

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(SCIENCE)

SUBJECT : CHEMISTRY
PAPER : 302

Full Marks : 60
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

SECTION - A (Compulsory)

1. Answer any Six Questions : (2x6)
- (i) Show that each Fe atom in $\text{Fe}_3(\text{CO})_{12}$ conforms to the 180 electron rule.
 - (ii) Explain Wacker Process.
 - (iii) What is water gas? How is water gas formed?
 - (iv) What is meant by Radioactive equilibrium?
 - (v) What is the significance of g - tensor?
 - (vi) What is meant by Fission Yield?
 - (vii) Provide two industrial applications of Olefin Metathesis.
 - (viii) What are fullerene complexes? Give example.

SECTION - B

Answer any **FOUR** Questions :

2. Discuss the bonding and reactions of the following: (6+6)
- (a) Allyl / Complex
 - (b) Carbocyclic π - System complexes.

3. (a) Write a note on spectral analysis of organometallic complexes. (6)
- (b) Discuss synthesis and bonding of Alkyl and Aryl complexes. (6)
4. (a) Discuss the following reactions: (4+4)
- (i) Hydrogenation
- (ii) Fischer-Tropsch synthesis.
- (b) Write a note on Zeigler-Natta polymerization. (4)
5. (a) What do you mean by oxidative addition and Reductive elimination? Explain with examples. (4+4)
- (b) Write a note on Hydride elimination. (4)
6. (a) What is nuclear fusion? Discuss fusion reactions occur in the sun. (2+3)
- (b) What is neutron activation analysis? Discuss one method of this type of analysis. (7)
7. (a) Describe the Q - values of nuclear reactions. (4)
- (b) Write notes on - (4+4)
- (i) Spin orbit coupling
- (ii) Lande interval rule.
8. (a) How are Zero field splitting and Kramer's degeneracy applied to the following complexes? (10)
- (i) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$
- (ii) $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$
- (b) What are the physical significance of 'g' value in EPR? (2)



GACR
PG 3rd SEMESTER EXAMINATION - 2018
(SCIENCE)

SUBJECT : BOTANY
PAPER : 302

Full Marks : 60
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

1. Answer any Six of the following : (2x6)
- (i) Name the popular plant used in biodiesel production.
 - (ii) What are molasses?
 - (iii) What is a DNA Bank?
 - (iv) What do you mean by advanced Cultivars?
 - (v) Mention two important causes of soil erosion.
 - (vi) What do you know about N.I. Vavilov?
 - (vii) Write the Botanical name and family of ground nut.
 - (viii) What is the full form of NBPGR?

Group - B

2. Discuss the major causes of loss of biodiversity and its impact. (12)
3. What is *in situ* conservation? Discuss different strategies for *in situ* conservation. (12)
4. Narrate the origin, evolution and wild relatives of cotton. (12)

(2)

5. Discuss about the joint forest management and stake holder's responsibility. (12)
6. What is Agrobiodiversity? Describe it's economic value. (12)
7. Write short note on : (6x2)
- (i) CBD
 - (ii) Mangrove forest conservation
8. Write notes on : (6x2)
- (i) Plant introduction
 - (ii) Importance of Medicinal and aromatic plants.

- x - x - x -

No of Pages : 2

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : SOCIOLOGY
PAPER : 302

Full Marks : 80
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks
Question No.1 is Compulsory.

1. Answer any EIGHT Questions of the following : (2x8)
- (i) Distinguish between common sense and scientific knowledge.
 - (ii) What is induction?
 - (iii) What is deduction?
 - (iv) Mention two major contributions of Popper.
 - (v) Mention two major contributions of Kuhn.
 - (vi) What is validation of knowledge?
 - (vii) What is the relevance review of literature in research?
 - (viii) What is a research problem?
 - (ix) What is Thurston Scale?
 - (x) What is Bogardus Scale?
 - (xi) Distinguish between null and alternative hypothesis.
 - (xii) How is a hypothesis tested?
 - (xiii) What is the importance of field work in Sociological study? (12)
 - (xiv) What is theory building? (12)

P.T.O.

(2)

Answer any FOUR Questions of the following :

(16x4)

2. What is logic of inquiry in Social Science Research?
3. What is positivism? Discuss the strength and limitations of positivist research.
4. What are the characteristics of a hypothesis? Discuss the role of hypothesis in Social Science Research.
5. What is Participatory Rural Appraisal (PRA)? How PRA is administered in Social Research?
6. What is scaling technique? What is its main purpose in social research?
7. Discuss the importance of Likert scale in social research.
8. Distinguish between reliability and validity with examples.
9. Distinguish between nominal and ordinal scale for data measurement in social research.

-X-X-X-

No of Pages : 2

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : PSYCHOLOGY
PAPER : 302

Full Marks : 60
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

1. Attempt any SIX : (2x8=16)
Write short notes on -
- (a) Social Energy
 - (b) Primary prevention
 - (c) Tele conferencing
 - (d) Consumer awareness
 - (e) Happiness
 - (f) Attitude of gratitude
 - (g) Resilience
 - (h) Terror trauma.

Group - B

Answer any Four :

(12x4)

2. What is social change? Discuss different strategies for social change.
3. Illustrate the role of Psychologists in rehabilitating the physically, mentally and socially challenged persons.

P.T.O.

(2)

4. Elaborately discuss the importance of IT in the life of individuals.
5. Discuss the role of Psychological interventions in enhancing sports performance.
6. Describe the goals and scope of positive Psychology.
7. What is subjective well being? Discuss different factors affecting subjective well being.
8. Discuss some of the important factors of community Psychology in solving different social problems.



GACR
PG 3rd SEMESTER EXAMINATION - 2018
(COMMERCE)
MCO - 302

Time : 3 Hours

Full Marks : 80

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

(2x8)

1. Answer any **Eight** of the following :
- (i) Define Corporate Governance.
 - (ii) What is the objective of Cadbury committee on Corporate Governance?
 - (iii) Write down two OECD principles.
 - (iv) Write down two recommendations of the CII's code of corporate Governance.
 - (v) Write down the recommendation of Kumar Mangalam Birla Committee, 1999 in relations to Audit Committee.
 - (vi) Write down three rights of shareholders.
 - (vii) Define Investor protection.
 - (viii) What is the role of Government in Corporate Governance?
 - (ix) Define Business Ethics.
 - (x) State the role of public opinion in resolving environmental issues.

Group - B

(16)

2. Discuss briefly the Agency Theory relating to public corporation. What are the major criticisms against the theory?

OR

P.T.O.

(2)

Discuss some of the most prominent issues of corporate Governance. Discuss the relevance of these issues with particular reference to the Indian Corporate sector.

3. Explain in detail OECD principles of corporate Governance. (16)

OR

Discuss critically the recommendations of Kumar Mangalam Birla committee 1999.

4. What are the rights and privileges of shareholders as enumerated by the Indian Companies Act 1956 and the amendments made thereto. (16)

OR

Discuss briefly:

- (a) Corporate Governance and creditors
(b) Corporate Governance and the government (16)
5. Discuss the importance and relevance of ethics while conducting business

OR

Why do business have a negative image? Explain the reasons behind the unethical behaviour of business organisations. (16)

6. Discuss the scope of CSR with suitable illustrations.

OR

What are the environmental concerns of modern societies? How are they being addressed by governments?

- x - x - x -

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)
POLITICAL SCIENCE (P - 302)

Time : 4 Hours

Full Marks : 80

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

1. Answer any EIGHT of the following : (8x2)

- a) Define the nature of a political society?
- b) Conceptualise authority.
- c) How power can be measured?
- d) Define classical elitism
- e) How did Almond classified political culture?
- f) What are the forms of political socialisation?
- g) Define the nature of political participation.
- h) Give Almonds definition of political communication.
- i) What are the impacts of modernisation?
- j) Does modernisation of politics in political development ?
- k) What are the attributes of political power ?
- l) What major role a political socialiser play?

Group - B

2. Define power and examine how power relations can be detected. (16)

P.T.O.

(2)

3. Political culture is the pattern of Individual attitudes and orientations towards politics among the members of a political system-discuss. (16)
4. What factors have contributed to the political socialisation and why do citizens participate in politics? (16)
5. Examine various factors influencing the process of political participation. (16)
6. Discuss some of the social and ecological costs of the kind of development which has been persued in most countries. (16)
7. What is political modernisations. What are its key features and how can they explain the under development of global south. (16)
8. What are the hot topics and trends in political communication today. Describe how Almond conceptualise the term. (16)



**PG, 3rd SEMESTER END EXAMINATION-2018
(SCIENCE)**

Sub.- Zoology

PAPER : P-302

Time: 4 Hours

Full Marks:60

The figure in the right hand margin indicate marks.

Question No.1 is compulsory, answer any FOUR from the rest.

GROUP - A

[2 x6

1. Answer any SIX of the following :-
 - i) Name the forces that are involved in antigen-antibody reaction.
 - ii) What is adjuvant? Mention its types.
 - iii) Name four immuno suppressive agents.
 - iv) Mention two important features of antigen-antibody interaction. Briefly explain these.
 - v) What are CD 4 and CD 8? Where are they situated?
 - vi) How macrophages help humoral immunity?
 - vii) What is the other name of tumour suppressor gene?
Name two such genes found in humanbeing.
 - viii) What are proto-onco genes? What is their role ?

GROUP - B

[12x 4

Answer any **FOUR** questions.

2. Describe the molecular structure of a typical antibody. Add a note on its type.
3. What is a cytokine? Mention its types. Discuss how they regulate immune response.
4. What is hypersensitivity? Give a detailed account of type I hypersensitivity.
5. Which cells are said to be cancerous? Elaborate the characteristics of a cancer cell.
6. Give a detailed account of the carcinogenes and their impact on human health.
7. Highlight the role of different cells associated with vertebrate immune system.
8. Describe the events of cellular immune response.



GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : ODIA
PAPER : P - 302

Full Marks : 80
Time : 4 Hours

*Answer all Questions as per the instruction
The figure in the right hand margin indicate marks*

‘କ’ ବିଭାଗ (ବାଧ୍ୟତାମୂଳକ)

୧. ଯେକୌଣସି ଆଠଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଲେଖ : (୨x୮=୧୬)
- (କ) ପ୍ରାଚୀନ ଓଡ଼ିଆ ଲିପି
 - (ଖ) କର୍ମ କାରକ
 - (ଗ) ପରିବହନ ସମ୍ପର୍କୀୟ ଜଞ୍ଜାଳୀ ଶବ୍ଦ
 - (ଘ) ଓଡ଼ିଆରେ ବ୍ୟବହୃତ ପର୍ଯ୍ୟାୟ ଶବ୍ଦ
 - (ଙ) ଅପାଦାନ କାରକ
 - (ଚ) ଗୁପ୍ତ କାଳୀନ ଲିପି
 - (ଛ) ‘ଉଆ’ ଓ ‘ଇଆ’ ପ୍ରତ୍ୟୟ
 - (ଜ) କୃଦନ୍ତର ସଂଜ୍ଞା
 - (ଝ) ‘ଅଣି’ ଓ ‘ଆଣି’ ପ୍ରତ୍ୟୟ
 - (ଞ) ‘ଇ’ ଓ ‘ଆଳି’ ପ୍ରତ୍ୟୟ

‘ଖ’ ବିଭାଗ

୨. ଯେ କୌଣସି ଷ୍ଟରୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ । (୧୬)
୧. ଓଡ଼ିଆ ଲିପିର ବିବର୍ତ୍ତନ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।
କିମ୍ବା
ଓଡ଼ିଆ ଲିପିର ବୈଶିଷ୍ଟ୍ୟ ନିରୂପଣ କର ।

(2)

୩. ଓଡ଼ିଆ ଭାଷା ଉପରେ ଦ୍ଵାବିତ୍ତ ଭାଷାର ପ୍ରଭାବ ଆଲୋଚନା କର । (୧୭)
କିମ୍ବା
ଓଡ଼ିଆ ଭାଷା ଉପରେ ଯାବନିକ ଭାଷାର ପ୍ରଭାବ ଆକଳନ କର ।
୪. ଗୋଟିକର ଉତ୍ତର ଲେଖ । (୧୭)
(କ) ଓଡ଼ିଆ ଭାଷା ଉପରେ ପର୍ତ୍ତୁଗୀଜ ଭାଷାର ପ୍ରଭାବ
(ଖ) ଓଡ଼ିଆ ଭାଷା ଉପରେ ଇଂରାଜୀ ଭାଷାର ପ୍ରଭାବ ।
୫. କାରକର ସଂଜ୍ଞା ନିରୂପଣ କରି ସଦୃଶାନ୍ତ ଏହାର ପ୍ରକାର ଭେଦ ଦର୍ଶାଅ । (୧୭)
କିମ୍ବା
ବିଭକ୍ତି କାହାକୁ କୁହାଯାଏ ? କେଉଁ କାରକରେ କେଉଁ ବିଭକ୍ତି ହୁଏ ଉଦାହରଣ ସହ ବୁଝାଅ ।
୬. ଯେକୌଣସି ଗୋଟିକ ସମ୍ପର୍କରେ ବିବରଣୀ ପ୍ରଦାନ କର । (୧୭)
(କ) ଗ୍ରାୟରସନ
(ଖ) ନୀଳକଣ୍ଠ ଦାସ

- x - x - x -

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : ENGLISH (ESSAYS)
PAPER : 302

Full Marks : 80
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A - Question No.1 is Compulsory

1. Answer any EIGHT of the following Questions : (2x8=16)

- (i) Why does Richard Steele represent the character Sir Roger de Coverly?
- (ii) Why is it considered that Steele has been described as “more human and at his best a greater writer”?
- (iii) Point out the subject matter of “The Spectator Club”.
- (iv) What major ideas do we find while reading the essay “On Courage”?
- (v) Why does AG Gardiner emphasize on letter writing?
- (vi) What intention does the reader find in Stevenson’s “Davos in Winter”?
- (vii) Which country does Robert Lynd belong to?
- (viii) Why does Gardiner emphasize No.13 in the essay “On Superstitions”?
- (ix) “Physical recovery is a matter of the mind as

(2)

well as of the body". Discuss with reference to "On Superstitions".

- (x) Why does fancy pieces out at its leisure irrespective of the reach of Sense and knowledge?
- (xi) Which term does Huxley use to describe the "regions of the mind" that one can reach via meditation, vitamin, and deficiencies".

Group - B

Answer any FOUR of the following questions : (4x16 = 64)

- 2. Give an appreciation of Richard Steele's essay "Recollections".
- 3. Discuss the theme of "The Spectator Club".
- 4. Point out the writing style of Charles Lamb in his essays referring to hyperboles, metaphors, irony personification etc.
- 5. Justify the title of the essay "On Courage" by A.G. Gardiner.
- 6. What major issues does Stevenson discuss in "Davos in Winter"?
- 7. View the ideas coined by A.G. Gardiner in 'On Superstitions' which emphasize on blind belief or dogmas?
- 8. Write a note on Hazliff's writing style as evident in his essays you have read.
- 9. "Heaven and Hell" is a philosophical essay. Discuss.



GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : EDUCATION
PAPER : 302

Full Marks : 60
Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

1. Answer any SIX of the following question in two sentences : (2x6)
- (a) Two principles of curriculum development.
 - (b) Difference between Curriculum and syllabus.
 - (c) Recommendations of 1966 - Education Commission.
 - (d) Team teaching
 - (e) CAI
 - (f) Activity - Centred curriculum.
 - (g) Merits of open education
 - (h) Meaning of Linear Programming.

Group - B

Answer any Four Questions of the following :

1. What is Curriculum? Discuss about the important bases of curriculum. (12)

(2)

2. Define curriculum? Discuss the Principles to organise the modern curriculum. (12)
3. Discuss the principles of curriculum development with suitable example. (12)
4. What is concentric method of curriculum development? Discuss its steps. (12)
5. What is Micro Teaching? Discuss its important features. (12)
6. What is Core Curriculum? Discuss its characteristics. (12)

-x-x-x-

No . of Pages : 2

GACR

PG, 3rd SEMESTER END EXIMINATION-2018
(ARTS)

SUB : ODIA

PAPER : 302

Time : 4 Hours

Full Marks : 80

*The figure in the right hand margin indicate marks
Question No. 1 is compulsory, answer any Four from the rest.*

‘କ’ ବିଭାଗ (ବାଧତାମୂଳକ)

୧. ଯେ କୈଣସି ଆଠଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଲେଖ :- [2x8 = 16]

କ) ପନ୍ ଓଡ଼ିଆ ଲିପି ।

ଖ) କର୍ତ୍ତୃ କାରକ

ଗ) କରଣ କାରକ

ଘ) କୃଦନ୍ତ କାହାକୁ କୁହାଯାଏ ?

ଙ) ତଦ୍ଦିତର ସଂଜ୍ଞା

ଚ) ଓଡ଼ିଆରେ ବ୍ୟବହୃତ ୪ଟି ପଞ୍ଚମୀଜ ଶବ୍ଦ

ଛ) ପରିବହନ ସଂପର୍କୀୟ ୪ଟି ଇଂରାଜୀ ଶବ୍ଦ

ଜ) ‘ଇକ’ ଓ ‘ଉକ’ ପ୍ରତ୍ୟୟର ୨ଟି ଲେଖା ତଦ୍ଦିତ ଶବ୍ଦ ଲେଖ ।

ଝ) ବିଭକ୍ତି କାହାକୁ କୁହାଯାଏ ?

ଞ) ‘ଅଣି’ ଓ ‘ଆଣି’ ପ୍ରତ୍ୟୟର ୨ଟି ଲେଖା କୃଦନ୍ତ ଶବ୍ଦ ଲେଖ ।

‘ଖ’ ବିଭାଗ

(ଯେ କୌଣସି ଋଚୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ)

୨. ଓଡ଼ିଆ ଲିପିର ବିବର୍ତ୍ତନ ସଂପର୍କରେ ଆଲୋଚନା କର । [୧୬]

କିମ୍ବା

ଓଡ଼ିଆ ଲିପିର ବିଶେଷତ୍ୱ ଉଲ୍ଲେଖ କର ।

୩. ଓଡ଼ିଆ ଭାଷା ଉପରେ ଦ୍ରାବିଡ଼ ଭାଷାର ପ୍ରଭାବ ଉଦାହରଣ ସହ
ଦର୍ଶାଅ । [୧୬]

କିମ୍ବା

ଓଡ଼ିଆ ଭାଷା ଉପରେ ଯାବନିକ ଭାଷାର ପ୍ରଭାବ ନିରୂପଣ କର ।

୪. ଓଡ଼ିଆ ଭାଷା ଉପରେ ପର୍ତ୍ତୁଗାଜ ଭାଷାର ପ୍ରଭାବ କିଭଳି ପଡ଼ିଛି
ଦର୍ଶାଅ । [୧୬]

କିମ୍ବା

ଓଡ଼ିଆ ଭାଷା ଉପରେ ଇଂରାଜୀ ଭାଷାର ପ୍ରଭାବ ସଦୃଷ୍ଟାନ୍ତ ଉଲ୍ଲେଖ
କର ।

୫. କାରକ କାହାକୁ କୁହାଯାଏ ? ଏହାର ପ୍ରକାର ଭେଦ ସଂପର୍କରେ
ଆଲୋଚନା କର । [୧୬]

କିମ୍ବା

ବିଭିନ୍ନ କାରକ ସହିତ ବିଭିନ୍ନ ସଂପର୍କ ନିରୂପଣ କର ।

୬. ଯେ କୌଣସି ଗୋଟିକ ସଂପର୍କରେ ବିବରଣୀ ପ୍ରଦାନ କର [୧୬]

କ) ଜନ୍ମଦିନ

ଖ) ନାଲକଣ୍ଠ ଦାସ

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(ARTS)

SUBJECT : ECONOMICS

Full Marks : 80

PAPER : 302

Time : 4 Hours

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Group - A (Compulsory)

1. Answer any EIGHT:

(2x8=16)

- (a) Define development.
- (b) What is technical progress?
- (c) Give the meaning of production function.
- (d) What is endogenous growth.
- (e) Define Saving.
- (f) What do you mean by economic growth?
- (g) Define neutrality approach.
- (h) Present role of learning.
- (i) Define investment.
- (j) What is intellectual capital.

Group - B

Answer any **FOUR**.

2. Critically analyse solow's model of economic growth. (16)
3. Describe in brief Cambridge criticism of Neo-classical analysis of economic growth. (16)

(2)

4. Explain Kaider's model of Economic growth and its practical importance. (16)
5. Justify the Significance and implication of optional economic growth. (16)
6. Elaborate Golden Rule of Capital accumulation. (16)
7. Discuss Ujawa two sector model of economic growth. (16)
8. Critically examine cost-benefit analysis of Project evaluation. (16)

- x - x - x -

No of Pages : 3

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(COMPUTER SCIENCE)
(MCS - 302)

Time : 4 Hours

Full Marks : 80

Answer all Questions as per the instruction
The figure in the right hand margin indicate marks

Section - A (Compulsory)

1. Answer any **EIGHT** of the following questions :

(2x8=16)

- (a) What is Extreme Programming?
- (b) Mention the drawbacks of RAD model.
- (c) List the principles of Software Engineering.
- (d) Differentiate verification and validation.
- (e) What do you mean by cohesion and coupling?
- (f) How do you compute the Expected Value for Software Size?
- (g) Mention the factors considered during System Modelling.
- (h) State the merits and limitations of Formal Methods.
- (i) State the components used in Use Case Diagram.
- (j) State the system Engineering hierarchy.

Section - B

2. a. Describe the importance of software Engineering? What steps should be taken under the process of developing a software system.

(16)

P.T.O.

(2)

- b. Differentiate Iterative waterfall model, Prototyping Model describing their phases with diagrams.
- 3. a. Describe the responsibilities of a Software Project Manager considering the project to develop a software for an Online Library. (8)
- b. What does it mean by project estimation? Describe the techniques used by Analytical Estimation and Empirical Estimation. (8)
- 4. a. What is Risk Management? Describe how Risk is identified, assessed and suppressed. (8)
- b. State the importance and difference of Gantt Charts and PERT Charts. Draw a PERT chart for the following. (8)

Task Identifier	Task description	Predecessor Task(s)	Optimistic times(O)	Most Likely Time (M)	Pessimistic Time (P)	Expected Time (T _e)
A	Establish project		4	5	12	6
B	Establish customer requirements	A	2	3	4	3
C	Produced Software specification documents	B	6	8	22	10
D	Write test plans	C	4	6	8	6
E	Write Code	C	3	4	5	4
F	Developer testing	E	2	4	6	4
G	System testing	D,F	2	3	4	3
H	Write Manuals	C	5	7	15	8

- 5. a. What are Functional Requirements? How those are identified and documented? (8)

(3)

- b. Describe the elements used in Use Case Diagram. Draw a Use Case diagram for Examination process of a college considering the following actors. STUDENT, QUESTION SETTER, EXAMINER, CONTROLLER. (8)
- 6. a. Describe integration Testing in brief. Differentiate Phased and Incremental Integration Testing. State the general issues associated with Testing. (8)
- b. Why white box testing called structure-based testing? Describe statement coverage, branch coverage, condition coverage and path coverage with suitable examples. (8)
- 7. a. Describe the importance of DFD and Data Dictionaries in Function-Oriented Design. Give Illustrations considering a common example for both. (8)
- b. Explain the evolution of Software Engineering. Differentiate Software Development and Software Engineering. (8)
- 8. Write short notes on (any FOUR): (4x4)
 - a. Agile Model
 - b. COCOMO
 - c. Project Monitoring and Control
 - d. SRS
 - e. Debugging

XXX

GACR
PG 3rd SEMESTER EXAMINATION - 2018
(SCIENCE)

SUBJECT : PHYSICS

Full Marks : 60

PAPER : PH - 302

Time : 4 Hours

*Answer all Questions as per the instruction
The figure in the right hand margin indicate marks.*

Symbols carry usual meaning.

Section - A (Compulsory)

1. Answer any Six Questions :

(2x6=12)

- (a) What is the criterion for sustained oscillation for oscillator to work with?
- (b) What is the difference between BJT and UJT devices?
- (c) An OPAMP that acts an integrator, find out put voltage V_o when input voltage $V_1 = V \sin \omega t$ and $R = 1 M\Omega$ and $C = 1 \mu f$
- (d) State the input and output impedance of an ideal OP AMP.
- (e) Write down the situation where klystron oscillator is used.
- (f) How CMRR of a differential amplifier plays the role for amplification?
- (g) Why NAND gate is called universal gate. Show its realization.
- (h) Set difference between combinational logic and sequential logic.

(2)

Group - B

Answer any **FOUR** questions:

2. (a) Which feedback principle is used for transistor to act as an oscillator? What is difference between Hartley's and Colpitt's oscillator. Find the operating frequency of a transistor Colpitt's oscillator if $C_1 = 30 \text{ pF}$, $C_2 = 60 \text{ pF}$ and $L = 10 \text{ } \mu\text{F}$. (6)
- (b) Given the truth table below, determine the logic expression (sum of product form) from the output Y from the truth table. Sketch the logic circuit for the simplified expression. (6)

A	B	C	Output Y
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

3. (a) Determine the output voltage of an OPAMP for input voltages of $V_{i1} = 105 \text{ } \mu\text{V}$ and $V_{i2} = 140 \text{ } \mu\text{V}$. The amplifier has a differential gain of $A_d = 4000$ and the value of CMRR is (6)
- i. 10^2
 - ii. 10^5
- (b) Find out the gain of an OPAMP in noninverting mode. Show that it can operate as an integrator. (6)

(3)

4. (a) What is the difference between a multiplexer and demultiplexer? Draw a 4-1 multiplexer. (6)
- (b) Write down the truth table of 3 variables (A, B and C) and draw its Karnaugh Map. (6)
5. (a) Design the circuit diagram of a full-adder and explain its working. (6)
- (b) What is a decoder? Design a 7- segment display with LED. (6)
6. (a) Draw and explain JK flip flop with truth table. What is race condition? How do you overcome by master-slave JK flip flop. (6)
- (b) A three variable truth table has high output for these input conditions: 000, 010, 100, and 110. Draw the sum-of-product circuit. (6)
7. (a) Solve the following equation of 4 variables by Karnaugh Map. $Y = m(0, 5, 3, 7, 10, 15)$ (6)
- (b) What is maximum power transfer theorem? Design a circuit and find out maximum power. (6)
8. Write notes on (6x2=12)
- (i) Superposition Theorem
 - (ii) Norton's Theorem
