোর উদ্দেশ্যে দাম (P) বাড়ানোর সিদ্ধান্ত নেয়।

(b) Given the following demand and supply functions find the inter-temporal equilibrium price and determine whether the equilibrium is stable.

$$Q_{dt} = \alpha - \beta p_t \quad (\alpha, \beta > 0)$$
$$Q_{st} = \gamma + \delta p_{t-1} \quad (\gamma < 0, \ \delta > 0)$$
$$Q_{dt} = Q_{st}$$

নিম্নলিখিত চাহিদা ও যোগান অপেক্ষকের পরিপ্রেক্ষিতে আন্তঃমৌলিক (Inter-temporal) ভারসাম্য দাম নির্ধারণ করো এবং ভারসাম্য দাম স্থিতিশীল কিনা তা নির্ধারণ করো।

$$Q_{dt} = \alpha - \beta p_t \quad (\alpha, \beta > 0)$$
$$Q_{st} = \gamma + \delta p_{t-1} \quad (\gamma < 0, \ \delta > 0)$$
$$Q_{dt} = Q_{st}$$

(c) Take $y_i = 200 + (250 - 200)\left(\frac{1}{2}\right)^t$, what is the value of β? Compute y_1, y_2, y_3 to satisfy yourself that y_i is falling from initial level of 250 towards the equilibrium level of 200.   1+4

ধরা যাক $y_i = 200 + (250 - 200)\left(\frac{1}{2}\right)^t$ β এর মান কত হবে ?

y_1, y_2 এবং y_3 এর মান নির্ণয় এমনভাবে যাতে y_i এর মান প্রারম্ভিক মান 250 থেকে ভারসাম্য দাম 200 এর দিকে অবতারণা করে।

(d) Solve the following game by using "Dominance Principle":   5

	B_1	B_2	B_3	B_4	B_5
A_1	3	5	4	9	6
A_2	5	6	3	7	8
A_3	8	7	9	8	7
A_4	4	2	8	5	3

উপরোক্ত গেমটি ''ডোমিন্যান্স প্রিন্সিপিল'' এর সাহায্যে সমাধান করো।

(e) Given the input-coefficient matrix of an input output model and the final consumption demand vector $'A' = \begin{bmatrix} 0.3 & 0.2 \\ 0.2 & 0.2 \end{bmatrix}$ & $C = \begin{bmatrix} 50 \\ 50 \end{bmatrix}$. Find the optimal output level of two goods. Suppose that 0.2 and 0.1 are labour coefficients of two good respectively. If $\overline{L} = 100$ will there be unemployment in the economy?

3+2

একটি ইনপুট-আউটপুট মডেলের উৎপাদন সহগ-ম্যাট্রিক্স ও সর্বশেষ ভোগ চাহিদা ভেক্টর হল $'A' = \begin{bmatrix} 0.3 & 0.2 \\ 0.2 & 0.2 \end{bmatrix}$ এবং $C = \begin{bmatrix} 50 \\ 50 \end{bmatrix}$। দ্রব্য দ্বয়ের কাম্য উৎপাদনের পরিমাণ কত হবে ?

ধরা যাক দুটি দ্রব্যের প্রয়োজনীয় শ্রম সহগ 0.2 এবং 0.1 এবং $\overline{L} = 100$ হলে অর্থনীতিতে বেকারত্ব থাকবে ?

(f) Graphically solve the following linear programming problem:

রেখাচিত্রের সাহায্যে নিম্নলিখিত "Linear programm" সমস্যাটির সমাধান করোঃ

Maximize $z = 6x_1 + 7x_2$

Subject to $2x_1 + 3x_2 \le 12$

$2x_1 + x_2 \le 8$

$x_1, x_2 \ge 0$

3.   Answer any *two* questions from the following:

$10 \times 2 = 20$

নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ

(a) Solve the following Linear Programming Problem with the help of the Simplex Method:

10

সিমপ্লেক্স পদ্ধতির সাহায্যে নিচের সরল রৈখিক প্রোগ্রামটির সমাধান করোঃ

Minimize $z = 4x + 8y + 2m$

Subject to $\frac{1}{2}x + 2y + 4m \ge 4$

$-x - y + 2m \le -6$

where $x, y, m \ge 0$

(b) Set up a Leontief Static Open Input-Output Model and show how prices are solved in such model.

10

লিওনটিয়েফের স্থির মুক্ত ইনপুট-আউটপুট মডেল গঠন করে দেখাও কিভাবে ঐ মডেলে দামগুলি নির্ধারিত হয়।

(c) Suppose the market demand and supply function are

10

মনে করো বাজারের চাহিদা ও যোগান অপেক্ষকগুলি নিম্নরূপ

$Q_{dt} = \alpha - \beta P_t \; (\alpha, \beta > 0)$

and $Q_{st} = -\gamma + \delta P_t \; (\gamma, \delta > 0)$

The price adjustment is inversely proportional to the inventory accumulated such that $P_{t+1} = P_t - \sigma(Q_{st} - Q_{dt}) \; (\sigma > 0)$.

Interpret the time path of price in detail.

দাম নির্ধারণ যদি মজুত ভাণ্ডারের পরিবর্তনের সাথে ব্যাস্তানুপাতিক হয় অর্থাৎ $P_{t+1} = P_t - \sigma(Q_{st} - Q_{dt})$ $(\sigma > 0)$, তবে দামের সময় পথ বিশ্লেষণ করো।

(d) Consider the following game (Player 1's payouts in bolds):　　　　　　2+2+6

নিম্নক্ত গেমটিতে খেলোয়াড় 1-এর payouts গুলো bold করা আছে

		Player - 2		
		Left	Middle	Right
Player - 1	Up	**1**, 2	**3**, 5	**2**, 1
	Middle	**0**, 4	**2**, 1	**3**, 0
	Down	**−1**, 1	**4**, 3	**0**, 2

(i) Does either player have a dominant strategy? — Explain.

কোন খেলোয়াড়ের কি "dominant" স্ট্রাটিজি আছে? — ব্যাখ্যা করো।

(ii) Does either player have a dominated strategy? — Explain.

কোন খেলোয়াড়ের কি "dominated" স্ট্রাটিজি আছে? — ব্যাখ্যা করো।

(iii) Solve the equilibrium for this game.

গেমটির ভারসাম্য সমাধান করো।

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

CMSACOR07T-COMPUTER SCIENCE (CC7)

COMPUTER NETWORKS

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as far as practicable
All symbols are of usual significance.

Answer Question No. 1 and any *four* from the rest

1.   Answer any *four* questions: 2×4 = 8

   (a) Mention the names of three widely used guided media in transmission mechanism.

   (b) What are the full form of PSK and PSM?

   (c) Differentiate between internal modem and external modem.

   (d) What are the full form of WNS, DNS and https?

   (e) Why Half Duplex Communication is used?

   (f) What is the purpose of a guard band?

   (g) What is the relevance of 'three way handshake' is used in Transport Layer function and protocol?

2. (a) What is Network Topology?   2+6

   (b) There are *N* devices, to be connected through a network. How many distinct cable links would be required if the following topology is followed?

      (i) Mesh, (ii) Ring, (iii) Bus.

3. (a) State and explain Nyquist Formula.   2+2+4

   (b) Determine the maximum (theoretical) limit of bit rate (in bits per second), in a noiseless channel, of a Bandwith of 5000 Hz transmitting 64 levels.

   (c) State and explain the Basic Service Set (BSS) for Wireless LAN as provided in IEEE 802.11 specification.

4.   Compare and contrast in between the following error recovery protocols.   2+2+4

   (a) Stop and Wait ARQ (Automatic Repeat Request)

   (b) Go Back n ARQ

   (c) How many bytes of data can be sent in 15 seconds over a serial link with baud rate of 96000 in asynchronous mode with odd parity and two stop bits in the frame?

5.　What is port address, logical address and physical address? A composite signal contains frequencies from 10 to 30 KHz, each with amplitude of 10V. Draw the Frequency spectrum. What does a decibel measure?　　3+3+2

6. (a) Compare and contrast in between Amplitude Modulation and Frequency Modulation with appropriate example.　　5+3

　 (b) Why TCP is said to be reliable and connection oriented protocol?

7. (a) What is routing?　　2+6

　 (b) Compare and contrast in between *Non Adaptive Routing Algorithm* and *Adaptive Routing Algorithm*.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

CEMACOR07T-CHEMISTRY (CC7)

ORGANIC CHEMISTRY-III

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
*All symbols are of usual significance.*

**Answer any *four* questions taking *one* from each unit**

UNIT-I

1. (a) State whether the formation of $Me_3CCH(OH)Me$ by acid catalyzed hydration of $Me_3CCH=CH_2$ is possible or not. If not, then how this transformation could be achieved? — 3

   (b) Three isomeric alkenes A, B and C with molecular formula C_5H_{10} on hydrogenation produce 2-methylbutane. A and B give the same tertiary alcohol on oxymercuration-demercuration. B and C give different primary alcohols on hydroboration-oxidation. Logically deduce structures of A, B and C. — 3

   (c) Carry out the following conversions: — 2+2

      (i)   2-butyne to (*Z*)-2,3-dideutero-2-butene

      (ii)   4, 4-dimethyl-2-pentene to 4, 4-dimethyl-1-pentene.

2. (a) Singlet carbene adds to *cis*-2-butene in a stereospecific manner whereas triplet carbene does not — Explain. — 3

   (b) Identify the product(s) formed when 1-octene is reacted with NBS/CCl_4. Predict the relative yields with proper justification. — 2

   (c) What happens when 1, 3-butadiene is treated with HBr at -80° C and at 40° C separately? Predict the product composition in each case and offer proper explanation in support of your answer. — 3

   (d) Give a simple reaction to distinguish 1-butyne from 2-butyne. — 1

   (e) Write structural formula for the compound which yields pentane-1,5-dial on reductive ozonolysis. — 1

UNIT-II

3. (a) Pivaloyl chloride (Me_3CCOCl) reacts with benzene in presence of anhydrous $AlCl_3$ to give mainly tert-butylbenzene whereas anisole under same reaction condition gives mainly p-methoxypivalophenone — Explain.   2

(b) Predict the favoured position of aromatic electrophilic substitution of the following compounds and justify your answer in each case: 2

    (i)   Ph–CH=CH–CO_2H   (ii)   Ph–CO_2H

(c) Compare reactivity of $PhNHCOCH_3$, aniline and benzene toward bromination reaction with proper justification. What is the major monosubstituted product formed during bromination of $PhNHCOCH_3$?   2

4. (a) Compare the reactivity of the following compounds towards nitration reaction using a mixture of concentrated HNO_3 and H_2SO_4:   2

$$C_6H_6, \quad C_6D_6, \quad C_6H_5\text{–}NO_2 \quad \text{and} \quad C_6H_5\text{–OMe}$$
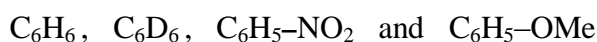
(b) Predict the product giving proper mechanism.   2
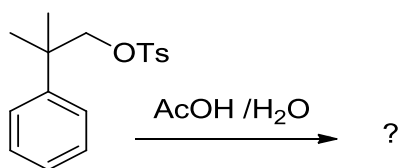
(c) Account for the following observation: 2
   The amination of both O-chloroanisole and m-chloroanisole yields only m-anisidine.

UNIT-III

5. (a) p-N,N-dimethyl aminobenzaldehyde or p-nitrobenzaldehyde separately on treatment with KCN/EtOH fails to give benzoin condensation reaction but a mixture of these two readily responds to the reaction. Explain the observation mechanistically.   4

(b) Give structural formula and name of the product of the reaction between benzaldehyde and semicarbazide. Comment on the nucleophilicsite(s) in the semicarbazide molecule.   2

(c) Write down all the possible products from a mixed Claisen condensation with $CH_3CH_2CH_2COOCH_3$ and $PhCH_2COOCH_3$.   2

(d) In the following reaction sequence, identify A, B and C. Suggest suitable mechanism for the conversion from B to C.   3
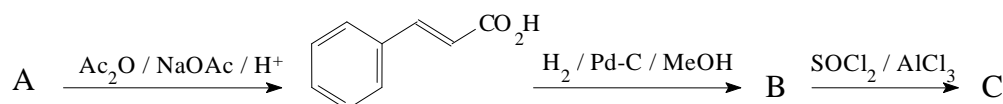
(e) α, β-unsaturated acid, $RCH_2CH=CHCO_2H$ decarboxylates readily on heating but $R_3CCH=CHCO_2H$ does not. — Why?   2

(f) Carry out the following conversion applying protection / deprotection technique.   2
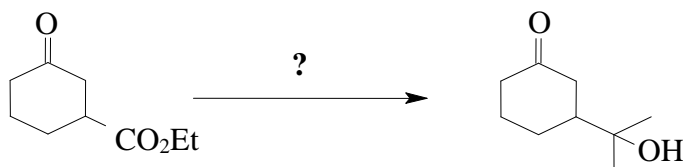
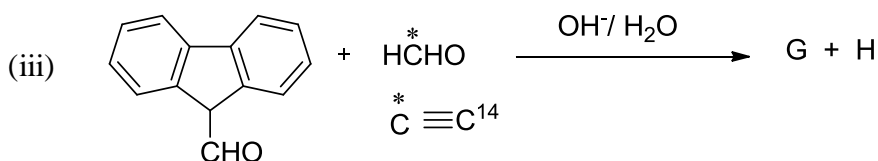(g) Optically active PhCOCH(Et)Me is racemised on base treatment but PhCOCH$_2$CH(Et)Me does not — Explain.   3

6. (a) Identify the products the following reaction.   3+3+2

(i)

(ii)

(iii)

(b) When the following compound is treated with NaOEt/EtOH, two isomeric compounds (A) and (B) are obtained. Give suitable mechanism for the formation of the products.   3
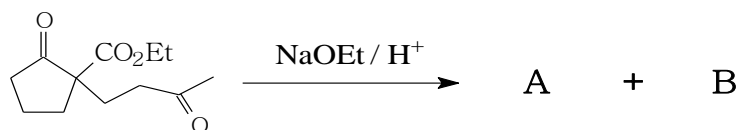
(c) Synthesis of 2,2,5,5-Tetramethylhex-3-ene cannot be accomplished by Witting reaction — Explain.   2

(d) Semicarbazide hydrochloride alone does not react with a ketone to give semicarbazone but when mixed with sodium acetate — it does — Why? Which nitrogen is involved in the reaction and why?   3

(e) Convert: 2
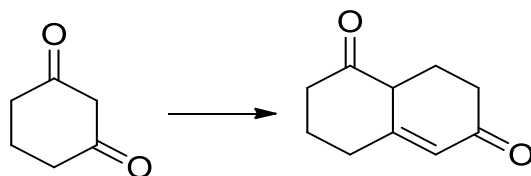
UNIT-IV

7. (a) Give the products with proper explanations: 2

$$? \xleftarrow{\text{MeMgBr / Et}_2\text{O}} \quad \xrightarrow{\text{MeMgBr / Et}_2\text{O / CuI}} ?$$

(b) Carry out the following conversion involving organometallic reagents: 2

$$(Me_2CH)_2CO \longrightarrow (Me_2CH)_3COH$$
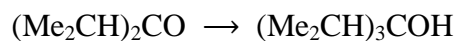
(c) Why Zn is a specific reagent for Reformatsky reaction?   2

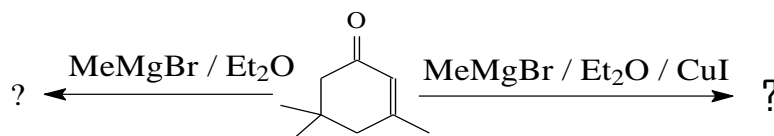8. (a) Convert the following using organometallic reagents: 2

$$Me_2CO \longrightarrow Me_2C(OH)CH_2COOH$$

(b) What happens when $PhCH_2MgBr$ is treated with HCHO followed by acidification?   2

(c) How can you prepare the acid $R_3C\text{–}CO_2H$ from R_3COH?   2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

BOTACOR07T-Botany (CC7)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1.   Answer the following questions in brief: 1×6 = 6

   (a) Define expressivity.

   (b) What do you mean by complete linkage? How it is related to crossing over?

   (c) Assume that an organism has $2n = 6$ chromosomes. How many chromosomes would be present in a trisomic organism of this species?

   (d) Differentiate between multiple allele and polygene.

   (e) What do you mean by complete linkage? How it is related to crossing over?

   (f) Distinguish between nullisomics and double monosomics.

2.   Answer any *eight* questions from the following: 3×8 = 24

   (a) Discuss maternal effect with reference to inheritance pattern of shell coiling in snails.

   (b) Distinguish between true allopolyploid and segmental allopolyploid.

   (c) Give the molecular mechanism by which alkylating agents cause mutation.

   (d) What is the basis for the green white colour variegation in the leaves of four o'clock plant (*Mirabilis jalapa*)? If the following cross is made: Variegated (Female) × Green (Male).

   (e) Briefly discuss the genetic significance of F_2 phenotypic ratios 9:3:4 and 13:3.

   (f) Distinguish between pericentric and paracentric inversions. What are the meiotic products of paracentric inversion?   2+1

   (g) Briefly describe the CIB method of detection of sex linked lethal.

   (h) Why is the DNA repair extremely important? What will happen if RecBCD is mutated in a cell?

   (i) What is pedigree analysis? Write all the symbols used in pedigree analysis.

   (j) What is the difference between a transition mutation and a transversion mutation?

   (k) What are cistron, recon and muton?

   (l) How many A and a alleles are present in a sample of organisms consisting of 10 AA, 15Aa and 4aa individuals? What are the allele frequencies in this sample?

3.   Answer any *two* questions from the following: 5×2 = 10

(a) A cross was made between purple leaf (pl), glossy seedling (gl) draft (t) variety and wild   1+2+1+1
(+++) type. F_1 plants were test crossed and the following proportions were obtained when
a sample of 1000 plants were counted:

Wild type	310
Purple leaf, glossy seedling, dwarf	305
Purple leaf	140
Glossy seedling, dwarf	145
Purple leaf, dwarf	42
Glossy seedling	43
Dwarf	09
Purple leaf, glossy seedling	06

Determine the correct order of the genes. Calculate the map distance between the genes,
Coefficient of coincidence and Interference.

(b) With suitable diagram briefly describe the cytological basis of crossing over.   5

(c) Mention the various types of DNA repair mechanisms known to counteract the effects of   4+1
UV rays. What is the role of visible light in photoreactivation?

(d) Briefly describe the rII locus in T4 phage. How could rII locus be divided into two   3+2
cistrons?

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WEST BENGAL STATE UNIVERSITY

B.A. Honours 3rd Semester Examination, 2020, held in 2021

BNGACOR07T-Bengali (CC7)

বাংলা গদ্য ও প্রবন্ধ

Time Allotted: 2 Hours   Full Marks: 50

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি প্রশ্নের মান নির্দেশ করে।
পরীক্ষার্থীদের নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে উত্তর দিতে হবে।

১।   প্রতিটি একক থেকে *একটি* করে প্রশ্ন নিয়ে মোট *চারটি* প্রশ্নের উত্তর দাওঃ   ১০ ×৪ = ৪০

একক - ১

(ক) পুরুষ ও নারীর অধিকারের সাম্য প্রতিষ্ঠার জন্য বঙ্কিমচন্দ্র কী কী প্রস্তাব করেছেন — সাম্য প্রবন্ধ গ্রন্থ   ১০
অনুসরণে আলোচনা করো।

অথবা

(খ) সাম্য প্রবন্ধ গ্রন্থে বঙ্কিমচন্দ্র উত্তরকালের সাম্য ভাবনাকে পরিত্যাগ করেছিলেন বলে কি তোমার মনে হয়   ১০
— সে বিষয়ে আলোকপাত করো।

একক - ২

(গ) ‘বিশ্বপরিচয়’ গ্রন্থটি রবীন্দ্রনাথ কাকে উৎসর্গ করেছেন ? উৎসর্গপত্রে রচনার উদ্দেশ্য সম্পর্কে প্রাবন্ধিকের   ১০
বক্তব্য কী ছিল আলোচনা করো।

অথবা

(ঘ) আমাদের প্রতিদিনের চেনা সূর্যের অচেনা জগৎ সম্পর্কে রবীন্দ্রনাথ যে পাঠ দিয়েছেন পাঠ্য প্রবন্ধগুলি   ১০
অনুসরণে তার পরিচয় দাও।

একক - ৩

(ঙ) প্রমথ চৌধুরীর প্রবন্ধ মানেই শাণিত গদ্যের প্রয়োগ — পাঠ্য প্রবন্ধগুলিতে তার পরিচয় কেমন করে   ১০
পাওয়া যায় দেখাও।

অথবা

(চ) ‘তেল নুন লকড়ি’ প্রবন্ধ অবলম্বনে দুই সভ্যতার তুলনা উদাহরণসহ আলোচনা করো।   ১০

একক – 4

(ছ) 'আপন কথা' গ্রন্থে অবনীন্দ্রনাথ জীবনীসাহিত্যে ঘরোয়া কথনভঙ্গির যে স্বাদ এনেছেন তার পরিচয় দাও। ১০

অথবা

(জ) 'উত্তরের ঘর' প্রবন্ধে চিত্রশিল্পী অবনীন্দ্রনাথ রসরচনাকার অপেক্ষা অনেক বেশি প্রত্যক্ষ — আলোচনা করো। ১০

২। নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ ৫×২ = ১০

(ক) ''যে বৈষম্য প্রাকৃতিক নিয়মের অধীন তাই প্রকৃত বৈষম্য'' – কেন ? সংক্ষেপে বুঝিয়ে দাও। ৫

(খ) 'বিশ্বপরিচয়' ছাড়া রবীন্দ্রনাথের বিজ্ঞানমনস্কতার পরিচয় পাওয়া যায় এমন দুটি নিদর্শন ব্যাখ্যাসহ উল্লেখ করো। ৫

(গ) ''ভারতচন্দ্র যা দিয়ে তা ঢাকা দিতে গিয়েছিলেন তাতেই তা ফুটে উঠেছে'' – ভারতচন্দ্র কী দিয়ে কী ঢাকা দিতে গিয়েছিলেন আর কেনই বা তা করতে সক্ষম হলেন না ? ২+৩

(ঘ) 'আপনকথা' গ্রন্থে রামলাল চরিত্রটির গুরুত্ব সংক্ষেপে আলোচনা করো। ৫

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WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

ZOOACOR07T-ZOOLOGY (CC7)

BIOCHEMISTRY

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer any *eight* questions: 2×8 = 16

    (a) What is an allosteric enzyme?

    (b) What is pentose phosphate pathway?

    (c) Name one amino acid with sulphur moiety and one amino acid with phenol ring.

    (d) Name one saturated and one unsaturated fatty acid.

    (e) Name one disaccharide with its basic sugar moieties.

    (f) Name one anabolic and one catabolic mechanism in body.

    (g) Define buffer.

    (h) What is the function of urea cycle?

    (i) What do you mean by redox system?

    (j) How many ATP is generated in glycolysis?

    (k) Name the bonds present in protein structure.

    (l) Why TCA cycle is called so?

    (m) What is the difference between a nucleoside and a nucleotide?

    (n) Why histone molecules contain basic amino acids?

2. Answer any *three* questions: 3×3 = 9

    (a) Describe the basic structure of an amino acid.   3

    (b) What are basic differences between DNA and RNA?   3

    (c) Name one weak acid and one weak base. Why they are called so?   2+1

    (d) If a 100 bp long DNA bears 36 Adenines how many other bases are there in that   3
        strand?

(e) How alpha helix is generated in a protein? 3

(f) Draw the molecular structure of any one carbohydrate. 3

3. Answer any ***three*** questions: 5×3 = 15

(a) Deduce Michaelis-Menten Equation.

(b) Describe beta-oxidation of a saturated fatty acid.

(c) Schematically represent the TCA cycle.

(d) Describe the different levels of protein structure with a suitable example.

(e) Describe electron transport system (flow chart only).

(f) What is Lineweaver-Burk Plot? What are the different factors affecting the rate of enzyme-catalyzed reactions?

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WEST BENGAL STATE UNIVERSITY
B.A. Honours 3rd Semester Examination, 2020, held in 2021

PLSACOR07T-POLITICAL SCIENCE (CC7)
PERSPECTIVE ON INTERNATIONAL RELATIONS AND WORLD HISTORY

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words
and adhere to the word limit as practicable.

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।
পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে
উত্তর করিবে।

1.   Answer any *five* questions from the following: (Each within 30 words)   2×5 = 10
   নিম্নলিখিত যে-কোনো *পাঁচটি* প্রশ্নের উত্তর দাওঃ (প্রতিটি ৩০ শব্দের মধ্যে)

   (a) Define International Relations.
   আন্তর্জাতিক সম্পর্কের সংজ্ঞা দাও।

   (b) Explain the concept of national interest in International Relations.
   আন্তর্জাতিক সম্পর্কে জাতীয় স্বার্থের ধারণাটি ব্যাখ্যা করো।

   (c) Mention two important features of classical realism.
   ধ্রুপদী বাস্তববাদের দুটি মূল বৈশিষ্ট্য উল্লেখ করো।

   (d) Write two limitations of the Liberal approach to International Relations.
   আন্তর্জাতিক সম্পর্কের উদারনৈতিক দৃষ্টিভঙ্গির দুটি সীমাবদ্ধতা লেখো।

   (e) Mention two features of core states in world system.
   বিশ্বব্যবস্থার কেন্দ্রে অবস্থিত রাষ্ট্রগুলির দুটি বৈশিষ্ট্য উল্লেখ করো।

   (f) What do you mean by semi-periphery state?
   আধা-প্রান্তিকরাষ্ট্র বলতে কি বোঝো ?

   (g) What is the main argument of the Feminist theory of International Relations?
   আন্তর্জাতিক সম্পর্কের নারীবাদী তত্ত্বের মূল বক্তব্য কি ?

   (h) What do you mean by Cold War?
   ঠাণ্ডা যুদ্ধের অর্থ কি ?

   (i) What is CTBT?
   CTBT কাকে বলে ?

2.   Answer any *two* questions from the following: (Each within 100 words)   5×2 = 10
   নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ (প্রতিটি ১০০ শব্দের মধ্যে)

   (a) Narrate briefly the evolution of the discipline of International Relations.
   আন্তর্জাতিক সম্পর্ক বিষয়টির বিবর্তনের একটি সংক্ষিপ্ত বিবরণ দাও।

(b) Discuss the difference between realism and neo-realism.

বাস্তববাদ ও নয়াবাস্তববাদের মধ্যে পার্থক্য আলোচনা করো।

(c) Explain the relations between core and periphery in World Systems theory.

বিশ্বব্যবস্থা তত্ত্বে কেন্দ্র-প্রান্ত সম্পর্কটি ব্যাখ্যা করো।

(d) Write a short note on the Suez Canal crisis.

সুয়েজখাল সঙ্কটের উপর একটি টীকা লেখো।

3.   Answer any *three* questions (within 350 words each) taking *one* question from   10×3 = 30
each module:

প্রতিটি মডিউল থেকে *একটি* করে প্রশ্ন নিয়ে নিম্নলিখিত যে-কোনো *তিনটি* প্রশ্নের উত্তর দাওঃ
(প্রতিটি ৩৫০ শব্দের মধ্যে)

MODULE-I

(a) Describe the nature and scope of the discipline of International Relations.

আন্তর্জাতিক সম্পর্ক বিষয়টির প্রকৃতি ও পরিধি আলোচনা করো।

(b) Explain the emergence of the international state system.

আন্তর্জাতিক রাষ্ট্র ব্যবস্থার উদ্ভব ব্যাখ্যা করো।

MODULE-II

(c) Evaluate the realist approach to the study of international relations.

আন্তর্জাতিক সম্পর্কের আলোচনায় বাস্তববাদী দৃষ্টিভঙ্গির মূল্যায়ন করো।

(d) Do you think that besides the state several other pluralist forces play a decisive role in International Relations? Argue your case.

তুমি কি মনে করো যে রাষ্ট্র ছাড়া অন্যান্য বহুত্ববাদি শক্তিগুলি আন্তর্জাতিক সম্পর্কে একটি গুরুত্বপূর্ণ ভূমিকা পালন করে ? তোমার উত্তরের স্বপক্ষে যুক্তি দাও।

MODULE-III

(e) Narrate briefly the different phases of Cold War.

ঠাণ্ডা যুদ্ধের বিভিন্ন পর্যায়গুলি সংক্ষেপে বর্ণনা করো।

(f) Describe briefly the post Cold War world.

ঠাণ্ডা যুদ্ধোত্তর বিশ্বের একটি সংক্ষিপ্ত বর্ণনা দাও।

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

PHSACOR07T-PHYSICS (CC7)

DIGITAL SYSTEMS AND APPLICATIONS

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limits as practicable.
Answers must be precise and to the point to earn credit.
All symbols are of usual significance.

Question No. 1 is compulsory and answer any *two* from the rest

1.   Answer any *ten* questions from the following: $2 \times 10 = 20$

 (a) What are the advantages and limitations of ICs?

 (b) Why is delay line used in the vertical deflection system of a CRO?

 (c) What is the function of aquadag in a CRT?

 (d) Convert $(2598.675)_{10}$ to hexadecimal.

 (e) Perform the decimal addition $679.6 + 536.8$ in the 8421 BCD code.

 (f) Prove the Boolean identity :

$$AB + B\bar{C} + \bar{A}(B+C) + \bar{B}C + \bar{A}\bar{B}\bar{C} + ABC = \bar{A} + B + C$$

 (g) Given $\overline{AB} + \bar{A}B = C$, find $\overline{AC} + \bar{A}C$.

 (h) Realise XNOR gate using only NAND gates.

 (i) Draw the circuit diagram of a 4-bit subtractor.

 (j) What is the need of clocking a flip-flop?

 (k) What are the differences between ripple counter and parallel counter?

 (l) What do you mean by edge triggering and level triggering?

 (m) Find the number of flip-flops required for a MOD-5 counter.

 (n) What are the main functions of a Register?

2. (a) What do you mean by deflection sensitivity of a CRT? Deduce an expression for deflection sensitivity of a CRT using magnetic deflection. Why do you use a saw-tooth voltage in a CRO?   2+3+2

 (b) Design a full adder using NAND gates only. Steps of calculation in designing are required.   3

3. (a) Expand $A(\bar{A}+B)(\bar{A}+B+\bar{C})$ to maxterms and minterms. — 3

   (b) Simplify the expression $F = (x \oplus y) \oplus (xy)$ and draw the simplified circuit. — 2+1

   (c) A binary ripple counter is required to count up to $(16383)_{10}$. Find how many flip-flops are required. If the clock frequency is 8.192 MHz what is the frequency at the output of the MSB? — 2+2

4. (a) On the CRO screen, the time base control is calibrated by 0.2 ms/div. One full cycle of the display covers 10 divisions on the time scale. Find the frequency of the input. — 3

   (b) Convert D flip-flop to a J-K flip-flop and vice versa. — 2+2

   (c) Draw a 4-bit serial-in, serial-out shift register using J-K flip-flops and show output stages. — 3

5. (a) What is meant by the propagation delay in a counter? — 2

   (b) Design an asynchronous mod-10 counter using J-K flip-flop. Show the output. — 4

   (c) Reduce the expression $f = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 10, 12, 13)$ using K-Map and implement the minimal expression using NAND gates. Show all intermediate steps. — 4

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WEST BENGAL STATE UNIVERSITY

B.A. Honours 3rd Semester Examination, 2020, held in 2021

PHIACOR07T-Philosophy (CC7)

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate full marks.   প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।
Candidates should answer in their own words   পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে
and adhere to the word limit as practicable.   উত্তর করিবে।
All symbols are of usual significance.

1.   Answer any *five* questions from the following: 2×5 = 10
      নিম্নলিখিত যে-কোনো *পাঁচটি* প্রশ্নের উত্তর দাওঃ

   (a) Is ethics a normative science?
       নীতিবিদ্যা কি একটি আদর্শনিষ্ঠ বিভাগ ?

   (b) Define rule-deontology.
       নিয়ম-কর্তব্যবাদের সংজ্ঞা দাও।

   (c) In what sense does Frankena use the term 'morality'?
       ফ্রাঙ্কেনা কোন অর্থে 'নৈতিকতা' শব্দটি ব্যবহার করেছেন ?

   (d) What according to Kant, is the supreme principle of morality?
       কান্টের মতে নৈতিকতার সর্বোচ্চ নীতিটি কী ?

   (e) What are the postulates of morality?
       নৈতিকতার স্বীকার্য সত্যগুলি কী কী ?

   (f) What are the different stages of voluntary action?
       ঐচ্ছিক ক্রিয়ার বিভিন্ন স্তরগুলি কী কী ?

   (g) What do you mean by Egoistic Hedonism?
       'আত্মসুখবাদ' বলতে কি বোঝো ?

   (h) What is 'conflict of desires'?
       'কামনার দ্বন্দ্ব' কী ?

   (i) What is Punishment?
       শাস্তি কী ?

   (j) What is 'Naturalistic Fallacy'?
       'প্রকৃতিবাদী অনুপপত্তি' কী ?

   (k) Are habitual actions an object of moral judgment?
       অভ্যাসজাত ক্রিয়াগুলি কি নৈতিক বিচারের বিষয়বস্তু ?

   (l) What is Prescriptivism?
       নির্দেশবাদ কাকে বলে ?

2. Answer any *two* questions from the following: 5×2 = 10

    নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ

    (a) Indicate the scope of ethics.

    নীতিবিদ্যার পরিধি নির্দেশ করো।

    (b) Distinguish between moral and non-moral actions.

    নৈতিক ও অনৈতিক ক্রিয়ার মধ্যে পার্থক্য নির্দেশ করো।

    (c) How does Act-Utilitarianism differ from Rule-Utilitarianism?

    কর্ম-উপযোগবাদের সঙ্গে নীতি উপযোগবাদের পার্থক্য কোথায় ?

    (d) Explain the dictum – Duty for duty's sake.

    'কর্তব্যের জন্যই কর্তব্য' – কথাটি ব্যাখ্যা করো।

    (e) Explain Gross and Refined Egoistic Hedonism.

    স্থূল এবং মার্জিত আত্মসুখবাদ তত্ত্ব ব্যাখ্যা করো।

    (f) Write a note on Deontological Ethics.

    কর্তব্যমুখী নৈতিকতা সম্পর্কে টীকা লেখো।

3. Answer any *two* questions from the following: 15×2 = 30

    নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ

    (a) Distinguish between 'motive' and 'intention'. Which is the object of moral judgement? Discuss. 5+10

    উদ্দেশ্য ও অভিপ্রায়ের মধ্যে পার্থক্য করো। কোনটি নৈতিক বিচারের বিষয়বস্তু ? আলোচনা করো।

    (b) Critically discuss Bentham's Altruistic Hedonism. 15

    বেন্থামের পরসুখবাদ বিচারপূর্বক আলোচনা করো।

    (c) What is Naturalism in ethics? Examine the view critically. 5+10

    নীতিবিদ্যায় প্রকৃতিবাদ কাকে বলে ? সবিচার আলোচনা করো।

    (d) Analyse Kant's doctrine of morals as a standard of morality. 15

    নৈতিকতার মানদন্ড হিসেবে কান্টের নীতিতত্ত্ব বিশ্লেষণ করো।

    (e) What are the different theories of punishment? Which theory do you accept? Justify your answer. 3+12

    শাস্তি সম্পর্কীয় বিভিন্ন মতগুলি কী কী ? তুমি কোনটিকে গ্রহণযোগ্য বলে মনে করো ? তোমার উত্তরের স্বপক্ষে যুক্তি দাও।

    (f) What are the different forms of Utilitarianism? Discuss critically Mill's Utilitarianism. 2+10+3

    উপযোগবাদের বিভিন্ন প্রকারগুলি কী ? মিলের উপযোগবাদ বিচারসহ আলোচনা করো।

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

MTMACOR07T-Mathematics (CC7)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

Answer Question No. 1 and any *four* questions from the rest

1.   Answer any *four* questions from the following: $2 \times 4 = 8$

   (a) What is the midpoint rule for numerical integration?

   (b) Prove that $\Delta . \nabla = \Delta - \nabla$.

   (c) Prove that $\left(\dfrac{\Delta^2}{E} \right) x^3 = 6x$, where interval of differencing is taken as 1.

   (d) Evaluate first two divided difference of $f(x) = x^3$ for arguments $x_0,\ x_1,\ x_2$.

   (e) Find iterative formula for finding real root of the equation $f(x) - g(x) = 0$ by using Newton-Raphson method.

   (f) Prove that $f(x_0,\ x_1,\ x_2) = \dfrac{\Delta^2 f(x_0)}{2!\, h^2}$

   where $x_1 = x_0 + h,\ x_2 = x_1 + h$

   (g) Solve the system of equations by Gauss-Jordan method: $x + y = 2,\ 2x + 3y = 5$.

   (h) Find the solution of the differential equation

   $$\frac{dy}{dx} = 1 - y, \quad y(0) = 0$$

   for $x = 0.2$ by using Euler's method (take step-length $h = 0.1$).

2. (a) To find a real root of an algebraic equation $f(x) = 0$ by using Newton-Raphson   5
   method, interative formula is obtained as (assuming convergence)

   $$x_{n+1} = \frac{2x_n^3 - x_n^2 + 2}{3x_n^2 - 2x_n + 2}$$

   Find the polynomial $f(x)$ and also find the only real root of the equation.

(b) Calculate the total number of multiplications and divisions are required in back substitution process of Gauss Elimination method to obtain the solution of the following equation.

$$a_{11}x_1 + a_{12}x_2 + \cdots\cdots + a_{19}x_9 = b_1$$

$$a_{21}x_1 + a_{22}x_2 + \cdots\cdots + a_{29}x_9 = b_2$$

$$\cdots\cdots\cdots$$

$$a_{91}x_1 + a_{92}x_2 + \cdots\cdots + a_{99}x_9 = b_9$$

3

3. (a) In LU-decomposition method, it is required to compute an upper triangular matrix and lower triangular matrix. If the given matrix is singular, what will be problem for LU-decomposition? Explain it analytically.

3

(b) Suppose you have given $(2n+1)$ interpolating points (x_i, y_i), $i = 0, 1, ..., 2n$ and you have determined interpolating polynomial using these interpolating points by Lagrange interpolation formula and Newton divided difference interpolation formula. Now, one extra interpolating point (x_{2n+1}, y_{2n+1}) is given to you. At this moment what formula is better (compare with two said formulas) to compute updated interpolating polynomial. Explain it analytically.

5

4. (a) Find $y'(x)$ from the following table:

x	0	1	2	3	4
$y(x)$	1	1	15	40	85

Hence find $y'(x)$ at $x = 0.5$.

3+2

(b) Suppose you are given four tabulated interpolating points (0.01, 1.2), (0.03, 1.5), (0.07, 2.5), (0.08, 3) and you have to find $f(0.015)$ by using Lagrange interpolation formula. If you directly apply the Lagrange formula, what error may be occurred? The error can be avoided by using a suitable linear transformation. Mention what linear transformation can be suitable for this problem. Write down the new Lagrange interpolation formula after transformation.

3

5. (a) What are the advantages and disadvantages of Newton-Raphson method over a general fixed point iteration method in computing a real root of an equation $f(x)$, in case both the methods are applicable.

4

(b) Define divided difference of order n. Show that it is symmetric function of its arguments.

4

6. (a) Find absolute, relative and percentage error in $f(x) = 3\sin x - 2x^2 - 9$ for $x = 0$ when the error in x is 0.003.

3

(b) Design an algorithm to find the real roots of the equation $ax^2 + bx + c = 0$, where a, b, c are real numbers.

5

7. Compute $y\,(0.2)$ for the initial value problem $\dfrac{dy}{dx} = x + y,\ \ y(0) = 1$ by Runge-Kutta method. Use step length $h = 0.1$.   8

8. (a) Derive a general quadrature formula for equidistant ordinates and hence derive Simpson's $3/8^{\text{th}}$ rule.   4+1

   (b) The velocity v of a particle at a distance s from a fixed point on its path is given by the table below   3

s (in m)	0	10	20	30	40	50	60
v (m/sec)	47	58	64	65	61	52	38

   Estimate the time taken to travel 60 meters by using Trapezoidal rule.

9. Describe the power method for finding the largest (in magnitude) eigen value of a real square matrix A. How least eigen value (in magnitude) can be obtained by using the Power method? Explain it mathematically.   8

10. Find the inverse of the matrix   8

$$A = \begin{pmatrix} 3 & 2 & 1 \\ 2 & 3 & 2 \\ 1 & 2 & 2 \end{pmatrix}$$

   using LU-decomposition method and hence solve the system of equations

$$3x + 2y + z = 6$$
$$2x + 3y + 2z = 7$$
$$x + 2y + 2z = 5$$

11. Define 'degree of precision' of a numerical integration formula. Mention the degree of precision for Trapezoidal rule and Weddle's rule. Deduce mathematically the degree of precision of Simpson's one-third rule.   8

   What will be the error for computing the integral

$$\int_{2}^{5} (6x^2 + 5x + 2)\, dx$$

   by using Simpson's one-third rule and taking 10 sub intervals. Justify your answer.

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WEST BENGAL STATE UNIVERSITY

B.A. Honours 3rd Semester Examination, 2020, held in 2021

HISACOR07T-History (CC7)

History of India (1206 CE-1526 CE)

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate marks of question.
Candidates should answer in their own words
and adhere to the word limit as practicable.

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি প্রশ্নেরমান নির্দেশ করে।
পরীক্ষার্থীদের নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে
উত্তর দিতে হবে।

GROUP-A
বিভাগ-ক

Answer any *two* questions from the following   5×2 = 10
Each answer has to be written within 250 words approximately
নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাও
প্রতিটি প্রশ্নের উত্তর ২৫০ শব্দের মধ্যে লেখা বাঞ্ছনীয়

1. Why did Razia fail?
   রাজিয়া কেন ব্যর্থ হয়েছিলেন ?

2. Assess Malik Kafur's contributions to Khalji imperialism.
   খলজী সাম্রাজ্যবাদের বিকাশে মালিক কাফুরের অবদান নির্ণয় করো।

3. What were *Jahandari* and *Zawabit*?
   জাহান্দারী ও জাওবিৎ কী ?

4. Briefly mention the main features of Firuz Shah Tughlaq's revenue system.
   ফিরোজ শাহ তুঘলক-এর রাজস্বব্যবস্থার মূল বৈশিষ্ট্যগুলি সংক্ষেপে উল্লেখ করো।

5. Write a short note on the Varkari movement in Maharashtra.
   মহারাষ্ট্রে বারকরী আন্দোলন সম্পর্কে একটি সংক্ষিপ্ত টীকা লেখো।

GROUP-B
বিভাগ-খ

Answer any *two* questions from the following   8×2 = 16
Each answer has to be written within 400 words approximately
নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাও
প্রতিটি প্রশ্নের উত্তর ৪০০ শব্দের মধ্যে লেখা বাঞ্ছনীয়

6. Discuss the role of the nobility during the Turko-Afghan period.
   তুর্ক-আফগান যুগে অভিজাত সম্প্রদায়ের ভূমিকা আলোচনা করো।

7. How far was Firuz Shah Tughlaq responsible for the downfall of the Delhi Sultanate?

দিল্লী সুলতানী সাম্রাজ্যের পতনের জন্য ফিরোজ শাহ তুঘলক কতটা দায়ী ছিলেন ?

8. Write a short note on the textile and metal industries during the Sultanate period.

সুলতানী আমলের বস্ত্র এবং ধাতুশিল্পের উপর একটি সংক্ষিপ্ত টীকা লেখো।

9. Write a note on the nature of Indian maritime trade prior to the advent of the Portuguese.

পর্তুগীজ আগমনের পূর্বে ভারতীয় সমুদ্র বাণিজ্যের প্রকৃতি সম্পর্কে একটি টীকা লেখো।

10. What was the significance of the Bhakti movement?

ভক্তি আন্দোলনের তাৎপর্য কী ছিল ?

GROUP-C
বিভাগ-গ
Answer any *two* questions from the following   12×2 = 24
Each answer has to be written within 600 words approximately

নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাও

প্রতিটি প্রশ্নের উত্তর ৬০০ শব্দের মধ্যে লেখা বাঞ্ছনীয়

11. Discuss the evolution of the theory of Muslim kingship in India from Iltutmish to Alauddin Khalji.

ইলতুৎমিস থেকে আলাউদ্দিন খলজী পর্যন্ত ভারতবর্ষে মুসলমান নরপতিত্বের ধারণার বিবর্তন সম্পর্কে আলোচনা করো।

12. Do you think that the schemes of Muhammad-bin-Tughluq were "correctly conceived, badly executed and disastrously abandoned"?

তুমি কি মনে করো যে মহম্মদ-বিন-তুঘলকের পরিকল্পনাগুলি ছিল "সঠিকভাবে কল্পিত, মন্দভাবে রূপায়িত ও বিপর্যয়করভাবে পরিত্যক্ত" ?

13. Trace the evolution of the architectural style under the Sultans of Delhi highlighting its main features.

দিল্লীর সুলতানদের অধীনে স্থাপত্যের মূল বৈশিষ্ট্যগুলি চিহ্নিত করে স্থাপত্যশৈলীর বিবর্তন নির্ধারণ করো।

14. Write a short essay on the debate relating to the urbanization in medieval India.

মধ্যযুগের ভারতবর্ষে নগরায়ন সংক্রান্ত বিতর্কের উপর একটি সংক্ষিপ্ত প্রবন্ধ লেখো।

15. Distinguish different trends within Indian Sufism. Discuss the impact of Sufism   6+6
on the society and culture of India under the Sultanate.

ভারতীয় সুফীবাদের বিভিন্ন ধারাগুলিকে পৃথকভাবে চিহ্নিত করো। সুলতানী শাসনের অধীনে ভারতবর্ষের সমাজ ও সংস্কৃতির উপর সুফীবাদের প্রভাব আলোচনা করো।

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WEST BENGAL STATE UNIVERSITY

B.Com. Honours 3rd Semester Examination, 2020, held in 2021

FACACOR07T-B.Com. (CC7)

FINANCIAL ACCOUNTING-II

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words as far as practicable
All symbols are of usual significance.

GROUP-A

Answer any *two* questions   10×2 = 20

1. A and B are two partners sharing profit and losses in the ratio of 3:2. On 31.12.2019 their capital accounts stood at Rs. 55,000 and Rs. 45,000 respectively after distribution of net profit of Rs. 15,000 and due consideration of drawings of the partners for Rs. 6,000 and Rs. 4,000 respectively. After closing the books following discrepancies were discovered:

    (i) An item in the inventory was valued at Rs. 12,800 but had a realistic value of Rs. 8,300.

    (ii) Rs. 2,400 paid for insurance premium for the year ending on 31.3.2020 had been debited to profit and loss account.

    (iii) Interest on capital at 5% on partners' capital as at the beginning of the year and interest on drawings of partners at 8% p.a. were left out of consideration.

    Ascertain the correct net profit of the firm and redistribute the profit by preparing a profit and loss of appropriation account and determine the balance of partners' capital accounts.

2. Ram, Rahim and Joseph are partners sharing profits and losses as 5:3:2. Their Balance Sheet on 31st March, 2020 is as follows :

Liabilities	Rs.	Rs.	Assets	Rs.
Capital A/cs:			Building	20,000
Ram	8,000		Machinery	12,000
Joseph	2,400		Furniture	6,400
		10,400	Stock	8,000
Ram's Loan		8,000	Debtors	6,800
Creditors		40,000	Rahim's Capital	5,200
		58,400		58,400

As all the partners are declared insolvent the firm is dissolved. Rs. 24,000 is realized from the sale of all assets. Realisation expenses are Rs. 1,200. A sum of Rs. 2,000 is received from Rahim, but Ram and Joseph are unable to contribute anything.

Prepare necessary accounts for dissolution of the firm.

3. Shri Kaushik sales two products manufactured in his two factory. The goods are made in two departments A and B for which separate set of accounts are maintained some of the manufacturing goods of department A are used as raw material of department B and vice versa.

From the following particulars you are required to ascertain the total cost of goods manufactured in department A and B:

	Department A	Department B
Total Units Manufactured	1000000	500000
Total Cost Of Manufacturing	Rs. 10000	Rs. 5000

Department A transferred 250000 units to department B and the latter transferred 100000 units to the former.

4. A manufacturer purchases a plant for Rs. 22,730 on the instalment payments system. The first payment is to be made at the time of taking delivery of the plant and entire payment is to be completed by four more equal annual payments. The vendor charges interest at 5% per annum. Assuming depreciation to be charged at 10% per annum on the reducing instalment plan, draw up the Plant Account and the Vendors Account in the books of the manufacturer. The present value of Re 1 paid at the beginning of each year for 5 years at 5% per annum is Rs. 4.5460.

5. Sun Ltd. invoices goods to its Patna branch at cost plus 20%. The Patna branch also purchases independently for which payments are made by Head Office. All cash collected by the branch is banked on the same day to the credit of the Head Office.

All expenses are directly paid by the Head Office except petty expenses for which a petty cash account is maintained by the branch to which periodical transfers are made from the Head Office.

From the following particulars show the Branch Account in the books of Head Office for the year ended 31-12-2020 :

	Stock on 1-1-2020 Rs.	Stock on 31-12-2020 Rs.
Transfer from Head Office at invoice price	60,000	45,000
Directly purchased from local market	35,000	25,000

			Rs.
Imprest Cash on 1-1-2020			5,000
Imprest Cash on 31-12-2020			4,600
Sundry Debtors as on 1-1-2020			75,000
Cash Sales	…	…	1,12,500
Credit Sales	…	...	3,12,500
Direct Purchase	…	…	1,12,500
Returns from customers	…	…	7,500
Goods sent to branch at invoice price	…	…	1,50,000
Bad debt	…	…	4,000
Discount to Customers	…	…	3,500
Cash received from customers	…	…	3,00,000
Transfer from Head Office for Petty Cash Expenses	…		6,250
Other Expenses at branch	…	….	…	7,500

2

6. What do you mean by investment accounting? Explain with example cum-dividend, ex-dividend, cum-interest and ex-interest. 2+8

GROUP-B

Answer any *two* questions 15×2 = 30

7. A, B and C were in partnership, their respective shares being 2:1:1. The following was their Balance Sheet on 31-03-2020 on which date they decided to dissolve the firm :

Liabilities	Rs.	Rs.	Assets	Rs.
Partners' Capitals :			Machinery	72,000
A	96,000		Furniture	50,000
B	80,000		Stock	80,000
C	60,000		Debtors	1,20,000
		2,36,000	Cash	34,000
Loan from B		22,000		
Loan from Bank		60,000		
(secured by pledge of stock)				
Income tax payable		8,000		
Creditors		30,000		
		3,56,000		3,56,000

Additional Information :

(i) Bank could realize only Rs. 50,000 on disposal of stock.

(ii) A sum of Rs. 6,000 was spent on machinery for getting better price.

(iii) All assets except stock were realized as follows :

April, 2020 – Rs. 24,000; May, 2020 – Rs. 30,000; June, 2020 – Rs. 20,000; July, 2020 – Rs. 60,000; and August, 2020 – Rs. 70,000.

The partners distributed cash as and when available. Show the distribution of Cash.

8. A, B and C were partners profits and losses in the ratio of 3:2:1. Their balance sheet as on 31.3.2020 stood as follows:

Liabilities	Rs.	Assets	Rs.
Sundry creditors	12,500	Cash at bank	1,500
General reserve	18,000	Debtors 15,000	
Capital accounts:		Less: Provision 1,500	13,500
A 40,000		Stock	12,500
B 21,000		Joint Life Policy	8,000
C 20,000	81,000	Office Equipments	14,000
		Furniture	12,000
		Building	50,000
	1,11,500		1,11,500

B retires on 1.4.2020 subject to the following conditions:

(i) A typewriter purchased on 1.10.2019 for Rs. 2,000, debited to office expenses account, is to be brought into account charging depreciation at the rate of 10% p.a.

(ii) Building is revalued at Rs. 75,000. Furniture is to be written down by Rs. 2,000 and stock is reduced to Rs. 10,000.

(iii) Provision for bad debts is to be calculated at 5% on debtors.

(iv) Goodwill of the firm is valued at Rs. 18,000 but no goodwill account is to be raised.

(v) Life policy is to be shown at surrender value. The surrender value is Rs. 7,500.

(vi) Amount due to B is to be transferred to his loan account.

(vii) A and C will share profits and losses in the ratio of 2:1 and their capital accounts are to be adjusted in profit sharing ratio.

You are required to prepare revaluation account, partners' capital accounts and balance sheet immediately after retirement.

9. X Transport Ltd. purchased from Delhi Motors 3 Tempos costing Rs. 50,000 each on the hire purchase system on 1-1-2018. Payment was to be made Rs. 30,000 down and the remainder in 3 equal annual instalments payable on 31-12-2018, 31-12-2019 and 31-12-2020 together with interest @ 9%. X Transport Ltd. writes off depreciation at the rate of 20% on the diminishing balance. It paid the instalment due at the end of the first year i.e. 31-12-2018 but could not pay the next on 31-12-2019. Delhi Motors agreed to leave one Tempo with the purchaser on 1-1-2020 adjusting the value of the other 2 Tempos against the amount due on 31-12-2019. The Tempos were valued on the basis of 30% depreciation annually. Show the necessary accounts in the books of X Transport Ltd. for the years 2018, 2019 and 2020.

10. A Patna based merchant has a branch at Gaya to which he charges out goods at cost plus 25%. The Gaya branch keeps its own sales ledger and remits all cash received to Patna head office every day. All expenses are paid from the head office.

The transactions for the Gaya branch were as follows:

	Rs.			Rs.
Stock (1.1.20)	11,000	Returns inward		500
Debtors (1.1.20)	1,700	Cheques sent to branch:		
Petty cash (1.1.20)	100	Rent	600	
Cash sales	2,650	Wages	200	
Goods sent to branch	20,000	Salary and other expenses	900	
				1,700
Collection on ledger accounts	21,000	Stock (31.12.20)		13,000
Goods returned to head office	400	Debtors (31.12.20)		2,000
Bad debts	300	Petty Cash (31.12.20)		100
Allowances to customers	250			

Prepare in the books of the merchant based at Patna, the Gaya branch account and the branch trading account and the profit and loss account for the year ended 31st December, 2020.

4

11. On 1.1.2015, S.K. Ltd had 10,000 Equity Shares of Rs. 10 each in Alpha Ltd. purchased for Rs. 1,25,000. The company unlike Investment Companies does not make any apportionment of dividends (received or receivable) in between capital and revenue. On 15.5.2015, the Alpha Ltd. made a bonus issue of 1 fully paid share for 2 held on 15.5.2015. In addition on the same day Right shares were issued at 3 for 5 held that date at a premium of Rs. 3, Rs. 7 to be paid on application and the balance in one call after a month. These shares are not to rank for dividend for the year ending 30th June, 2015. 2,000 Right shares were taken up by X Ltd. Balance Rights being sold at Rs. 2 each on 25.5.2015. On 15.10.2015 the company declared a dividend of 20% for the year ending 30th June, 2015. Make out the Investment Account in the books of X Ltd. Ignore Income Tax.

12. Hotel Heritage has two departments – (i) Lodging Department and (ii) Restaurant Department.

The Trial Balance of Hotel Heritage as on 31-03-2020 is as follows:

Debit	Rs.	Credit	Rs.
Purchase of Foods	3,10,000	Provision for Depreciation of Buildings	4,80,000
Opening stock of food materials	20,400	Suppliers Account	1,96,000
Debtors	16,000	Capital	44,00,000
Buildings (1/10 is used for Restaurant Department)	42,00,000	Income from Lodging Dept.	9,20,000
		Income from Restaurant Dept.	6,40,000
		Interest	22,600
Furniture and Equipments	12,00,000		
Wages	1,20,000		
General Expenses	5,48,200		
Interest accrued	4,000		
Income Tax	8,000		
Life Insurance Premium (for Proprietor)	32,000		
Cash at Bank	2,00,000		
	66,58,600		66,58,600

Additional Information:

(a) Closing stock of food materials Rs. 12,600.

(b) Wages are to be apportioned in the proportion ½ to the Lodging Department, ¼ th to the Restaurant Department and the residue to the General Profit and Loss Account.

(c) The employees in the Lodging Department had occupied a room worth Rs. 2,400 and took means worth Rs. 1,200. Similarly, employees in the Restaurant Department had occupied a room worth Rs. 3,000 and took meals worth Rs. 1,800.

    (d) Increase provision for depreciation of the building to Rs. 6,00,000. Depreciate furniture & Equipments @ 10% p.a. and apportion the amount in the ratio of 3:2:1 to lodging, restaurant and office.

    (e) A sum of Rs. 16,000 representing accommodation Rs. 4,800 and meals Rs. 11,200 is to be charged to proprietor of the hotel.

You are required to prepare Departmental Profit & Loss A/c, General Profit & Loss A/c for the year ended 31-03-2020 and Balance Sheet as on that date.

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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WEST BENGAL STATE UNIVERSITY

B.A. Honours 3rd Semester Examination, 2020, held in 2021

ENGACOR07T-ENGLISH (CC7)

PAPER TITLE: BRITISH POETRY AND DRAMA (17ᵀᴴ -18ᵀᴴ C)

Time Allotted: 2 Hours   Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1.   Answer any *one* from the following questions in about 500 words: 15×1 = 15

  (a) Make a critical assessment of Milton's use of epic conventions in *Paradise Lost*, Book I.

  (b) Discuss Milton's *Paradise Lost*, Book I, as an epic delineating the conflict between good and evil.

2.   Answer any *one* from the following questions in about 500 words: 15×1 = 15

  (a) '*The Rape of the Lock* is much more than a satire; it is a work of imagination.' Comment on the validity of this observation with reference to the text.

  (b) Is Pope's treatment of Belinda in *The Rape of the Lock* a satirical commentary on feminine follies? Discuss with close reference to the text.

3.   Answer any *two* from the following questions in about 200 words: 5×2 = 10

  (a) Who is Satan's second in command in *Paradise Lost*, Book I? Discuss his role.

  (b) Comment on the appropriateness of the Vallombrosa simile in *Paradise Lost*, Book I.

  (c) Briefly describe how, according to Ariel, the women were transformed after death in *The Rape of the Lock*.

4.   Contextualise and explain any *two* of the following extracts: 5×2 = 10

  (a) For this, ere Phoebus rose, he had implor'd

    Propitious Heav'n, and ev'ry pow'r ador'd,

    But chiefly love—to love an altar built,

    Of twelve vast French romances, neatly gilt.

(b) With varying vanities, from ev'ry part,

   They shift the moving toyshop of their heart;

   Where wigs with wigs, with sword-knots sword-knots strive,

   Beaux banish beaux, and coaches coaches drive.

(c) What in me is dark

   Illumine, what is low raise and support;

   That to the highth of this great Argument

   I may assert Eternal Providence,

   And justify the ways of God to men.

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WEST BENGAL STATE UNIVERSITY

B.A. Honours 3rd Semester Examination, 2020, held in 2021

EDCACOR07T-EDUCATION (CC7)

CONTEMPORARY ISSUES

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words
and adhere to the word limit as practicable.

প্রান্তিক সীমার মধ্যস্থ সংখ্যাটি পূর্ণমান নির্দেশ করে।
পরীক্ষার্থীরা নিজের ভাষায় যথা সম্ভব শব্দসীমার মধ্যে
উত্তর করিবে।

1. Answer any *two* questions from the following: 15×2 = 30
   নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ

   (a) State the problems related to language education in India. State the   9+6
   recommendations of Kothari Commission with respect to language education.
   ভারতবর্ষে ভাষা শিক্ষা সংক্রান্ত সমস্যাগুলি আলোচনা করো। ভাষা শিক্ষা সম্পর্কে কোঠারী কমিশনের
   সুপারিশগুলি লেখো।

   (b) Discuss the problems related to education of backward classes in India. State   9+6
   some measures recommended by different commissions and policies to solve the
   problems.
   ভারতবর্ষে পশ্চাদপদ শ্রেণীর শিক্ষা সংক্রান্ত সমস্যাগুলি আলোচনা করো। এই সমস্যা সমাধানে বিভিন্ন
   কমিশন এবং শিক্ষা নীতির কিছু সুপারিশ উল্লেখ করো।

   (c) Discuss briefly the recommendations of National Curriculum Framework, 2009.
   National Curriculum Framework, 2009-র সুপারিশগুলি সংক্ষেপে আলোচনা করো।

2. Answer any *two* questions from the following: (Each answer within 200 words)   5×2 = 10
   নিম্নলিখিত যে-কোনো *দুটি* প্রশ্নের উত্তর দাওঃ (প্রতিটি উত্তর ২০০টি শব্দের মধ্যে)

   (a) State the importance of technical and vocational education.
   কারীগরি ও বৃত্তিশিক্ষার গুরুত্ব লেখো।

   (b) State some problems related to adult education in India.
   ভারতবর্ষে বয়স্ক শিক্ষা সংক্রান্ত কিছু সমস্যার উল্লেখ করো।

   (c) State the characteristics of non-formal education.
   প্রথামুক্ত শিক্ষার বৈশিষ্ট্য লেখো।

   (d) What are the causes of inequality of educational opportunity?
   শিক্ষার অসম সুযোগের কারণগুলি কি কি ?

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